A Cultural Resource Survey of Habitat for Humanity's Proposed Palo Alto Residential Subdivision Project Area, San Antonio, Bexar County, Texas

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Abstract

On September 19, 2004, South Texas Archeological Research Services, LLC, performed the fieldwork phase of a cultural resource survey of Habitat for Humanity's proposed Palo Alto residential subdivision project area in southwest Bexar County, Texas. The project area, which is adjacent to Leon Creek, consists of approximately 14.50 acres. Because the project was funded in part by the United States Department of Housing and Urban Development, the survey was conducted according to applicable provisions of Section 106 of the National Historic Preservation Act and *Archeology and Historic Preservation: Secretary of the Interior's Guidelines*. Since the project area was not owned or controlled by the State of Texas or any of the state's political subdivisions, it was not subject to compliance with the Antiquities Code of Texas and a state antiquities permit was not obtained.

The area of potential effects for the project consisted of the zone of impacts for construction of a single-family residential subdivision. At the time of the survey, the entire project area was covered with dense vegetation that effectively reduced surface visibility to almost zero. Therefore the scope of work for the survey consisted of excavation of 20 shovel tests within the area. The tests confirmed the results of geocores recently conducted within or near the project area that indicated that the subsurface in the area consisted of dense natural clay or clay loam deposits over caliche. No archeological or other cultural resources were found during the survey and no artifacts or other items were collected or curated. Based on these results, South Texas Archeological Research Services, LLC, recommended to the project sponsor and the Texas Historical Commission that the currently planned construction should be allowed to proceed without further archaeological work. It was also recommended that if any cultural resources should be encountered during construction, per applicable antiquities statutes and regulations, construction work should immediately be halted in the vicinity until such finds are examined and evaluated by a qualified archeological consultant and the Texas Historical Commission.

Acknowledgements

South Texas Archeological Research Services, LLC, was assisted in coordinating and performing the survey of the project area by several persons whose help is gratefully acknowledged: Habitat for Humanity Land Acquisition and Development Specialist Courtney D. Riddle, City of San Antonio Historic Preservation Office archeologist V. Kay Hindes, Texas Historical Commission reviewer Mark Denton, and fieldwork assistants Ricky Espinosa and Albert Uecker.

Introduction

On September 19, 2004, South Texas Archeological Research Services, LLC (STARS), conducted the fieldwork phase of a cultural resource survey of Habitat for Humanity's (HFH) proposed Palo Alto residential subdivision project area in southwest Bexar County, Texas (Figures 1 and 2). The project area, which is adjacent to Leon Creek, consists of approximately 14.50 acres set in clay and loamy clay soils and which was heavily overgrown at the time of the survey with mesquite and similar thorn scrub vegetation and with dense grasses and weeds. An aerial photograph of the project area taken in about the mid 1960s by the United States Department of Agriculture, Soil Conservation Service, indicates that the area was then almost entirely under cultivation (Taylor et al. 1966:Sheet 70).

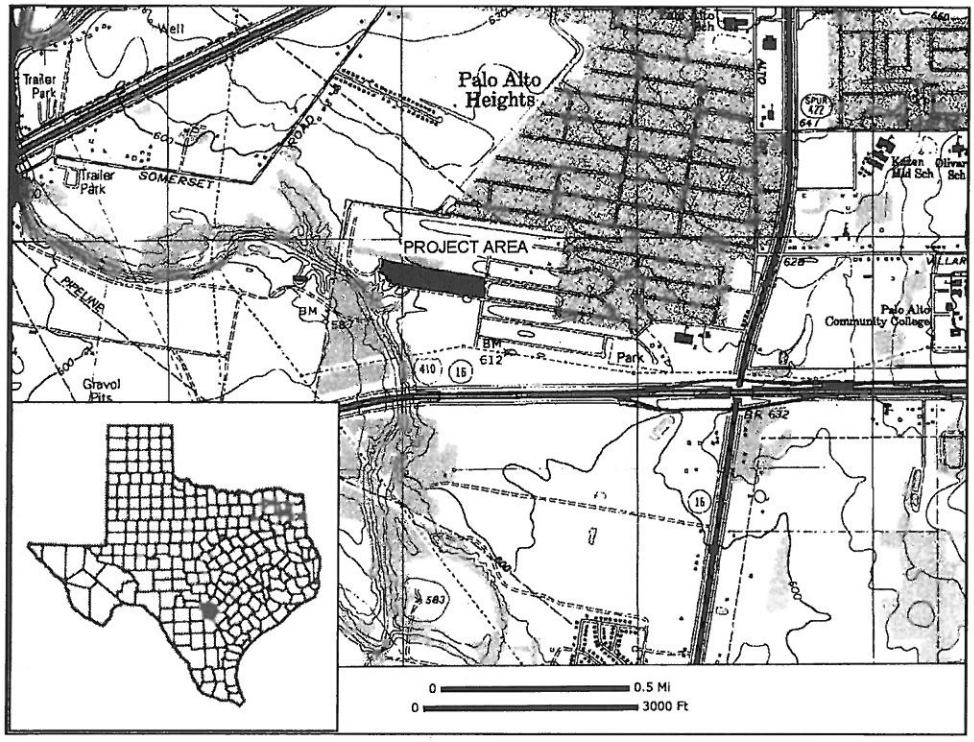

Figure 1. General location of project area (darkened just left of center) within Bexar County as shown on copy of part of San Antonio East United States Geological Survey 7.5 minute quadrangle topographic map. North is toward top of image. Inset shows location of Bexar County within Texas.

