

**Archaeological Monitoring at  
41HY261 for the Riverside Drive  
Reconstruction Project,  
San Marcos, Hays County, Texas**

*by*

Amy E. Reid and Jacob Hooge

Principal Investigator: Amy E. Reid

Texas Antiquities Permit 6202

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*Cover Photograph: Overview of Cheatham Street trenching.*

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# MANAGEMENT SUMMARY

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**Project Title:** Archaeological Monitoring at 41HY261 for the Riverside Drive Reconstruction Project, San Marcos, Hays County, Texas

**Project Description:** Archaeological monitoring of mechanical excavation.

**Local Sponsor:** Capital Improvements Department, City of San Marcos

**Institution:** Center for Archaeological Studies (CAS), Texas State University

**Principal Investigator:** Amy E. Reid

**Project Archaeologist:** Jacob Hooge

**Crew Members:** Senna Thornton-Barnett

**Texas Antiquities Permit:** 6202

**Dates of Work:** March–April, 2014

**Total Volume of Monitored Excavated Sediment:** 770 m<sup>3</sup>

**Number of Sites:** 1—Site 41HY261

**Curation:** Center for Archaeological Studies, Texas State University (Records Only).

**Comments:** Archaeological monitoring for the Riverside Drive Reconstruction Project identified cultural resources associated with 41HY261. This site is eligible for listing on the NRHP and for SAL status. Due to the limited exposure of intact sediments associated with 41HY261 during the excavations, CAS recommends full regulatory clearance.

# ABSTRACT

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During the months of March and April in 2014, the Center for Archaeological Studies (CAS) at Texas State University conducted archaeological monitoring of excavations associated with the Riverside Drive Reconstruction Project (RDRP). These excavations were located near archaeological site 41HY261, on the east bank of the San Marcos River in San Marcos, Texas. The RDRP was subject to provisions of the Antiquities Code of Texas, and was proposed to be located within the boundaries of archaeological site 41HY261. Therefore, working under Texas Antiquities Permit 6202, CAS conducted archaeological monitoring on behalf of the City to assist them with their regulatory compliance obligations.

Cultural deposits were encountered within the excavated sediments and are considered to be associated with site 41HY261. Due to the limited exposure of intact sediments associated with 41HY261 during the excavations, CAS recommends no further archaeological investigations are necessary for the RDRP. However, it is recommended that the City continue to coordinate any development planned within or near the boundaries of site 41HY261 with the Texas Historical Commission (THC) prior to beginning. Additionally, the Areas of Potential Effect(s) (APE) should be carefully evaluated to determine whether the areas affected are likely to contain intact deposits.

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## **ACKNOWLEDGMENTS**

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The Center for Archaeological Studies (CAS) at Texas State University greatly appreciates the support and cooperation provided by the City of San Marcos in protecting and preserving the cultural resources of San Marcos. The authors would also like to thank Senna Thornton-Barnett and Patricia Christmas for their efforts in the field and the lab. Thank you, Maggie McClain, for providing your invaluable editorial expertise. Finally, CAS would like to thank the Texas Historical Commission for their support and assistance.



## Introduction

The Center for Archaeological Studies (CAS) at Texas State University (University) conducted archaeological monitoring of subsurface excavations associated with the construction of a parking lot and drainage improvements by the City of San Marcos (City) for the Riverside Drive Reconstruction Project (RDRP). The project is located on the east bank of the San Marcos River along a portion of Riverside Drive, between Cheatham Street and Interstate Highway (IH) 35 (Figure 1). CAS archaeologists monitored the removal of existing pavement and base and the site grading to prepare for proper subgrade and asphalt for the new parking lot. CAS also monitored mechanical trenching associated with the installation of a water main along the southeast side of Cheatham Street, and improvements made to the storm drainage system located near the intersection of Cheatham Street and Riverside Drive. The City's standing as a political entity within the State of Texas causes the RDRP to be subject to provisions of the Antiquities Code of Texas (Code). The Code requires that such an undertaking consider the potential impact on any

cultural resources that might be present and that might contribute information that is meaningful or significant to understanding the history and/or prehistory of the state of Texas.

Because the project area is located within the boundaries of archaeological site 41HY261, it was determined that the RDRP had a high likelihood of impacting associated archaeological deposits. Furthermore, prompted by the results and recommendations following previous investigations of 41HY261 (see below), CAS conducted archaeological monitoring on behalf of the City to assist them with their regulatory compliance obligations. Work was conducted under Texas Antiquities Permit 6202 (Amy E. Reid, Principal Investigator) and in accordance with the guidelines set forth by the Council of Texas Archeologists (CTA) and adopted by the Texas Historical Commission (THC).

## Project Setting

The project area is centrally located within the City of San Marcos, in south-central Hays County, Texas. The San Marcos River lies

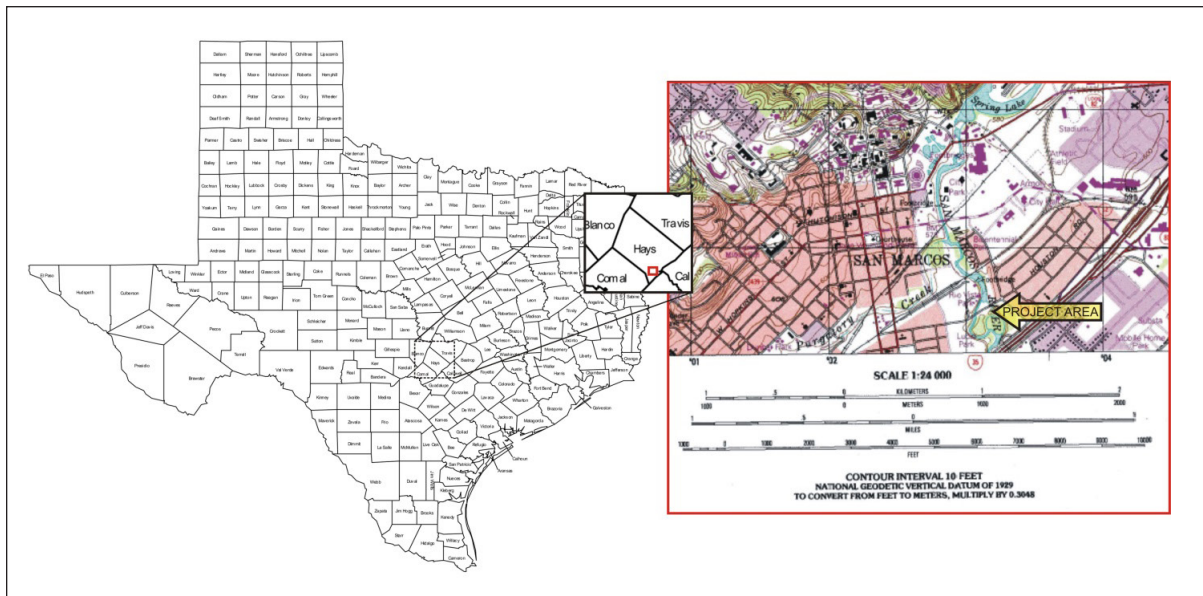


Figure 1. Project location.

adjacent to the project area, and is an integral component of the overall project. The San Marcos River issues forth from the base of the Balcones Escarpment, approximately 800 meters (m) upstream from the project area. The Balcones Escarpment was created by uplift during the Miocene, and now marks a transition between the Blackland Prairie environment to the east and the Edwards Plateau, or Hill Country, environment to the west. These environmental transitions are known as ecotones, and they are typically high-energy settings capable of supporting richly diverse plants and animals (Crumley 1994). Because of the abundance of stones for tool making, fresh water, and a wealth of plants and animals, this particular region was and is an attractive locale for human occupation.

