Archaeological Investigation for the Bulverde Road Phase II Improvements, San Antonio, Bexar County, Texas

by

Sarah Wigley

Texas Antiquities Permit No. 31149

REDACTED

Principal Investigator
Sarah Wigley

Prepared for:
City of San Antonio
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Prepared by:
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The University of Texas at San Antonio
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San Antonio, Texas 78249-1644
Technical Report, No. 100

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Abstract:

On June 12, 2023, through June 22, 2023, CAR-UTSA (Center for Archaeological at the University of Texas at San Antonio) staff completed an archaeological survey of a 1-kilometer (km) section of right-of-way (ROW) along Bulverde Road in northeastern San Antonio, Bexar County, Texas. This work was carried out in advance of the Bulverde Road Phase II Improvements project in response to a request from the City of San Antonio (COSA). The project includes updates to paving, drainage and utilities within the project area. The survey, conducted under the requirements of COSA's Unified Development Code (UDC) (Article 6 35-630 to 35-634) and the Antiquities Code of Texas, was carried out under Antiquities Permit No. 31149. Sarah Wigley served as the Principal Investigator for the project and directed the fieldwork.

A pedestrian survey with shovel testing was conducted to revisit two previously recorded sites (41BX1787 and 41BX2204) within the project area, as well as to identify any previously unrecorded cultural resources. At approximately 30-meters (m) wide, the project area spans 3 hectares (ha; 7.4 acres). CAR excavated 19 shovel tests (STs) within the project area. CAR encountered no cultural features during the investigation, and the only cultural material recovered was modern trash. The survey results indicate that the portions of sites 41BX1787 and 41BX2204, previously recorded within the project area, were destroyed by subsequent construction. The CAR recommends no further work. All records associated with this project are permanently curated at the CAR under accession number 2750 in accordance with Texas Historical Commission (THC) guidelines. Artifacts collected were discarded with the concurrence of the THC and the City of San Antonio Office of Historic Preservation (COSA-OHP).

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Acknowledgements:

The fieldwork for this project was carried out by Sarah Wigley, David Burns, Jason Perez and Amber Hefner of the CAR. David Yelacic, CAR Director, oversaw the project. Dr. Mary Whisenhunt and Dr. Raymond Mauldin reviewed and edited a draft of this report and provided helpful comments. Peggy Wall processed the GIS data and produced the maps and graphics for this report, as well as providing final editing and creating the layout for the final document. CAR Lead Curator and Lab Director, Cynthia Munoz, oversaw the laboratory processing and curation. Jason Perez processed and inventoried the artifacts. Thank you to Dr. Paul Shawn Marceaux of COSA-OHP and Dr. Emily Dylla of the THC for their work coordinating and reviewing this project.

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Chapter 1: Introduction

In June of 2019, CAR staff conducted an intensive pedestrian survey with shovel testing in advance of COSA's Bulverde Road Phase II Improvements Project. This project includes updated pavement, drainage, and utilities within the section of ROW that makes up the project area. The survey was conducted to identify any previously unrecorded cultural resources that may be impacted by the planned improvements and assess their significance, as well as revisit portions of two previously recorded sites (41BX1787 and 41BX2204) that fall within the project area. The project area is located within COSA ROW, and therefore, the project required review by COSA-OHP under the UDC (Article 6 35-630 to 35-634) as well as by the THC under the Antiquities Code of Texas. As required, the CAR obtained a THC-issued Texas Antiquities Permit (No. 31149) prior to the start of the investigation. Sarah Wigley served as the Principal Investigator and directed the fieldwork.

The project area is located in northeastern San Antonio, Texas (Figures 1-1, 1-2). It encompasses the ROW along the section