The project consisted of construction of an extension of Aragon Drive, and extension of existing sewer and water lines along the new part of the street to accommodate about 75-80 new single-family residential lots. The area of potential affects was the zone of impacts for these activities and corresponded to the area surveyed. Because the project was funded in part by the United States Department of Housing and Urban Development, the survey was conducted according to applicable provisions of Section 106 of the National Historic Preservation Act, *Archeology and Historic Preservation: Secretary of the Interior's Guidelines,* and the rules and regulations of the Texas Historical Commission for federally linked projects. Since the project area was not owned or controlled by the State of Texas or any of the state's political subdivisions, the project was not subject to compliance with the Antiquities Code of Texas and a state antiquities permit was not obtained.

The fieldwork phase of the survey was performed by STARS owner and Principal Investigator Herbert G. Uecker, who was assisted by archeological technician Richard Espinosa and mapping specialist Albert Uecker. This report conforms to the *Council of Texas Archeologists Guidelines for Cultural Resource Management Reports* as it applies to reports of negative or negligible findings.

General Background

Regional Natural Setting and Natural History

At the time of the survey, the regional physiographic and geologic setting of the project area had already been described in considerable detail (cf. Abbott and Woodruff 1986; Black 1989a:5-16; Black and McGraw

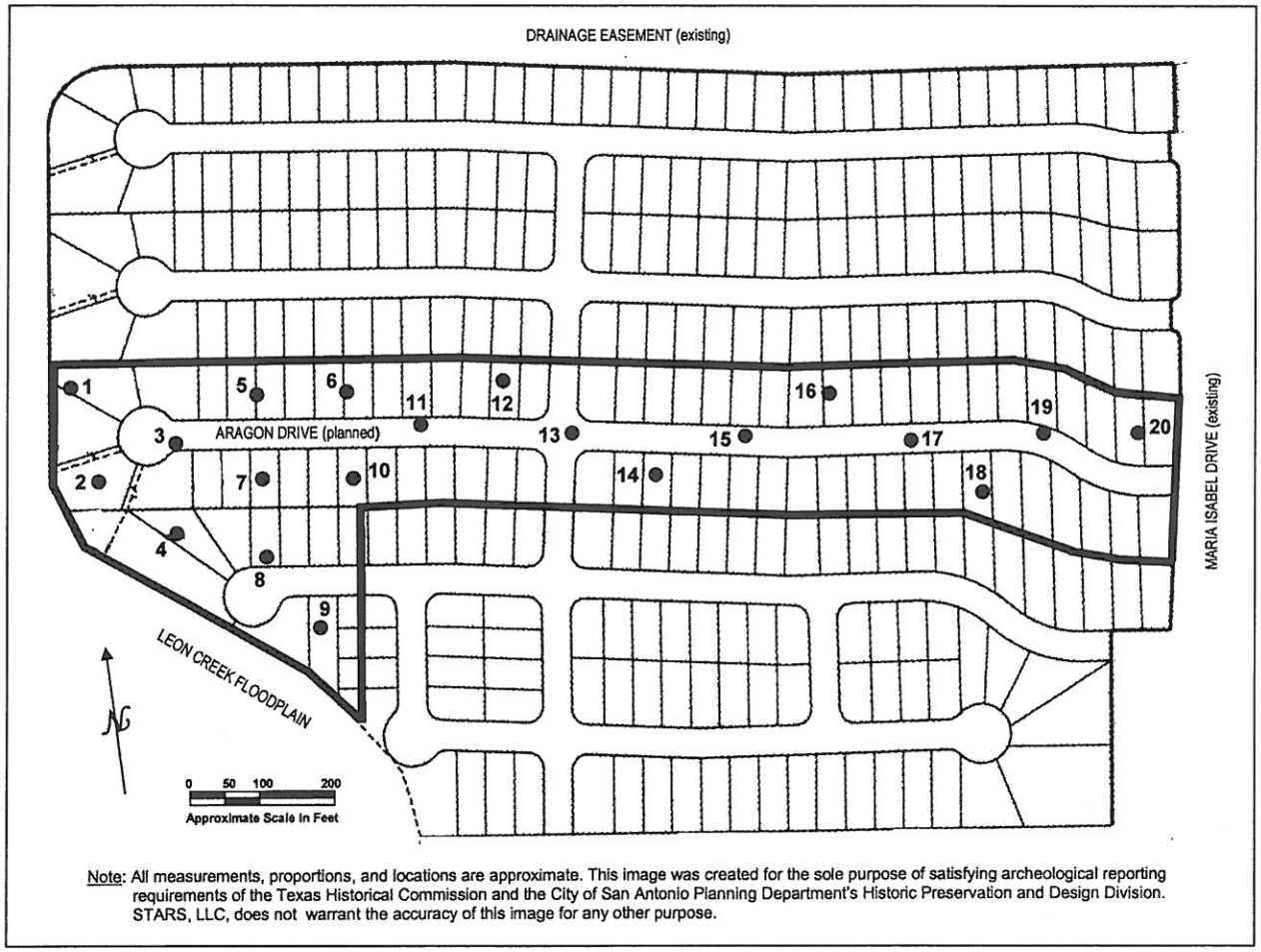

Figure 2. Plan of project area showing existing and proposed improvements. Dark border encloses area surveyed and dots with numbers indicate approximate locations of archeological shovel tests excavated by STARS. Shovel test results are presented in Table 1.