### *Geology and Soils*

Bedrock geology of the region is complex because of the Balcones Fault Zone, but the project area, however, is small and situated within Quaternary Alluvium (Qal), as mapped by the Bureau of Economic Geology (Barnes 1974). Qal consists of recent flood deposits. In proximity to the project area, Qal abuts middle Cretaceous limestones, Del Rio Clay and Georgetown Formation undivided (Kdg), and Eagle Ford Group and Buda Limestone undivided (Keb), as well as late Pleistocene Fluvial terrace deposits (Qt).

Soils of the project area are also the result of flood deposits. The project area is situated on Oakalla soils, frequently flooded (Ok). As described by Batte (1984), Oakalla series soils are typically deep, well drained, calcareous loams that are situated on near-level floodplains. These soils have an A-(B)-C profile, with the A horizon being brown to grayish brown, B horizon (where present) appearing grayish brown to light yellowish brown, and the C horizon being

brown to light yellowish brown. As these soils are formed in accumulations of alluvium, they do have the potential to contain stratified cultural deposits.

### *Climate and Weather*

The following weather statistics are based on a 30-year record (1951–1980). Mean maximum temperatures of summers approach 97° F, and winters have mean minimum temperatures of approximately 50° F in Hays County (Bomar 1983). December and January are the only two months on record that have not had temperatures above 90° F, whereas freezing temperatures have been recorded from October through April. The mean annual precipitation recorded for Hays County is 33.75 inches (86 centimeters [cm]). Precipitation in the county is bimodal, with most precipitation occurring in the late spring and in the early fall (Dixon 2000). Weather in this region is dynamic and often marked by severe events. Hazardous weather comes in the form of extraordinary downpours and droughts. With thin soils and high-relief bedrock topography, the Hill Country is notorious for flash flooding. As moisture-rich maritime air approaches the Balcones Escarpment (a prominent topographic feature), the air is lifted, moisture condensed, and then quickly unloaded (Caran and Baker 1986; Slade 1986). As a result, the affected drainage basins rapidly fill their waterways. Drought can also be an expected feature of Central Texas weather; there is not a decade in the twentieth century that did not include drought (Bomar 1983:153). At a greater temporal scale, the region's climate can be described as moist with mild winters, wet all seasons to dry summers (east to west), and with long hot summers (Köppen Climatic Classification: Cfa-Csa, east to west), but evidence indicates that climates are variable as well (Mauldin et al. 2010).

## *Flora and Fauna*

Floral and faunal characteristics of both adjoining environmental regions (Edwards Plateau and Blackland Prairie) mingle along the Balcones Escarpment. Blair (1950), calling this ecotone the Balconian Province, noted that it contained wildlife from every other region in the state, and also that it contained endemic species. Typical modern fauna found in the region includes armadillo, badger, beaver, black rat, coyote, crayfish, domestic dog, eastern cottontail, eastern gray squirrel, eastern wood rat, horse, muskrat, common opossum, pig, raccoon, red fox, turkey, western diamondback rattlesnake, white-tailed deer, and white-tailed jackrabbit, in addition to bountiful other mammals, birds, reptiles, amphibians, and fish. In prehistory, many of the same animals were present, as were bison and antelope.

The region's natural vegetation is generally a grassland-woodland-shrubland mosaic, where grasslands separate patches of woody vegetation (Ellis et al. 1995). Along the escarpment, mesquite, post oak, and blackjack oaks interrupt patches of bluestems, grammas, and many other types of grass in the Blackland Prairie. These species are also found with the Edwards Plateau's live oak, shinnery oak, junipers, and mesquite (Gould 1962).

The project area is situated adjacent to the banks of the San Marcos River, where the natural vegetation has been modified considerably in order to accommodate various infrastructure constructions and general improvements through the years. Wildlife has changed accordingly and is now well suited for picnickers' curious contributions. Despite changes to the banks, the river remains home to a variety of fish as well as rare or endemic and endangered salamanders, prawn, and wild rice (Kutac and Caran 1994).

## **Central Texas Cultural Chronology**

Human presence within the region is divided into three periods: Prehistoric (including Paleoindian, Archaic, and Late Prehistoric), Protohistoric, and Historic. Evidence for prehistoric occupation in and around the San Marcos area extends from the Clovis period, approximately 11,500 radiocarbon years ago, up until the arrival of Spanish explorers almost 400 years ago. Historic documents record the use of the San Marcos springs by Spanish and Native American groups in the seventeenth, eighteenth, and nineteenth centuries, and as early as the mid-nineteenth century by Anglo settlers such as General Edward Burlleson.

### *Prehistoric*

The Prehistoric period is divided into three major temporal stages: the Paleoindian, Archaic, and Late Prehistoric. The Paleoindian stage begins with the earliest known human occupation of North America and extends to approximately 8800 years before present (BP). The Archaic stage follows, extending from ca. 8800 to 1250 BP, and is generally seen as a time during which humans made successful adaptations to changing environmental conditions. The Late Prehistoric stage begins ca. 1250 BP, and is characterized by a resurgence of grassland habitats and the development of bow and arrow and ceramic technologies.

### **Paleoindian**

Collins (1995:381–385, 2004) dated the Paleoindian period in Central Texas to 11,500–8800 BP. The Paleoindian period is further divided into Early (ca. 11,500–10,200 BP) and Late (ca. 10,200–8800 BP) phases. Diagnostic Early Paleoindian point types include Clovis, Folsom, and Midland. The Clovis culture is also characterized by well-made prismatic blades (Collins 1995; Green 1964). The Early Paleoindian

stage is generally characterized by nomadic cultures that relied heavily on hunting large game animals (Black 1989). However, recent research has suggested that early Paleoindian subsistence patterns were considerably more diverse than previously thought, and included reliance on local fauna, including turtles (Black 1989; Bousman et al. 2004; Collins and Brown 2000; Hester 1983; Lemke and Timperley 2008). Folsom cultures are considered to be specialized bison hunters, as inferred from the geographic location and artifactual composition of sites (Collins 1995).