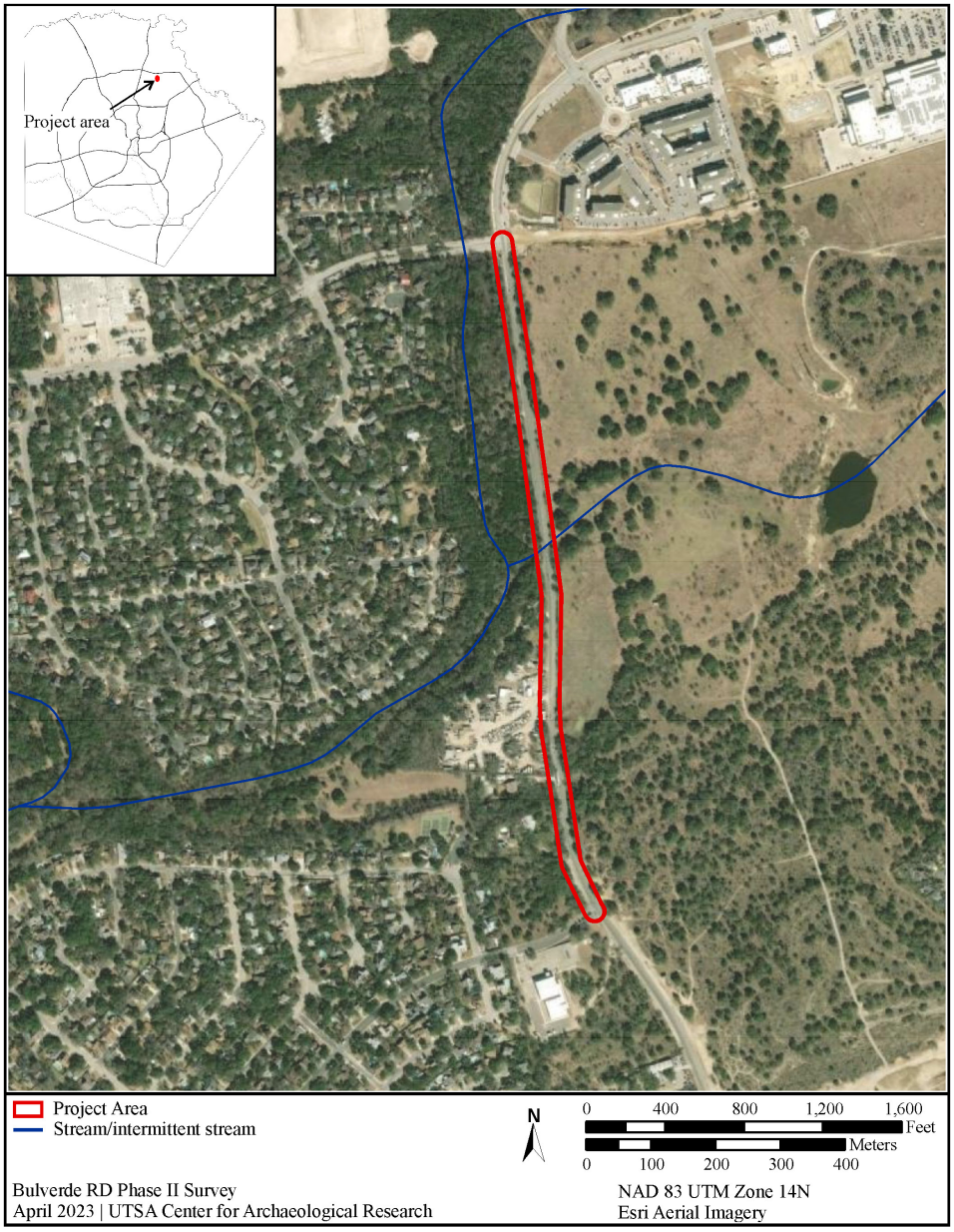

Figure 1-1. Project area on aerial imagery.

Figure 1-2. Project area on a topographic map.

of Bulverde Road south of Redland Road and north of Green Spring Drive. An unnamed drainage of Elm Waterhole Creek bisects the project area close to the location of previously recorded site 41BX2204. A portion of site 41BX1787 crosses the northern project area near the Redland Road intersection. The project area is approximately 1-km long and 30-m wide, spanning 3 ha (7.4 acres).

The Scope of Work (SOW) initially called for exploratory backhoe trenching, provided that trenches could be safely placed within the project ROW. During a previous survey located immediately south of the project area (Wigley 2019), CAR staff were unable to excavate backhoe trenches due to the narrowness of the ROW and extensive existing utilities. During the current investigation, CAR staff again observed that the narrow project area and extensive existing utilities would not permit the excavation of backhoe trenches. After consulting with COSA-OHP and the THC, CAR excavated eight additional shovel tests (ST) in the vicinity of the two previously recorded sites and the unnamed drainage. In total, 19 STs were excavated within the project area.