1985:40-54; Mahula 1976:2-6). Briefly, the project area is located on the northern edge of the Gulf Coastal Plain at an elevation of about 185 meters above sea level. It is within the Balcones fault zone just south of the Balcones Escarpment in central Texas. The fault and escarpment region is also known as the Balcones Canyonlands. Intermittent faulting began in the area during the Miocene geologic epoch about 15-21 million years ago and continued until about a million years ago.

The local geomorphology consists of a series of northeast to southwest trending fault scarps and associated erosional features. The regional drainage pattern is dendritic and major drainages in the area include the Medina River, which is west and south of the project area; the San Antonio River to the east of the project area; and Leon Creek, which is adjacent to the project area. Many secondary streams also dissect the general area.

Base or parent rocks in the canyonlands zone include several members of the Lower Cretaceous series including the Del Rio shale formation and the Buda, Edwards, and Glenrose limestones. These formations collectively range up to as much as 10,000 meters thick over much of central and south Texas. They were formed during the Cretaceous geologic period between about 120 and 65 million years ago.

During the last several million years, numerous karst features have formed within the limestone formations, which also house the Edwards aquifer (cf. Veni 1988:11-26). The aquifer is a regional-scale phenomenon composed of porous beds of limestone and shale sandwiched between less permeable calcareous strata and it is virtually the sole source of potable water for the city of San Antonio and much of central Texas. Soils in the canyonlands region

are derivatives of the local bedrock and are typically very thin, stony, and underdeveloped in the uplands. Whereas the character of soils in the immediate vicinity of the project area has been influenced by the proximity of Leon Creek, the main parent soil in the general area is the Houston Black Clay (Taylor et al. 1966). It is a very alkaline, viscous, and turbaceous gumbo.

Ecologically, the area has been a resource-refugium zone since the middle of the Holocene geologic epoch about 7,000 years before present (B.P. [present being arbitrarily defined by culture historians as A.D. 1950]). It was at that juncture in time that the onset of the Altithermal climatic episode (Nance 1972) began to substantially alter the climate of the North American southwest, including Texas. The Altithermal was a period of relatively intense heating and drying that lasted, with many short breaks, until the present time. As the lush tall-grass steppes and mixed-grass prairies of south and west Texas were reduced to thorn scrublands and semiarid deserts over several millennia, both animal and human populations congregated in such areas as the Rio Grande basin and the mountain forests of west Texas and northern Mexico, and also in the central Texas Hill Country north of San Antonio. South and west of the Hill Country, riparian zones slowly evolved into isolated ribbons of resources, and many unique places along the area's rivers, including the site of the city of San Antonio, became centers of human population.

San Antonio is situated within an ecotonal zone that exhibits characteristics of three major natural regions (cf. Blair 1950; Riskind and Diamond 1988): (1) the Balconian Biotic Province, a subtropical, subhumid mixed woodland or parkland that is geographically congruent with much of the Texas Hill Country and is dominated by juniper-oak scrub forests; (2) the Tamaulipan Biotic Province, a subtropical to megathermal desert steppe or thorn scrubland that ranges southward from San Antonio into the coastal and Rio Grande plains and well into northern Mexico that is dominated by huisache and mesquite; and (3) the Blackland Prairie, a subtropical, subhumid area characterized by mixed savannah grassland or prairie and by postoak-blackjack oak woodlands that ranges northward and eastward to the Red River area near the Texas-Oklahoma border. The climate of these regions during the last several millennia has been typified by short mild winters and long hot summers. Modern annual precipitation in the San Antonio area averages about 700-800 mm and follows a bimodal pattern with maxima in May and September. The Balcones tablelands just north of San Antonio have sometimes been the locus of world record precipitation events triggered by tropical waves of warm moist air from the Gulf of Mexico colliding with colder dryer air of arctic and subarctic origins surging southward from the high plains (Caran and Baker 1986).

In the mid 2000s, there were hundreds or even thousands of species of plants, animals, and insects thriving in the San Antonio area. It is beyond the scope of this report to include a comprehensive listing or description of these species but the interested reader is referred to publications by Davis (1960), Enquist (1987), Everitt and Drawe (1993), Kutac and Caran (1994), Neck (1986), Riskind and Diamond (1986), Simpson (1988), and Vines (1984). Major terrestrial faunal species and avifaunal species of the area include the white-tailed deer, javalina, coyote, red fox, opossum, raccoon, ringtailed cat, squirrel, striped skunk, armadillo, wild turkey, bobwhite quail, Inca dove, white-winged dove, box tortoise, and western diamondback rattlesnake. Prominent raptors of the region include turkey and black vultures and various species of owls; and red-tailed hawks, eagles, and peregrine falcons. Also, modest numbers of cougar and bobcat are present in the less populated areas around San Antonio.