The Late Paleoindian substage occurred from ca. 10,200 to 8800 BP. Reliable evidence for these dates was recovered from the Wilson-Leonard site north of Austin (Bousman et al. 2004; Collins 1998). At Wilson-Leonard, archaeologists excavated an occupation known as Wilson, named for the unique corner-notched projectile point. The dense occupation also included a human burial (Bousman et al. 2004; Collins 1998). In addition to the Wilson occupation, Golondrina-Barber and St. Mary's Hall components, dating between 9500 and 8800 BP, were excavated. Collins (1995) suggested the Wilson, Golondrina-Barber, and St. Mary's Hall components represent a transitional period between the Paleoindian and Archaic periods due to the subtle presence of notched projectile points and burned rock cooking features.

## **Archaic**

According to Collins (1995, 2004), the Archaic stage in Central Texas lasted approximately 7500 years, from 8800 to 1200/1300 BP. He has divided the stage into Early, Middle, and Late Archaic based on Weir's (1976) chronology. The Archaic stage is characterized by several transitions, including a shift in hunting focus from Pleistocene megafauna to smaller animals; the increased use of plant food resources and use of ground stones in food processing; increased implementation

of stone cooking technology; increased use of organic materials for tool manufacturing and an increase in the number and variety of lithic tools for woodworking; the predominance of corner- and side-notched projectile points; greater population stability and less residential mobility; and systematic burial of the dead. The markedly increased emphasis on organic materials in tool technologies and diet is likely a reflection of preservation bias. Traditionally, scholars define the end of the Archaic period by the appearance of bow and arrow technology around 1200 BP. However, Lohse and Cholak (2013) argue that this shift, while important, was relatively insignificant in comparison with other evidence for strong cultural continuity until approximately 650 years ago (Figure 2). Accordingly, the current project considers the Archaic period as the 5,000 years encompassing the end of the Early Archaic to the beginning of the Late Prehistoric Toyah interval (Table 1). This range is based on the timing of projectile point styles, sporadic periods of bison hunting, and, to a lesser degree, some environmental conditions in the region. The Archaic starts with the Calf Creek horizon (including Bell and Andice types), representing the terminal Early Archaic, and ends with Scallorn.

## *Early Archaic*

The Holocene marked a significant climate change associated with the extinction of megafauna, which stimulated a behavioral change in land use. Early Archaic groups focused more intensively on the exploitation of local resources such as deer, fish, and plant bulbs. This dietary adjustment is evidenced by the increased number of ground stone artifacts, burned rock middens, and woodworking tools such as Clear Fork gouges and Guadalupe bifaces (Turner and Hester 1993:246–256). Projectile points are dominated by bifurcated or split-stem morphologies that often grade into one another in

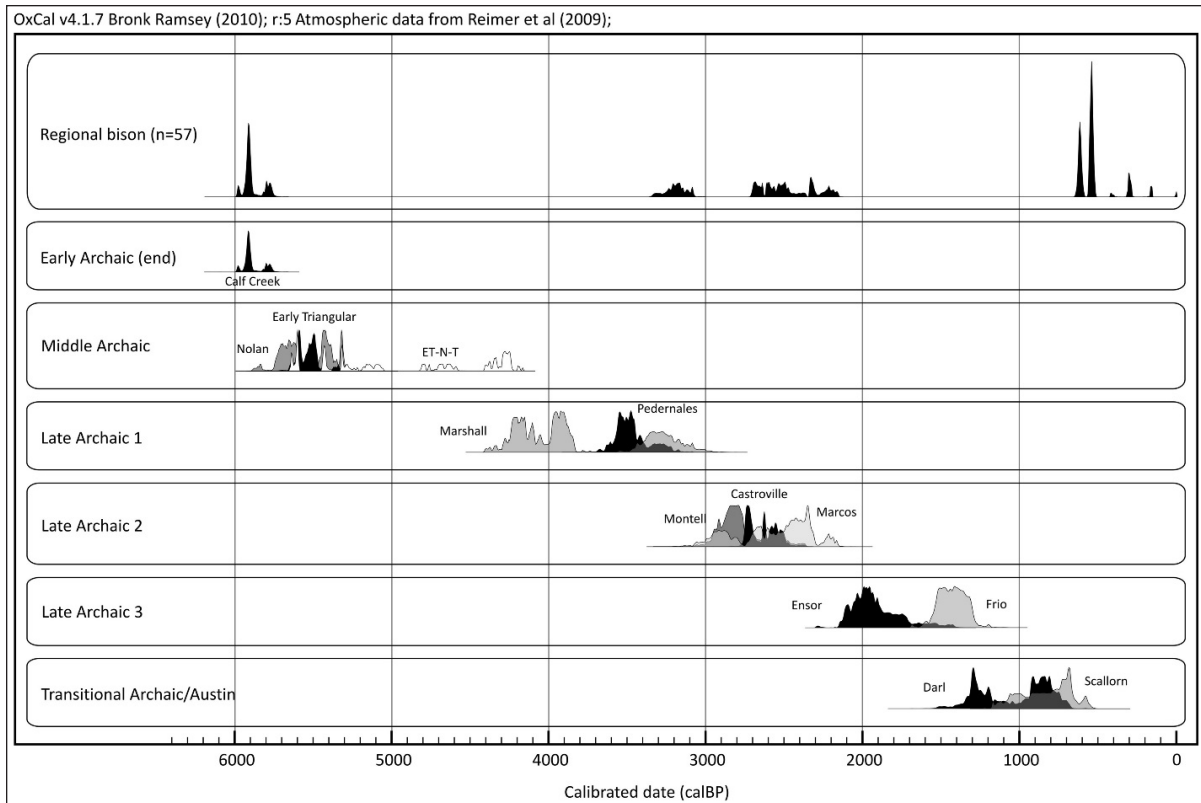


Figure 2. Cultural chronology, shown as published radiocarbon probability distributions for some key point types, for Central Texas for the period from the end of the Early Archaic (Calf Creek horizon) to the end of the Archaic, called the Transitional Archaic/Austin period.

terms of style and design. Dillehay (1974) argued that bison were widely available across Texas, although confirming data are often lacking.

The end of the Early Archaic dates to ca. 5750 BP (Lohse and Cholak 2013). This date places the widespread Calf Creek horizon, a brief period closely associated with bison exploitation across the Southern Plains (Wyckoff 1994, 1995) at the very end of the Early Archaic. This placement reflects the close stratigraphic association at nearby Spring Lake of Calf-Creek-related point types (Bell and Andice) with bison remains as well as immediately preceding types in the regional sequence, including Merrell and Martindale. These two types are typical Early Archaic forms in Central Texas, while the Calf Creek horizon is very poorly dated here; this

component at Spring Lake may represent the best known instance in the entire state.