Shovel tests encountered extensive disturbance within the ROW, including within the previously recorded sites that were revisited. No cultural features were recorded. The only cultural material recovered was modern trash, including tin cans, plastic, and clear container glass. Shovel test results suggest that the portions of the revisited sites present within the project area were destroyed by subsequent construction. The CAR recommends no additional work. Artifacts and records associated with this project are permanently curated at the CAR under accession number 2750, in accordance with THC guidelines, with the exception of items discarded with the concurrence of COSA-OHP and the THC.

This report has five chapters. Following this introductory chapter, Chapter 2 provides a project background, including a brief overview of the project environment, regional cultural history, and previous archaeological work conducted in the vicinity of the project area. Chapter 3 provides a discussion of the field and laboratory methods used for this project. Chapter 4 provides a discussion of the results of these investigations. Chapter 5 summarizes the project and CAR's recommendations.

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Chapter 2: Project Background

This chapter presents a background discussion of the project area in order to provide context for the results of this investigation. The discussion includes the project area's natural environment as well as a brief regional summary of prehistoric and historic culture history. The chapter concludes with a review of previous archaeological investigations conducted in the vicinity of the project area.

Project Environment

The project area is located in northeast Bexar County, Texas, east of US 281 North and approximately 790 m south of Loop 1604 east. The project spans the section of Bulverde Road south of Redland Road and north of Green Spring Drive. Elm Waterhole Creek parallels the west side of the northern half of the project area, running approximately 75 m west of the project boundary. An intermittent tributary of Elm Waterhole Creek bisects the project area in the vicinity of site 41BX2204 (see Figure 2-1). Elm Waterhole Creek is a part of the Upper Salado Creek watershed. This portion of the watershed is characterized by a relatively steep gradient. Soils are thin, rocky, and characterized as stable or deflated. The system's discharge is bedload dominated (Potter et al. 1995). The eastern side of the project area primarily borders undeveloped pastures and areas of secondary growth. The southern half of the project area abuts sparse areas of residential development.

The city of San Antonio is located where the southernmost Great Plains meets the Gulf Coast, demarcated by the Balcones Escarpment (Petersen 2001). The Balcones Escarpment is the result of a series of faults found between the Edwards Plateau and the Gulf (Eckhardt 2023). It is also located near a significant climate boundary, partitioning a humid-subtropical from an arid zone (Petersen 2001). The city's location near these significant geological and climactic boundaries results in a varied resource base which attracted settlers to the region (de la Teja 2001). The area contains a number of reliable freshwater sources, including the San Antonio River and a variety of freshwater artesian springs associated with the Edwards Aquifer. The growing season, on average, lasts 270 days (Petersen 2001:22). The average annual rainfall is approximately 76.2 centimeters (cm; 30 in.) with peaks in the spring and fall. Precipitation is highly variable both seasonally and annually (Petersen 2001:22). The project area is located within the Balconian Biotic Province, described as an intermediate ecological area between the eastern forest and the western desert (Blair 1950). Elevations within the project area range between 800-850 ft. above sea level.

The majority of the project area is located within Eckrant cobbly clays soils (TaB) of one to eight percent slopes, with the exception of the southern portion of the project area, which contains Eckrant very cobbly clays (TaC) with five to 15 percent slopes (Figure 2-1). Eckrant cobbly clays are formed on ridges. They are well drained and relatively shallow, reaching of depths of 10-51 cm before encountering bedrock. Eckrant very cobbly clays also form on ridges and are relatively shallow, reaching depths of 25-51 cm before bedrock is encountered. Neither of these soil types are prime farmland. West of the project area immediately adjacent to Elm Waterhole Creek, soils consist of Patrick soils (PaB) of one to three percent slopes, which are rarely flooded. These are deep, well-drained soils formed on paleoterraces. Northeast of the project area is an area of Lewisville silty clay (LvB). These deep, well-drained soils form on stream terraces (NRCS 2023).

The project area falls within the Low Stony Hill ecological site (R081CY360TX). Located in upland areas on shallow clay loam soils over limestone bedrock, vegetation generally consists of tall and midgrasses (dominated by little bluestem [*Schizachyrium scoparium*] and sideoats grama [*Bouteloua curtipendula*]), numerous forb species, and live oak (*Quercus fusiformis*) mottes. Without fire or other brush management, juniper and other woody species proliferate. Historic accounts indicate that prior to the mid-1800s, this landscape served as a periodic grazing area for bison. White-tailed deer are still present, though declining as human settlement increases. Other historic species that have been reduced or eradicated include wolves, mountain lions, black bears, and coyotes. In the present, overuse and drought has resulted in loss of topsoil, which has reduced plant species diversity in these areas (NRCS 2023).