Prominent plant species and communities of San Antonio are typical of those found throughout much of central Texas. Live oak, mountain laurel, persimmon, and juniper are major tree varieties in the hill country scrub forests north of the city. Tree species such as mesquite, huisache, and blackbrush acacia; and many cacti and yuccas including prickly pear, Spanish dagger, and sotol are prevalent in the thorn shrub thickets south and west of town. The stream courses and river bottoms of the area contain a broad spectrum of native deciduous trees including Spanish oak, cedar elm, hackberry, pecan, walnut, cherry, and ash. Whitebrush, giant ragweed, cockle burrs, snow-on-the-prairie, frost plant, and numerous other herbs and forbs cover the forest floors. Dozens of types of short and mid grasses carpet the area's prairies and savannas.

Soils and Geoarcheology

As mapped by the Soil Conservation Service (Taylor, et al. 1966:Sheet 70), the surface soils in non-riparian zones of the project area were classified as Lewisville silty clay (LvA) and those along the banks of Leon Creek were part of the Frio component of the Trinity and Frio soils (Tf). Lewisville silty clay generally occurs as nearly

level, broad terraces along rivers and creeks. Trinity series soils are deep, dark, calcareous clays that range in texture from clay loam to gravelly clay and that typically occupy bottomlands that are frequently flooded. They are usually derivatives of the surrounding upland soils. Because they are ideal for cultivation, Trinity series soils were farmed intensively during the historic era wherever they were present in Bexar County and surrounding areas. They frequently contain pockets of Venus Clay Loam (Vcb) and Houston Black Clay (HtA).

Similar soils were previously documented during geoarcheological work at the Alamodome development site and at several other locations in the eastern portion of downtown San Antonio (cf. Collins 1997:151-157). At those locales, several of which are just a few kilometers from the project area, the soils are generally about 2-3 m deep and rest above very ancient deposits of caliche-laden gravels. In several profiles of this type observed by the Principal Investigator, columns were comparatively uniform in composition, the upper dark clay deposits had virtually no visible inclusions and were readily distinguishable from the light-colored caliche gravels below them, and no cultural evidence was present.

According to Collins, the upper, dark-colored clays are very turbaceous and extend several meters to the bottom of the Holocene deposits. Thus, prehistoric archeological resources, which are found only rarely within such soils, are almost always poorly preserved due to the high shrink-swell and particle migration characteristics of the deposits. Collins (1997) further asserted that, because these soils are so turbaceous, accurate dating of archeological resources found within them is usually not possible unless time-diagnostic artifacts are found in good associations with those resources. Based on the established ages of similar soils in the region, he speculates that the dark clays above the caliche gravels are of Holocene age and the caliche gravels are of Pleistocene vintage.

This description is generally supported by data on file in the THC's Texas Sites Atlas, some of which indicates that sites only a few kilometers from the project area, and within generally similar geomorphic contexts, contained artifacts of apparent Middle to Late Archaic age (cf. Maslyk 1994). It is further supported by the observations of the Principal Investigator at such sites.

In spite of the limitations imposed by regional and local soil characteristics, several archeological investigations were conducted during recent years in the general vicinity of the HFH project area (cf. Houk 2002). From an archeological research perspective, most of these studies were, at best, only modestly successful. Also, in conjunction with channelization and surface-water-reservoir construction projects along segments of the San Antonio River and similar drainages, numerous prehistoric sites have been found both at the surface and deeply buried in massive alluvial deposits. Some of the shallower sites of this type have been discovered in the immediate vicinity of the project area, but the deeper sites are contained in the thick alluvial deposits of the Medina and San Antonio River drainages. Because they are so deeply buried, the oldest of those sites are archeologically obscure (cf. Potter 1995: 11). Research on some of these sites has revealed that they are generally well-preserved and contain archeological resources representing all periods of regional prehistory. Interested readers unacquainted with the subject of geoarcheology are referred to Abbott (2001), Collins (1995, 1997), Holliday (1997), and Waters (1996).

Local Culture History and Cultural Ecology

Probably attracted by the abundance of pristine water, the steep ecological gradients, and the rich biotic microenvironments present, humans first occupied the San Antonio area at least 11,000 years B.P. The local culture history contains four broad divisions (cf. Black 1989b:25-33, 1989c:48-57; Black and McGraw 1985:35-40; Hester 1980:27-37; Turner and Hester 1999:50-63): the Paleoindian period (ca. 11,000-8000 B.P.), the Archaic period (ca. 8000-1500 B.P.), the Late Prehistoric period (ca. 1500 B. P. to A.D. 1528), and the Historic period (ca. A.D. 1528 to present). During all but the Historic period, humans in the area were engaged in a nomadic to semi-sedentary hunting and foraging lifeway. Archeological evidence indicates that they were organized as small groups or bands that traveled much of the time in regular patterns, known as subsistence forays, in order to exploit a variety of seasonably available natural resources. This lifeway was practiced in most of North America for many thousands of years before the fifteenth century infusion of Europeans to the New World.