### *Middle Archaic*

The Middle Archaic in Central Texas dates from 5750–4200/4100, and is generally associated with the Altithermal, a prolonged period during which the climate fluctuated from arid to mesic, then back to arid in Central Texas. Vegetation and wildlife regimes all fluctuated in response to these environmental oscillations, with human groups responding accordingly. Large ungulates (bison) are absent from the record during this time. The Middle Archaic is characterized by two primary projectile point style intervals: Early Triangular (Taylor and Baird types), and Nolan and Travis. Taylor bifaces are broad and triangular, similar to the earlier Calf Creek Styles, but lacking any basal notches. By the latter part of the Middle Archaic,

Table 1. Cultural Chronology for Central Texas (from Lohse et al. 2013).

<b>Epoch</b>	<b>Period</b>	<b>Certain Diagnostic Types</b>	<b>Age (Years Before Present)</b>
<b>Holocene</b>	Historic		~AD 1550
	Late Prehistoric/Toyah	Perdiz	650– <300
	Transitional Archaic/ Austin	Darl, Scallorn, Edwards	1270–650
	Late Archaic III	Ensor, Fairland, Frio, Ellis	2150–1270
	Late Archaic II	Montell, Castroville, Marcos	3100–2150
	Late Archaic I	Bulverde, Pedernales, Marshall, Lange, Williams	4200/4100–3100
	Middle Archaic	Early Triangular (Baird, Taylor), Nolan, Travis	5750–4200/4100
	Early Archaic III	Calf Creek (Bell, Andice), Martindale, Bandy	6000(?)–5750
	Early Archaic II	Uvalde, Gower, Hoxie, Jetta	8000–6300 (?)
	Early Archaic I	Angostura	8800–8000
<b>Pleistocene</b>	Late Paleoindian	Golondrina, St. Mary’s Hall	10,200–8800
	Early Paleoindian	Clovis, Folsom	13,500–10,200

Nolan and Travis points predominate; both are technologically and stylistically dissimilar to the preceding styles (Collins 1995, 2004). The Nolan-Travis interval was also a period when temperature and aridity were at their peaks. Prehistoric inhabitants acclimated themselves to peak aridity as seen through increased utilization of xerophytes such as sotol (Johnson and Goode 1994). These plants, typically baked in earthen ovens, also reflect the development of burned rock middens. During more arid episodes, the aquifer-fed streams and resource-rich environments of

Central Texas were extensively utilized (Story 1985:40; Weir 1976:125, 128).

#### *Late Archaic*

The Central Texas Late Archaic spanned the period of ca. 4200/4100–1270 BP. Bison returned episodically to the southern Plains (Dillehay 1974), strongly influencing subsistence during periods of visibility. Cemeteries at sites such as Ernest Witte (Hall 1981) and Olmos Dam (Lukowski 1988) provide some evidence that populations increased and that groups



were becoming territorial (Story 1985:44–45), although this pattern had begun by ca. 6500–7000 BP (Hard and Katzenberg 2011; Ricklis 2005). Numerous projectile point styles during this period suggest increases in population pressure and social and technological divisions between bands. Common styles include Bulverde, Pedernales, and Marshall (Late Archaic 1); Montell, Castroville, and Marcos (Late Archaic 2); and Ensor, Fairland, and Frio (Late Archaic 3). The Transitional Archaic and Austin periods, together, represent the last phase of Archaic lifeways in the region. Except for the gradual (and poorly dated) appearance of the bow and arrow, subsistence practices, settlement patterns, and technological behaviors appear to change slowly throughout this period (see Black and Creel 1997; Houk and Lohse 1993). Point styles that define this final transitional interval include Darl and Scallorn. Burials from this time reveal a high proportion of arrow-wound deaths (Black 1989; Prewitt 1974), perhaps suggesting some disputes over resource availability.

### **Late Prehistoric**

Historically, following J. Charles Kelley (1947), archaeologists divide the Late Prehistoric into two phases, Austin and Toyah. However, the present authors consider the Central Texas Late Prehistoric to be limited to the Toyah interval beginning at approximately AD 1300, based on a sudden appearance of bison in the regional record (Table 1). Dating the end of Toyah is complicated, since material traits clearly extend into the early part of the Historic period (Arnn 2012). In general, this period is marked by the (apparently) complete shift away from the dart and atlatl to the bow and arrow, and by the incorporation of pottery throughout the region (Black 1989:32; Story 1985:45–47). Importantly, Toyah peoples were interacting in a broad network of exchange focused on bison

and bison by-products. This network appeared in Southern Plains areas to the north (Spielman 1991), stretched from Pueblo areas to the west to Mississippian villages in the east, and involved agricultural goods, people (especially women), exotic materials like obsidian, ceramics, and other resources. Evidence for the movement of peoples into the study area comes from stable isotope values from a human burial from the University campus; data show this woman from coastal regions had moved to Central Texas as an adult (Muñoz et al. 2011).

The beginning of the Toyah period (650 BP) in Central Texas is marked by contracting-stem points and flaring, barbed-shouldered points. Perdiz is the most common example (Black 1989:32; Huebner 1991:346), and this type occasionally occurs on glass in mission contexts (Lohse 1999:268). Toyah is also characterized by its tools, like prismatic blades and blade cores, which are considered part of a specialized bison hunting and processing toolkit (Black and McGraw 1985; Huebner 1991; Ricklis 1994). However, wide technological variability is present, including both lithics and ceramics, suggesting a diverse social landscape (Arnn 2012).

### *Protohistoric (Spanish Entrada Period)*

In Texas, the Protohistoric period was marked by Spanish *entradas*, the formal expeditions from established forts and missions in Northern Mexico into Central, Coastal, and East Texas in the late seventeenth and early eighteenth centuries. These encounters began with the venture into Texas by the Spanish explorer Cabeza de Vaca and the Narváez expedition in 1528. The period is generally dated between AD 1500 and 1700 (or 1528, the date of the Cabeza de Vaca/Narváez expedition, to the establishment of Mission San Antonio de Valero in 1718).