Culture History

The project area is located in the vicinity of a number of prehistoric and historic sites. A brief review of both periods is provided here to provide context for the project results.

Texas Prior to European Contact

The prehistoric record in Texas is generally divided into the Paleoindian, Archaic, and Late Prehistoric periods. Bexar County's archaeological record has been included in reviews of both Central (Collins 2004) and South (Hester 1980) Texas as the county is near a cultural area boundary. The summary below follows a Central Texas chronology.

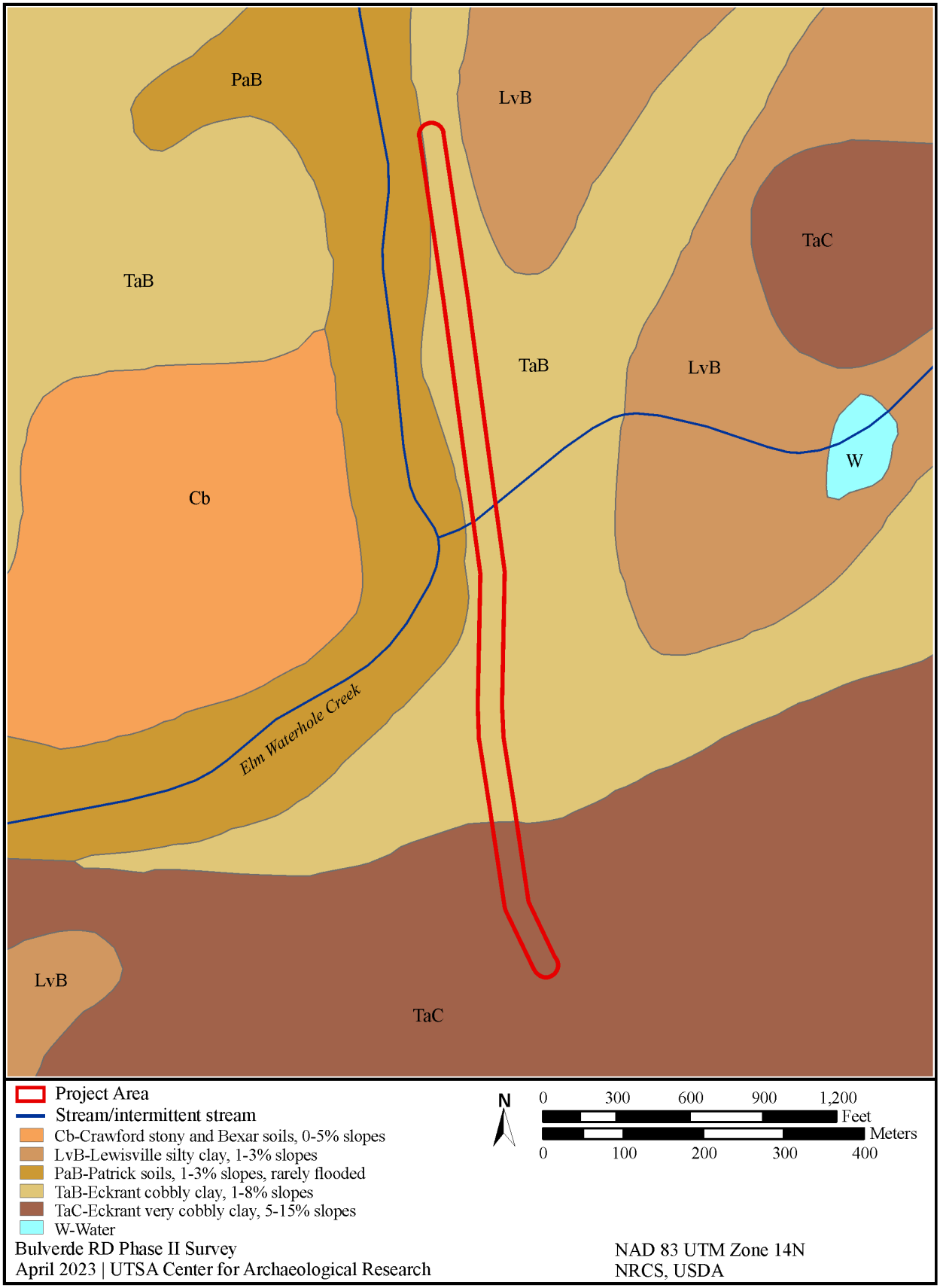

Figure 2-1. Soils within the project area.