Such peoples were largely of Asiatic origin, but are variously referred to as aboriginals, native Americans, American Indians, ancient Americans, or early Americans. Apparently many of these pioneers entered North

America from eastern Siberia via the Bering Strait sometime prior to about 15,000 B.P., probably during a major episode of global cooling and glaciation when an ice sheet or bridge connected Siberia to Alaska. They eventually spread throughout the Americas, and their cultures flourished and greatly diversified, especially during the last few thousand years. By the early eighteenth century when the Spanish established missions in Texas, several hundred Indian groups, each having a fairly distinct linguistic or socio-political identity, lived in the southwestern United States, Texas, and northern Mexico (cf. Campbell 1979:1, 1988:39; Schuetz 1976:1). The story of these peoples' prehistoric past encompasses the first three major periods in the culture history of the San Antonio area.

The Paleoindian period includes the terminus of the Pleistocene geologic epoch and the beginning of the Holocene. The climate of the period was generally somewhat cooler and more humid than that of later periods. The natural landscape in the San Antonio vicinity during this period consisted mostly of forest parkland, i.e., savannah grasslands with numerous clusters of trees. The lush vegetation of the period provided a trophic base which supported many large ice-age herbivores and carnivores. Sea level along the Texas coast is estimated to have been about 120 m lower than at present; thus, a broad seaward expanse of land, which is now inundated, existed during those times. Paleoindians were typically organized as small, nomadic, stone-age, hunting and foraging bands that often pursued such large game as bison, mammoth, and mastodon. The fact that they supplemented their diets with wild plant foods has been documented only occasionally in much of Texas because of the poor preservation of pollen and plant fibers in most local soils. The relatively few Paleoindian sites documented in Texas consist primarily of isolated finds of chipped stone spear points that exhibit highly distinctive styles and workmanship, and rare kill and butchering sites of Pleistocene game animals.

The Archaic period is characterized by a shift to generally dryer and warmer conditions, sometimes referred to as the Altithermal climatic period (Nance 1972). The Altithermal of Texas apparently was punctuated by alternating mesic and xeric episodes that were sometimes of significant duration and magnitude. In spite of these erratic patterns, the landscape gradually evolved into a mosaic of alternately sparse and lush savannah grasslands with isolated stands of trees on the uplands and heavier arboreal growth in the riparian zones. This drying out of the land after the Pleistocene corresponds to broad changes in the lifeways and cultures of native peoples. The archeological record indicates that a substantial degree of diversification in human subsistence patterns occurred. Emphasis shifted from the hunting of large Pleistocene mammals, by then extinct, to a new focus on the hunting of smaller game and on plant food gathering, processing, and consumption. During most of the period the dominant lifeway continued to be nomadic hunting and foraging by small egalitarian bands who exploited scattered seasonal resources. As evinced principally by the appearance in the archeological record of large communal or clan cemeteries toward the end of the period, population growth resulted in land and other resource scarcities, prehistoric peoples began to form into large groups, and territorialism, sociopolitical complexity, and semipermanent or permanent settlements fromed.

The predominant type of central and south Texas archeological site of the period is the occupational refuse pile, or midden. Such midden sites are frequently large, open, seasonally occupied base camps located along rivers and streams. They were central places used for the accumulation, processing, cooking, and consumption of foods, and presumably for habitation as well. They were also occasionally used for burying the dead (Hester 1985). Burned rock middens are the most common type present at interior sites. At such sites, foods were often cooked in earthen pits lined with rock slabs or boiled in hide pouches filled with water, food, and hot stones. The rocks had to be routinely replaced as they disintegrated from continual exposure to the intense heat. This resulted in the gradual accumulation of large heaps of thermally fractured and discolored rocks mixed with food scraps, discarded tools, and tool manufacturing debris. Diagnostic projectile points, radiocarbon dates, and other archeological data from burned-rock-midden sites indicate that many of them were occupied intermittently for several hundreds or even thousands of years by peoples who normally wandered about in small bands, but who gathered into much larger bands for special seasonal activities and ceremonies. Additional information about burned-rock-midden sites is provided in the section on interpretation of research findings of this report.

Other types of sites that are associated with the Archaic period include smaller, shorter-term occupancy or use sites such as upland hunting-butchering camps, quarry-workshop sites for the procurement of raw stone for the manufacturing of chipped stone tools, cavern or rockshelter habitation sites, isolated hearths and stone chipping scatters, burial and cemetery sites, and isolated finds or caches of projectile points or other tools.

During the Late Prehistoric period, plant domestication and other agricultural practices were gradually adopted. Due to the poor preservation of plant remains in prehistoric archeological deposits of central and south Texas, the extent to which these new subsistence activities were used is not known. The bow and arrow and ceramic technology were introduced from neighboring regions. Permanent settlements arose and trade networks for the routine exchange of goods with neighboring regions were greatly expanded. Sociopolitical relationships were elaborated and the concepts of local group identity and coherence were undoubtedly strengthened.