With Alonso de León's expedition of 1680, El Camino Real (the King's Road) was established from Villa Santiago de la Monclova in Mexico to East Texas. This roadway followed established Native American trade routes and trails, and became a vital link between Mission San Juan Bautista in Northern Mexico and the Spanish settlement of Los Adaes in East Texas (McGraw et al. 1991). Spanish priests accompanying entradas provided the most complete information of indigenous cultures of early Texas. Those documented during the early entradas include the Cantona, Muruam, Payaya, Sana, and Yojuane, who were settled around the springs at San Marcos and described as semi-nomadic bands. Other tribes encountered at San Marcos included mobile hunting parties from villages in South and West Texas, including Catequeza, Cayanaaya, Chalome, Cibolo, and Jumano, who were heading toward bison hunting grounds in the Blackland Prairies (Foster 1995:265–289; Johnson and Campbell 1992; Newcomb 1993). Later groups who migrated into the region and displaced the earlier groups or tribes included the Tonkawa from Oklahoma and Lipan and Comanche from the Plains (Campbell and Campbell 1985; Dunn 1911; Newcomb 1961, 1993).

Archaeological sites dated to this period often contain a mix of both European imported goods, such as metal objects and glass beads, and traditional Native American artifacts, such as manufactured stone tools.

### *Historic*

Spanish settlement in Central Texas first occurred in San Antonio with the establishment of Mission San Antonio de Valero (the Alamo) in 1718, and the later founding of San Antonio de Béxar (Bolton 1970; de la Teja 1995; Habig 1977). Some researchers have demarcated the transition in Texas between the Entrada (Protohistoric) and Historic periods by the construction of the first

Spanish missions in Texas. Most knowledge of this period has been gained through the written records of the early Spanish missionaries. Besides the mission town of San Antonio, the only other Spanish settlement in the region was San Marcos de Neve, established in 1808, four miles south of present-day San Marcos. San Marcos de Neve was abandoned in 1812 as a result of constant raids by local tribes (Dobie 1932). During this time, massive depopulation occurred among the Native Americans, mostly due to European diseases to which the indigenous people had little resistance. Those few indigenous people remaining were nearly all displaced to reservations by the mid-1850s (Fisher 1998).

European presence in the region increased as settlers received land grants from the Mexican government until 1835. Settlement was difficult, however, due to continuation of hostilities with and raids by Native American tribes. The Texas Rangers provided protection from these conflicts after Texas secured independence from Mexico in 1836. Settlement in the region increased until 1845, when Texas gained admission to the United States, resulting in the formation of Hays County three years later (Bousman and Nickels 2003).

## **Previous Archaeological Investigations**

Previous investigations of the project area (McCulloch and Voellinger 1996; Cargill and Brown 1997; Jones and Oksanen 2006; Yelacic and Leezer 2012) recorded the multi-component prehistoric site 41HY261. A historic mill race is also present, although the THC has concluded that this structure lacks the structural integrity necessary for inclusion in the National Register of Historic Places (NRHP). Prior work in the area of Crook's Park has identified cultural materials extending perhaps as deep as 20–22 feet beneath the surface and dating as far back as 10,000 BP.

Each previous project has recommended that additional work be conducted in the event of future impacts or developments. Most recently, the boundaries of 41HY261 were extended as a result of monitoring and auger investigations conducted by CAS under Texas Antiquities Permit 5943 for the installation of a portion of a storm water outflow and water line along Cheatham Street (Figure 3) (Yelacic 2012).

The auger investigations and trench monitoring along Riverside Drive yielded cultural material, indicating that the site extends beneath Riverside Drive to at least its terminus at IH 35. Trenching inadvertently impacted the portion of 41HY261 that extends across Chetham Street, and approximately 1,350 m<sup>3</sup> of artifact-bearing sediments were disturbed during early phases of the undertaking. In the final report for these

investigations, CAS recommended that 41HY261 is eligible for listing in the NRHP under Criterion D (ability to provide information important to prehistory or history of the region) and for designation as a State Antiquities Landmark (SAL). In order to alleviate the accumulation of storm water drainage prior to the completion of the final outflow structure, the City has installed a temporary drainage line. Excavations for this undertaking increased the estimated volume of displaced sediments containing or having the potential to contain archaeological materials associated with 41HY161 to 2,010 m<sup>3</sup>.

The THC reviewed the results of CAS's monitoring investigations in 2011 and determined that archaeological site 41HY261 is indeed worthy of official SAL designation, and concurred that the site is eligible for listing in the NHRP. The



Figure 3. Revised boundaries for site 41HY261

THC also determined that the earlier impacts to the site, combined with additional adverse effects that will result from the completion of the City's proposed undertaking, warranted mitigative measures to offset the cumulative adverse effects that have occurred to this NRHP-eligible property and that will take place as a result of this undertaking. In order for the storm water outfall project to comply with state and federal laws governing cultural resources on public lands and/or that are affected by undertakings permitted by federal agencies, the U. S. Army Corps of Engineers (USACE) and THC required the City to develop a research design and scope of work for archaeological work that will effectively mitigate the cumulative adverse effects to the site. In January of 2013, CAS presented a proposal for Data Recovery at Spring Lake to the City and the THC as an off-site mitigation plan. A Memorandum of Agreement (MOA) for the Spring Lake data recovery program was signed by the City on October 18, 2013.

Although off-site mitigation for impacts to site 41HY261 was accepted by the THC, the THC was clear that any future developments within the boundaries of or in proximity to 41HY261 must be assessed and coordinated with professional archaeologists. Texas Antiquities Permit 6202 was issued to Jon C. Lohse, then later transferred to Amy E. Reid, for monitoring these projected developments. The RDRP is considered by the THC to be a separate development (not covered by the MOA) that required archaeological monitoring, and would also require mitigation if adverse effects to the site occurred as a result of the project (Mark Denton, personal communication, 2013). The present project report is in accordance with these directions.

## Methods

CAS conducted archaeological monitoring of excavations associated with the construction of a parking lot along Riverside Drive, installation of a water main along the southeast side of Cheatham Street, and improvements made to the storm drainage system located near the intersection of Cheatham Street and Riverside Drive (Figure 4). Monitoring was necessary due to the project area's location within the boundaries of site 41HY261. All monitoring work was conducted under Texas Antiquities Permit 6202 and in accordance with the guidelines set forth by the CTA and adopted by the THC.

Trench profiles were recorded on field forms, and digital photographs of exposed profiles were taken. Any notable deposits, contents, or features encountered were documented. An opportunistic, non-systematic sampling of excavated soils was subject to screening through ¼ inch mesh. Representative samples of artifacts were collected for analysis and description. The location of all trenches were recorded with a Trimble GeoXT handheld GPS device with submeter accuracy and integrated into the San Marcos River Valley database of cultural resources that is being developed at CAS. All artifacts collected were prepared for curation and curated at CAS.