The Paleoindian period in Central Texas spans 13,000-9000 BP. Several in-depth reviews of this time period are available, including Bousman and colleagues (2004). Groups inhabiting the area during this period are generally characterized as highly mobile (Bousman et al. 2004). Temporally diagnostic artifacts from the period include Folsom and Clovis points, among others (see Turner et al. 2011). Faunal remains from Paleoindian components on sites such as Lubbock Lake (41LU1) and Wilson-Leonard (41WM235) suggest a broad subsistence base (Bousman et al. 2004). Within Bexar County, there are multiple sites that have Paleoindian components. These include the Pavo Real (41BX52) site (Collins et al. 2003) and the St. Mary's Hall (41BX229) site (Hester 1977).

The Archaic period in Central Texas ranges from 9000-1200 BP. The period is characterized by several technological developments, including an increased diversity of material culture and the use of heated rock technology (Carpenter and Hartnett 2011; Collins 2004; Johnson and Goode 1994; Thoms and Clabaugh 2011). The period is often subdivided into Early, Middle and Late Archaic periods (see Collins 2004; Hester 2004). Temporally diagnostic artifacts from the Early Archaic period (9000-6800 BP) include Angostura, Early Split Stem, and Martindale-Uvalde dart points, as well as Guadalupe tools (Collins 2004). The Middle Archaic spans 6800-4200 BP. Temporally diagnostic artifacts from this period include Calf Creek, Bell-Andice, Nolan, and Travis points, among others (Collins 2004; Houk et al. 2009, Turner et al. 2011). The Late Archaic spans 4200-1200 BP. Temporally diagnostic artifacts from the Late Archaic include a wide variety of types, with Pedernales, Ensor, and Frio points dominating assemblages (Collins 2004). Archaic period components in Bexar County are common. Some of the more influential sites include the Granberg site (41BX17), with multiple excavations (see Munoz et al. 2011; Schuetz 1966; Wigley 2018) and Panther Springs (41BX228; Black and McGraw 1985), both of which are located in the Salado Creek watershed. Many of the previously recorded sites within 1 km of the project area that contain temporally diagnostic elements include Archaic components, including 41BX901, 41BX903, 41BX904, 41BX905, 41BX806, 41BX907, 41BX909, 41BX1787 and 41BX2131 (THC 2023). These sites will be discussed in more detail in the following section.

The Late Prehistoric period begins at 1200 BP and terminates around 350 BP (see Carpenter 2017; Kenmotsu and Boyd 2012). The time period is divided into two intervals, Austin (1200-750 BP) and Toyah (750-350 BP). The period is characterized by a shift to bow and arrow technology, evidenced by arrow points such as Scallorn and Perdiz (Collins 2004). The Toyah style interval of this period also includes the adoption of ceramic technology (Collins 2004). There is evidence that burned rock middens increased in use (Black et al. 1997; Mauldin et al. 2003). Bison remains are common on Late Prehistoric sites (Mauldin et al. 2012), and they may have more intensively exploited toward the end of this period (Lohse et al. 2014). A number of sites within 1 km of the project area contain Late Prehistoric components, including 41BX901, 41BX903, 41BX904, 41BX905, and 41BX2131 (THC 2023). These sites will be discussed in more detail in the following section.

Historic Texas

The end of the Late Prehistoric Toyah, at 350 BP (AD 1650), overlaps with the beginning of the Historic period that is usually thought to begin with the arrival of Europeans in the region in AD 1528 when Cabeza de Vaca and other survivors of the Narvaez expedition washed up on the Texas Coast (see Krieger 2000). Early interactions between the indigenous population and the Spanish were infrequent. However, even prior to the establishment of settlements in the area, Native American populations in the area were impacted by invasive disease and the arrival of groups that had been displaced by European settlement to the north, south, and east (Kenmotsu and Arnn 2012). Spain made little attempt to establish settlements in Texas prior to 1700 (Chipman and Joseph 2010). However, motivated by concerns about the French encroachment into Texas in 1685 by Robert Cavalier Sieur de la Salle's expedition, and colonization in Louisiana in the early 1700s, the Spanish government endeavored to strengthen its hold on Texas, which previously was sparsely populated by Europeans (Cruz 1988). Missions established in East Texas in the early 1700s were attempts to secure Spain's hold on the area (Cruz 1988).