The impact of these changes on the lifeways of the native peoples living in central and south Texas during the period is just beginning to be known. Apparently with few exceptions, the Archaic lifeways practiced in south and south-central Texas continued largely unmodified into the Late Prehistoric period. The modifications in the technological and cultural inventory that occurred there during the Late Prehistoric period and that manifest archeologically include the production and widespread distribution of smaller, lighter stone tips for arrows and the routine production and use of ceramics. The subsurface remains of prehistoric houses or village sites, and the attendant traces of nearby activity areas, fortification features, agricultural plots, and irrigation systems from the period are present in Texas, but are confined mostly to the northern, eastern, and western margins of the state. Ethnographic accounts from European explorers who ventured into the south Texas or Texas coastal areas during the sixteenth and seventeenth centuries also mention the existence of villages of crude structures, but at this writing there was virtually no known archeological evidence for the existence of such structures (cf. Johnson 1997).

Many of the indigenous Texas Indian groups, including such long term residents of the San Antonio area as the Coahuiltecans and Tonkawas, continued to engage primarily in nomadic hunting and foraging well into historic times. This was the case in spite of the fact that some of their Late Prehistoric ancestors had begun the routine practice of horticulture or agriculture, and had apparently settled in permanent or nearly permanent villages by about A.D. 500. Archeological evidence has recently emerged that indicates that small permanent or semi-permanent villages were probably present in what is now central Texas as early as the Middle Archaic period (Johnson 1997). Shortly after the accidental introduction of horses into American Indian culture in the sixteenth century by the Spanish, bison-hunting became the way of life for many tribes on the Great Plains, where nomadism also continued. The Apaches and Comanches are the main southern plains tribes that invaded the central Texas area from the west and north during the 1600s and 1700s, displacing, absorbing, or exterminating many of the original inhabitants of the area (cf. Hester 1980; Newcomb 1961; Sjoberg 1953). They also frequently raided European-American settlements in or near San Antonio. During the eighteenth century, most of the surviving indigenous groups apparently fled to outlying regions or sought protection from their aboriginal enemies in the Spanish missions.

The Historic period in Texas began in the early sixteenth century (ca. 1528-1536). The first Spaniard, if not the first European, to set foot on Texas soil was probably Alvár Núñez Cabeza de Vaca. He was sailing the Caribbean with an exploratory Spanish expedition and was shipwrecked off the Florida coast in 1528. For about the next eight years, he allegedly wandered along the gulf coast, well into Texas, and finally arrived in Mexico in 1536. By that time, the Spanish had conquered and dominated many of the aboriginal cultures that occupied Mexico, Central America, and a sizeable portion of South America, and thus established a foothold of European-style civilization in those areas. During the period from roughly the second decade of the sixteenth century to the terminal seventeenth century, the Spanish colonized all of what is now Mexico to the Rio Grande. In 1691, an expedition of Spaniards from Mexico penetrated Texas to San Pedro Springs, now located in the northern portion of San Antonio's central business district. In an often-quoted report to the viceroy, explorer Domingo Terán de los Ríos describes the territory:

> We marched five leagues over a fine country with broad plains---the most beautiful in New Spain. We camped on the banks of an arroyo, adorned by a great number of trees, cedars, willows, cypresses, osiers, oaks and many other kinds. This I called San Antonio de Padua, because we reached it on his day [Terán de los Ríos 1691 as quoted in Crook 1967:1-2].

Fray Damian Massanet, also with the 1691 Spanish expedition, is cited by Crook as attesting that they encountered a very large tribe of Payaya Indians at that same location. Several more preliminary expeditions into Texas were conducted by the Spanish during the next few decades.

The landing of the Frenchman René Robert Cavelier, Sieur de La Salle, on Matagorda Island in 1684 and the subsequent activities of the French in Texas appear to have consolidated the resolve of the Spanish to colonize the region north of the Rio Grande. Some Spanish families had permanently settled in the vicinity of San Antonio by 1715 (Chabot 1936:8), and by 1718 the Spanish officially established the first settlement north of the Rio Grande near San Pedro Park. Called San Antonio de Padua, it consisted of a mission and a presidio based on agriculture employing Indian labor and irrigation. This subsistence base was used by the Spanish for virtually the entire time that they controlled the area.

The Spanish soon expanded their colony southward along San Pedro Creek and the San Antonio River, and by 1726, citizens of the crown numbered about 200 in the San Antonio area. In 1731, a party of about 52 additional settlers arrived from the Canary Islands and joined the fledgling colony. The Bexar County missions south of the present Alamo were imported during the mid eighteenth century from what were originally satellite locations in east Texas, and the relocation constituted a final impetus for Spanish settlement in the vicinity. The present-day metropolis of San Antonio, with its 1,000,000+ inhabitants, has grown from these humble eighteenth century beginnings.

The missions continued active throughout much of the remainder of the eighteenth century. With the beginning of secularization of the missions in the early 1790s came the granting of what had previously been the mission-controlled lands in Texas to Spanish citizens. By the end of the mission era, the indigenous Indians who were, presumably, descendants of the first human inhabitants of south and central Texas, had been virtually eradicated. Many of those who took refuge in the missions died of European-introduced diseases, and the hunting-gathering lifeways of the remnant populations were radically and permanently disrupted by mission life and the trials of acculturation.