### *Parking Lot Construction*

A new parking lot was built along the southwest side of Riverside Drive, over a distance of approximately 100 m from the entrance to the Crooks Park parking lot toward the southeast (see Figure 4). The dimensions of the total area of the parking lot are roughly 10 x 110 m, and the design is a single row of straight, pull-in spaces. The area had previously been used in the same manner, but was not paved. Although the construction of the parking lot was closely monitored by CAS archaeologists, no sediments were screened, as

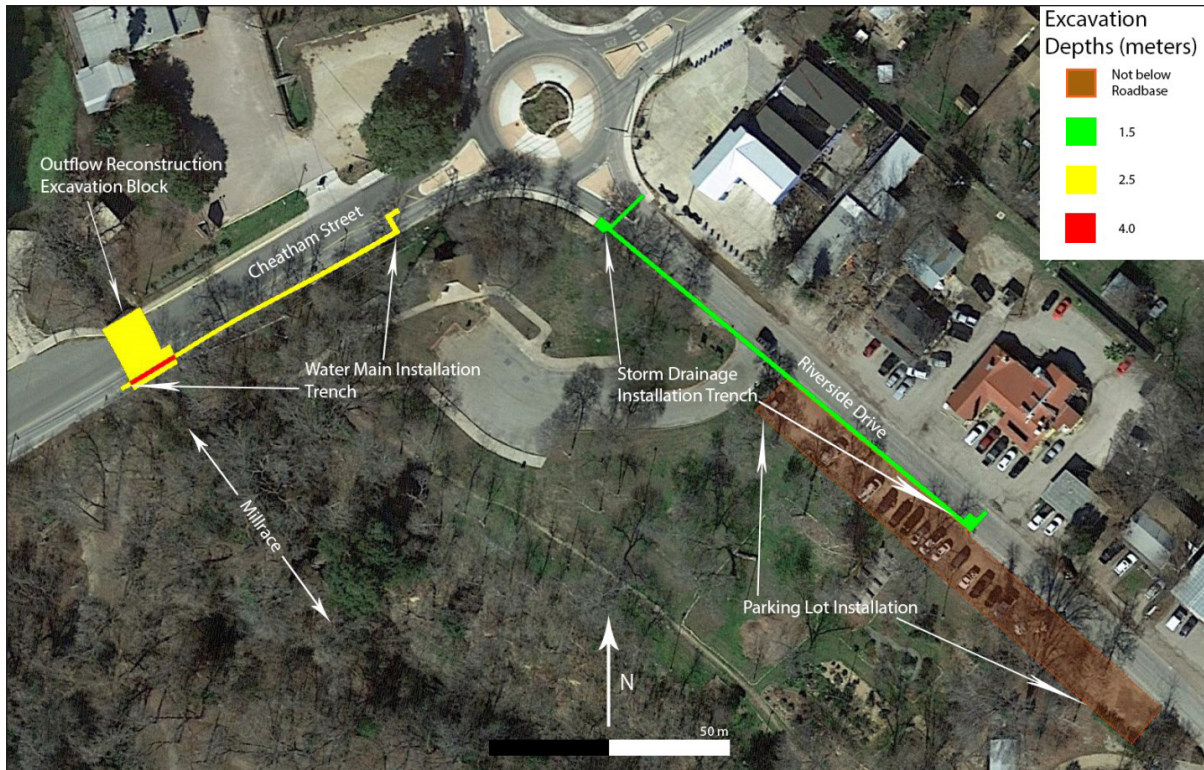


Figure 4. Location of RDRP construction phases.

no sediments below roadbase/fill were observed to be disturbed during the construction of the parking lot.

### *Water Main Locate and Installation*

In order to install a water main, a trench was excavated from just southwest of the intersection of Cheatham Street and Riverside drive to the southwest side of the millrace that crosses under Cheatham Street (see Figure 4, Figure 5). The trench measured 1.0 m wide and was excavated to a depth of approximately 2.5 m for most of its extent. At the millrace, the trench was excavated to 4 m below surface (mbs; 1.5 m below bottom of the culvert trench northwest of the millrace). The trench runs parallel to Cheatham Street through the culvert excavation, and rises 45° to a depth of 2–2.5 m below road surface at both ends (Figure 6). The length of the trench measures approximately 55 m from the millrace excavation northeast to Riverside Drive. Approximately 40 m

south of the center of the roundabout at Cheatham and Riverside, the trench turns and connects to an existing water line. CAS archaeologists carefully monitored the excavation of the trench, opportunistically screening bucketloads of backdirt.

### *Storm Drain Outflow Reconstruction and Culvert Replacement*

A 10 x 16-m block was mechanically excavated to a depth of approximately 2.5 mbs to expose an existing storm drain pipe and two corrugated metal culverts (see Figure 4, Figure 7). Once the culverts were exposed, it was determined that they were in poor condition and needed to be replaced. Two pumps were used to remove water as the excavation progressed. CAS archaeologists carefully monitored the excavation of the sediments below approximately 50 cm below the level of the corrugated metal culverts, as it was determined that this area had not been



Figure 5. Water main locate and installation trench.



Figure 6. Water main trench, facing northeast.



Figure 7. Outflow reconstruction culvert trench (excavation block), facing northwest.

previously disturbed. Although this sediment was saturated and impossible to fully screen, approximately 10 5-gallon buckets of undisturbed sediment were closely inspected.

### *Trenching for Storm Drainage Pipe Installation*

Beginning approximately 30 m southeast of the center of the roundabout at the intersection of Cheatham Street and Riverside Drive, a trench and two blocks for a new storm drainage pipe were excavated (see Figure 4, Figure 8). The trench was excavated to a depth of approximately 1.5 mbs; it crossed Riverside Drive just south of the intersection with Cheatham Street, then turned southeast and proceeded down the southwest side of Riverside Drive for approximately 100 m, then turned northeast, crossing to the other side of Riverside Drive. Both blocks at either end of the trench were approximately 2 x 2 m to a depth of approximately 1.5 mbs. CAS archaeologists carefully monitored the excavation of the trench,

opportunistically screening excavated sediments in order to determine whether cultural materials were present.

## **Results**

Results from the various components of archaeological monitoring near the intersection of Riverside Drive and Cheatham Street are presented below, by phase of construction. All of the archaeological monitoring in the vicinity of 41HY261 was performed in March and April of 2014. In total, approximately 770 m<sup>3</sup> of sediment were excavated for the water main installation, outflow reconstruction, parking lot construction, and storm drainage installation. During monitoring, CAS archaeologists determined that approximately 290 m<sup>3</sup> of the excavated sediment was not previously disturbed and contained concentrations of cultural material, suggesting the presence of intact prehistoric deposits associated with 41HY261.



Figure 8. Storm drainage pipe trench, facing east.

### *Water Main Locate and Installation*

Two test holes were excavated to locate the end of the water main, approximately 40 m southwest of the center of the roundabout at the intersection of Cheatham Street and Riverside Drive. A 1-m-wide trench absorbing both test holes was then excavated along the southeast side of Cheatham Street, from the water main to approximately 2.5 m southwest of the millrace culvert. In order to extend the water main under the millrace culvert, the 10-m section of trench at the millrace was excavated to a depth of 4 m (see Figure 4). Excluding the volume of pavement and roadbase, the installation of the water main led to the excavation of a total of approximately 140 m<sup>3</sup> of undisturbed alluvial deposits.

The profile of the water main trench begins from the surface, with 35–40 cm of pavement and road base overlying 10–15 cm of dark brownish to dark reddish brown clay loam

containing a mixture of road base and pavement, and an abrupt smooth lower boundary. The soil below 50–60 cm appeared to be undisturbed and consisted of clay to clay loam grading from dark brown to light reddish brown, moving away from the millrace towards the intersection of Cheatham Street and Riverside Drive. Moving at 5-m intervals from the millrace to the north, soil color was observed and recorded at a depth of 1.0 m below road surface (Table 2).

At about 25 m north of the millrace, reddish soil pinches out at an angle of approximately 20–25°, with an abrupt wavy lower boundary. The lowermost 20–30 cm of profile in northernmost 10 m of ditch was highly calcified/lithified, though still contained soil constituents such as snail shell. This soil deposit likely represents a Pleistocene-age petrocalcic horizon. At about 42 m north of the millrace, the pavement becomes thicker (approximately 30–40 cm) with no road base below for a length of 5 m. Soil below



Table 2. Soil Color and Description for Water Main Trench.

Horizontal Trench Intervals (m)	Munsell	Soil Description
0–5	10YR 3/3	Dark brown
5–10	10YR 3/4	Dark yellowish brown
10–15	7.5YR 3/3	Dark brown
15–20	5YR 3/3	Dark reddish brown
20–25	5YR 4/6	Yellowish red
25–30	2.5Y 7/4 10YR 5/6	Light reddish brown with yellowish brown mottles
30–35	2.5Y 7/4 10YR 5/6	Light reddish brown with yellowish brown mottles

this section is dark brown and highly mottled with many inclusions of pavement and roadbase throughout, indicating disturbance. Edges of this disturbed section are near vertical.

Modern and historic debris was observed in sediments from the upper 50–60 cm of the entire trench profile (Figure 9). Prehistoric lithic debitage was observed within intact sediments in the northeastern half of the trench, although the exact depth where the prehistoric material originated was impossible to ascertain due a lack of vertical control during excavation. Although coming from undisturbed contexts, the prehistoric material observed was scarce, and no archaeological features were encountered. A steep slope on the edge of Crooks Park that runs parallel to the trench on the southeast side of Cheatham Street contains lithic debitage eroding out of an exposed profile. It is likely that the prehistoric materials observed in water main trench originated from or are associated with this eroding deposit (see discussion section).

### *Outflow Reconstruction and Culvert Replacement*

The total volume of the excavated block for the culvert replacement was approximately 425 m<sup>3</sup>. The walls of the excavation block showed signs of previous disturbance including modern and historic trash such as aluminum cans, glass bottles, and barbed wire. However, approximately 80 m<sup>3</sup> of the lowermost sediment consisted of previously undisturbed alluvial sediments.

The culvert, which drains the millrace under Cheatham Street, is set upon approximately 30 cm of gravel/construction fill. An intact zone of very dark gray to black clay loam sediment was noted beneath the construction fill, although this zone was well under the water table and extremely difficult to assess in the profile. Ten 5-gallon buckets of this underlying sediment were closely inspected and observed to contain well-preserved organic materials including wood, leaves, seeds, insect cases, and rodent bones. However, no cultural material was observed in this underlying sediment. Given the dark color and organic constituents, this sediment most likely represents a buried marsh paleosol.



Figure 9. Sample of historic and prehistoric cultural material from water main trench.

### *Trenching for Storm Drainage Pipe Installation*

The excavation of the trench for storm water drainage on Riverside Drive just east of Cheatham intersection amounted to a total of approximately 180 m<sup>3</sup> of excavated sediment. At least 50 m<sup>3</sup> of this was previously undisturbed alluvial sediment. The trench cut across Riverside Drive at a depth of approximately 1 mbs beginning at a junction, then ran along the south side of the street at 1.5 mbs for approximately 100 m before turning back across the street to a second junction. Both junctions included an approximately 2 x 2-m block excavation, also to 1.5 mbs.

The soil profile of the storm drainage trench consists of approximately 30 cm of pavement overlying 10 cm of mostly dark brown, very mixed sediment. The underlying intact soil

is reddish-brown (2.5YR 4/3), and contains both modern and possibly historic material as well as prehistoric lithic debitage (Figure 10). Approximately 3 m southeast of where the culvert crosses under Riverside (just east of Cheatham), the ditch's southwestern profile appears to be disturbed with construction fill intermixed with reddish-brown soil. However, the northeastern profile appears to be intact below 30 cmbs. Near the north side of the entrance to the Crooks Park parking lot, the trench appeared to be cutting through entirely disturbed sediment, with several existing pipes present in both profiles.

Cultural materials were observed in the northwestern half of the storm drainage trench, and appeared to have originated from undisturbed contexts. These materials included modern trash, historic trash, and lithic debitage (Figure 11). One prehistoric ceramic sherd was collected from the



Figure 10. Sample of modern, historic, and prehistoric cultural material from storm drainage pipe trench.

surface next to the trench; however, it appeared to be associated with imported sand that was to be used as construction fill (Figure 12). According to the contractors, the sand originated from Colorado Materials, which is located between San Marcos and New Braunfels.

### *Geoarchaeology*

The trench excavated for the water main installation exposed an excellent profile of undisturbed alluvium, offering a glimpse of the geomorphology within the project area. Although conditions were not ideal for a thorough profile description due to both safety concerns and the water table, several tentative assumptions may be made. Figure 12 illustrates an idealized cross section of deposits exposed in the water main trench on Cheatham Street, from the millrace to 20 m short of the roundabout at the intersection of Cheatham Street and Riverside Drive.