For many decades after the missions waned, the culture history of the San Antonio area continued to be dominated by their influences. Throughout the periods of Mexican and Texan independence, the U. S.-Mexican War, and until just prior to the Civil War, the subsistence base of the city was largely agricultural and local population growth was fairly benign. There were very few changes in land usage in the area throughout the reigns of several major imperial powers over almost a century and a half until the railroad and the Industrial Revolution came to the city:

> The rapid growth of San Antonio dates from 1876 [actually 1877], when the first railway (Sunset Route) entered the city. From 1879-1880 to 1887, the population increased from 14,894 to 42,570; from 1900 to 1910, the population increased from 53,321 to 96,614. Today [ca. 1936] the population of San Antonio exceeds two hundred thousand [Chabot 1936:13].

Heusinger (1951:28) estimates the 1860 population of San Antonio at only 8,235. Schuchard (1951:23, 30, 39, 46) provides the following dates and population figures: in 1870, over 12,000; in 1880, 20,550; in 1890, 37,673; and in 1900, 53,321. These figures underscore the fact that San Antonio as a whole experienced an almost exponential rate of population growth and development during about the last third of the nineteenth century.

The railroad alone meant so much to development:

> It is difficult to understand the euphoria the coming of the railroad caused, or the immediate, dramatic changes it made in San Antonio, without realizing the tremendous handicaps placed on the interior by other modes of transportation. San Antonio was far from the sea, without a navigable river. Every amenity, and most of the necessities for life in the region had to be imported out of Europe or the Eastern states, usually from New Orleans via Galveston, then carted halfway across Texas by wagon. San Antonio was tenuously attached to civilization by a rutted wagon trail which was impassible in rainy seasons. The cost of goods was simply enormous due to transportation, and many of the artifacts of civilization were not available [Fehrenbach 1978:114-117].

The first line to reach San Antonio, the Sunset Route of the Galveston, Harrisburg & San Antonio Railway, ran from New Orleans to San Francisco and passed along the east side of San Antonio's central urban complex. By 1881, the International & Great Northern Railway out of St. Louis, and which shortly afterward was extended to Laredo and into Mexico, passed only a few blocks west of San Pedro Creek and ran parallel to and along what is today San Marcos Street (Land and Thompson 1977:17-18 [1885]).

Prior to and shortly after the coming of the rails, mule freighters operated lines from various locations around the city. One of the earliest was the firm of Froboese and Santleben, which hauled goods from diverse areas of Texas and from Mexico to a central receiving and mule quartering area located in the 1850s near San Pedro Springs. According to Thonhoff (1971:22), in January, 1866, August Santleben was awarded the contract to carry mail from San Antonio to Eagle Pass and Fort Clark. Thonhoff notes that by the middle of the 1870s, several mail lines ran from San Antonio to nearby communities, including Fredericksburg, and that a number of other coach lines bound for west Texas departed on a regular basis northwest out of San Antonio:

...four horse coaches... ...left San Antonio for El Paso via Boerne [and] Fredericksburg. Early in 1878, C. Bain and Company announced "an elegant line of four and six horse coaches," which left their office on Alamo Plaza daily except Monday for Leon Springs, Boerne, and Fredericksburg [Thonhoff 1971:28, 31].

From the mid nineteenth century until well after the railroads came to south Texas, there were numerous cattle drives through San Antonio to distant northern markets along prescribed trails. For example, The Western Trail, which originated in Brownsville, left San Antonio for Bandera and Kerville, and then proceeded northward through Oklahoma, Kansas, Colorado or Nebraska, Dakota or Wyoming territories, and terminated in Montana territory (Flanagan 1974:97, 176).

Substantial changes in local land usage began to occur during the second quarter of the nineteenth century, and their affects lasted through virtually the remainder of the century. These innovations in land utilization in the area can be accurately related to the infusion of German culture to Texas which occurred at about that time. It is clear from the history of immigration in Texas that there were simultaneous appearances of significant numbers of several other ethnic groups, mostly of northern European origins, but German immigrants were remarkably talented and unusually tenacious settlers, organizers, builders, and commercializers in the San Antonio area. The Germans came early and planted deep roots and their incipient developments formed a core around which much later development revolved.

As early as the 1830s, a few Germans had already migrated to Texas (Lich 1986:6). Substantial German colonization in Texas began in about 1845 with Prince Carl of Solms-Braunfel's founding of New Braunfels (Biesele 1930:119). During the next decade, the German settlements of Fredericksburg and Boerne developed in the Hill Country north of San Antonio. Contemporaneously, the Germanic population of San Antonio was on the increase and by 1876, according to the town assessor, totaled 5,630 Germans and Alsatians (Fehrenbach 1978:117).

The Germans settled principally along the Balcones Escarpment in central Texas. The escarpment is the most prominent landform in the San Antonio area and has served as a transitional zone between broadly different lifeways throughout most of the Historic period:Since earliest European settlement, the Balcones Escarpment stood as a cultural frontier, a dividing line between the farming economy of the coastal plain and the ranching economy of the Texas Hill Country. The Escarpment has greatly influenced the cultural development in the land which it transects [Palmer 1986:153].Since about the beginning of the nineteenth century, and especially prior to the Civil War, the Escarpment has been the physical and cultural boundary between the Old South and the Old West. Before the coming of the Industrial Revolution to the area during the late-nineteenth century, the economy of the Old South was based primarily on the growing of cotton, while that of the Old West was based mainly on livestock production (Abbott and Woodruff 1986:Preface). Whereas the petroleum industry dominated the economy of much of Texas from about 1900 until the mid twentieth century, for most of the remainder of the twentieth century, the economy of the San Antonio-Bexar County area has been based substantially on the presence of the military. Such local facilities as Brooks, Kelly, Lackland, and Randolph Air Force Bases and the United States Army's Fort Sam Houston and Leon Springs Military Reservation have been important hubs around which much private-sector growth has occurred.

A second major component of the local economic infrastructure during the last several decades has been the internationally recognized Southwest Texas Medical Center complex and other regional medical facilities. During the period from about the mid 1980s to the mid 1990s, the biomedical trades, high technology manufacturing, real estate, and tourism were leading growth industries in the area. Between about 1990 and 1995, tourism in particular experienced a major florescence with the opening of Sea World of Texas, Fiesta Texas, and the Alamo Dome. The numerous institutions of higher learning in San Antonio, such as Incarnate Word, Our Lady of the Lake, Trinity University, St. Mary's University and Law School, The University of Texas at San Antonio, and The University of Texas at San Antonio Health Science Center, must also be recognized as important contributors to the cultural enrichment and economic health of the city and the region.

Methodology and Results

Since the surface of the project area was covered almost entirely with thorn scrub brush and with dense grasses and weeds, a pedestrian examination of the area was not feasible. Due to the soil and landform characteristics of the area, the fact that the adjacent portion of Leon Creek had been channelized and capped with concrete, and given that geocores recently dug in the vicinity encountered only clays or clay loams over caliche, backhoe trenching was not included in the scope of work. Twenty shovel tests were dug at locations fairly evenly distributed throughout the project area (Figure 2).

The shovel tests were dug in 20-centimeter unit-levels and each was approximately 30 centimeters in diameter. All excavated matrix was screened through one-quarter-inch-mesh hardware cloth. Depths of the tests ranged from about 65-110 centimeters and averaged about 80 centimeters. Dark colored clays and clay loams were encountered within about the upper 40-60 centimeters of most of the tests and caliche gravels were found near the bottoms of the tests. Excavations were terminated when caliche gravels became the predominant matrix type. Boundaries between these zones were gradual and no cultural evidence was encountered. A fairly recently excavated, roughly circular pit about 3-4 meters in diameter and about two meters in maximum depth was discovered near the location for Shovel Test 11. The origin and purpose of the pit was not determined. Its profiles were relatively well exposed and exhibited similar characteristics to soil columns within the shovel tests. No cultural evidence was seen within or around the pit. Due to the concrete cap on the channel bottom and walls, it was not possible to examine the profiles of Leon Creek near the project area.

Table 1. Shovel Test Data

No	Depth (cm)	Munsell Values	Soil Type/Visible Natural Inclusions	Results
1	85	10YR5/2	Silty Clay with about 20% small gravels (probably drainage channel spoil)	Negative
2	65	10YR5/2	Silty Clay with about 25% small gravels (probably drainage channel spoil)	Negative
3	110	10YR2/1-10YR5/2	Clay with < 10% small gravels over lighter-colored silty clay	Negative
4	100	10YR2/1-10YR5/2	Clay with < 10% small gravels over lighter-colored silty clay	Negative
5	95	10YR2/1-10YR5/2	Clay with < 10% small gravels over lighter-colored silty clay	Negative
6	95	10YR2/1-10YR5/2	Clay with < 10% small gravels and CACO3 flecks over lighter-colored silty clay	Negative
7	90	10YR2/1-10YR5/2	Clay with < 10% small gravels and CACO3 flecks over lighter-colored silty clay	Negative
8	85	10YR2/1-10YR5/2	Clay with < 10% small gravels and CACO3 flecks over lighter-colored silty clay	Negative
9	80	10YR2/1-10YR5/2	Clay with < 5% small gravels and CACO3 flecks over lighter-colored silty clay	Negative
10	80	10YR2/1-10YR5/2	Clay with < 5% small gravels and CACO3 flecks over lighter-colored silty clay	Negative
11	95	10YR3/4-10YR5/2	Clay or clay loam with < 5% small gravels and a few land snail shells	Negative
12	65	10YR3/4-10YR5/2	Clay or clay loam with < 5% small gravels and a few land snail shells	Negative
13	60	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
14	75	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
15	60	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
16	80	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
17	60	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
18	65	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
19	60	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative
20	80	10YR3/4-10YR5/2	Clay or clay loam over lighter-colored silty clay	Negative

Notes: Light-buff-colored caliche or caliche gravels were encountered at or just above the bottoms of almost all tests.
Percentages indicated are volumetric.
Virtually all soil zone boundaries were gradual.

Recommendations

Since the survey did not encounter any archeological sites or other cultural evidence considered significant according to the National Historic Preservation Act and the project area was substantially disturbed by modern cultivation activities and channelization of Leon Creek, STARS recommended to the project sponsors and the Texas Historical Commission that the project should proceed as presently planned without further archaeological work. However, because no survey-level testing procedure is 100 percent foolproof, STARS also recommended that if any cultural resources are encountered during construction, per applicable antiquities statutes and regulations, construction work should immediately be halted in the vicinity until such finds are examined and evaluated by a professional archeological consultant familiar with the archeology of Bexar County and vicinity, and by the Texas Historical Commission.

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