Standing on the Cheatham Street surface looking south at the exposed profile along



Figure 11. Prehistoric ceramic fragment from imported sand.

the northwest edge of Crooks Park, it is clear Cheatham Street was cut down 1–2 m into what is most likely intact Holocene to recent alluvium

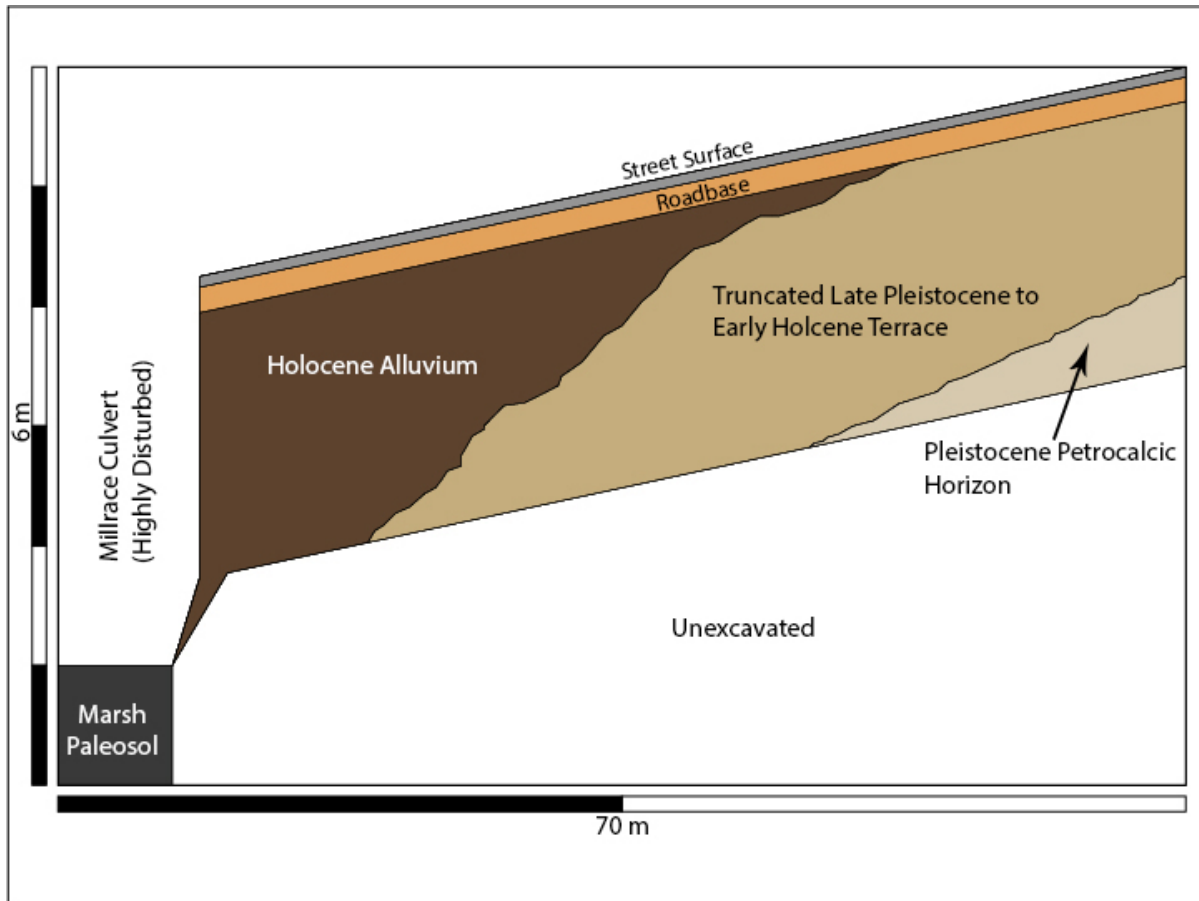


Figure 12. Idealized cross section of deposits exposed in water main trench, with vertical exaggeration.

between Riverside Drive and the millrace. Historic and prehistoric cultural materials were observed eroding from this exposed A to B soil horizon into the Cheatham Street gutter. The profile of the first approximately 20 m of the water main trench from the millrace to the northeast appears to be a continuation of this profile as a dark brown B to Bk horizon. At approximately 20 m from the millrace, the dark brown stratum begins to pinch out at an angle of roughly 20°, with an abrupt wavy lower boundary suggesting truncation of the lower surface. The lower surface is a much lighter-colored horizon with a significant increase in calcium carbonate development, and likely represents the truncated remnants of a Late Pleistocene to Early Holocene terrace of the San Marcos River Valley. A petrocalcic horizon became visible in the last approximately 10 m

of the trench underlying a clear smooth lower boundary, and contained a degree of calcium carbonate development suggestive of an age of some tens of thousands of years (Schoeneberger et al. 2002; Soil Survey Staff 2006).

It is impossible to say exactly where the buried marsh paleosol fits into the geomorphic timeline exhibited in the water main trench, as its upper surface was beneath water table and not visible in an undisturbed profile. It may be a different facies but of similar age to the Late Pleistocene/Early Holocene terrace, or it may be resting on the older terrace's truncated surface and more related to the upper Holocene alluvium.

Taken in total, the geomorphology of the water main trench suggests that the stretch of Cheatham

Street between the millrace and Riverside Drive within the boundaries of 41HY261 and at least the northern end of Crooks Park has the potential to contain cultural deposits that could date from the Late Pleistocene to present. Although the exact ages of deposits cannot be verified without some form of absolute dating, the level of pedogenesis visible in the lowermost petrocalcic deposit is suggestive of an age older than but near to the range of human presence in North America.

### **Discussion and Recommendations**

CAS conducted archaeological monitoring of mechanical excavations associated with the RDRP on behalf of the City of San Marcos in March and April 2014. Monitoring revealed that approximately 290 m<sup>3</sup> of the excavated sediment was not previously disturbed, and contained concentrations of cultural material suggesting the presence of intact prehistoric deposits associated

with 41HY261. Specifically, intact prehistoric deposits were observed in the northwestern half of the storm drainage trench and the northeastern half of the water main trench (Figure 13). Although intact, these archaeological deposits were small and did not contain significant features. However, these findings, combined with evidence of cultural material eroding out of an exposed profile, suggest that significant, intact cultural deposits are very likely to exist within the corner of land containing the Crooks Park parking lot just south of the intersection of Cheatham Street and Riverside Drive.

With all that is known about 41HY261, it is apparent that this location above the San Marcos River was important for people during much of prehistory, and also during historic times. Additionally, the geomorphic setting (i.e., alluvial terrace) has the inherent potential to bury and subsequently preserve discrete components of



Figure 13. Map illustrating locations where intact cultural deposits were observed.

an archaeological site. Therefore, sites like these, which have a deep record of occupation and ideal preservation setting, have great potential to contribute to what is known about prehistory and history in Texas. Despite previous construction efforts (i.e., Crooks and Rio Vista Park development and the Storm Water Outflow and Water Line Installation along Cheatham Street), it appears that a good portion of this site remains intact. The current investigations provided further information characterizing the cultural deposits located within 41HY261, and support the THC determination that archaeological site 41HY261 is worthy of official SAL designation and is eligible for listing in the NHRP.

Due to the limited exposure of intact sediments associated with 41HY261 during the excavations, CAS recommends no further archaeological investigations are necessary for the RDRP. However, it is recommended that the City continue to coordinate any development planned within or near the boundaries of site 41HY261 with the THC prior to beginning. Additionally, any future projects should be carefully evaluated and compared with the results of previous archaeological investigations to determine whether the areas affected are likely to contain intact deposits.

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