Colonial Period (AD 1700-1824)

The area that would become San Antonio was first explored in 1691 by a Spanish expedition led by Domingo de Teran (Cox 1997). Spanish occupation of the region began when San Antonio was founded in 1718 (Jasinski 2023) with the establishment of the San Antonio Bexar Presidio, intended to provide a way-station between the Rio Grande and east Texas missions (Cox 1997). Five Spanish missions were located along the San Antonio River during this time period. In San Antonio, some Native Americans sought refuge within the missions, which required some adaptation to Spanish Colonial customs as well as changes in mobility patterns (Cargill 1996). Many of the Native Americans who inhabited the missions had been displaced from other parts of Texas as well (Campbell and Campbell 2004). The city

expanded with Spain's charter of the Villa San Fernando de Bexar in 1731 (Jasinski 2023).

By 1775 populations in all San Antonio missions had declined considerably (Campbell and Campbell 2004), and in 1793 the secularization of the missions began (Chipman and Joseph 2010:214). The land owned by the missions was divided and distributed among the mission residents (de la Teja 1995).

Archaeological sites dating to the colonial period in San Antonio are often characterized by the presence of cobble limestone architectural features, Spanish Colonial ceramics, Native American ceramics, and faunal bone (Figueroa and Mauldin 2005; Hanson 2016; Kemp et al. 2020 Mauldin and Kemp 2016). Sites in San Antonio dating to this time period include 41BX2170, a multicomponent site with features related to the Siege of Bexar, the Veramendi site (41BX2164), a historic home dating to the Spanish Colonial period (Kemp et al. 2020), and the various missions (Fisher 1998), including Mission de Valero (41BX6; Anderson et al. 2017; Cox 1997; Fox 1976; Zapata 2017).

Mexican Period (AD 1821-1836)

Unrest in Mexico began with a failed rebellion against the Spanish in 1810 (Chipman and Joseph 2010; Cox 1997). San Antonio participated in another failed rebellion in 1812-1813, which resulted in retaliation against its citizens by the Spanish. Spanish executions and fleeing citizens led to significant depopulation of the city during this period (Chipman and Joseph 2010; Cox 1997). After years of unrest, Texas ceased to be ruled by Spain and became part of Mexico with the adoption of the Constitution of 1824 (Cox 1997). Under this constitution, Texas became part of the state of Coahuila, and a system which provided land to settlers was created (Campbell 2003). This policy played a role in an influx of settlers from the United States during this period, until immigration from the United States was prohibited in 1830 (Campbell 2003). Conflict within the newly formed Mexican government, as well conflict between the existing inhabitants of Texas and the new arrivals, resulted in some instability and unrest in the region (Campbell 2003).

Republic of Texas and Statehood (AD 1835-1950)

The period beginning with the Texas Revolution until after the Civil War included multiple periods of conflict. Texas broke with Mexico and established the Republic of Texas in 1837. During the Texas Revolution (1835-1836), San Antonio was the site of numerous battles, including the Battle of the Alamo, which took place at the site of the Mission de Valero (41BX6). The population of the city was decimated by the warfare. The Mexican War broke out following Texas's statehood in 1846, which ultimately resulted in setting the Rio Grande as the state's southern boundary, as well as the acquisition of considerable western territory by the United States (Bauer 2023). The number of people living in San Antonio grew rapidly after Texas became part of the United States in 1846, and in 1860, it was the largest city in Texas (Jasinski 2023). Texas joined the Confederacy in 1861, and San Antonio served as a Confederate depot during the Civil War (Jasinski 2023). Confederate forces in Texas surrendered on June 2, 1865 (Wooster 2023). Union forces arrived and declared freedom for all slaves on June 19, 1865 (Acosta 2023).

After the Civil War, San Antonio served as a cattle, military, and mercantile center due to its proximity to the border and the southwest (Cox 1997; Jasinski 2023). The arrival of the railroad in 1877 further increased growth in the city. San Antonio was once again the largest city in the state in 1900, 1910, and 1920 (Jasinski 2023) and was known for its unique mix of cultures due to Mexican and European, significantly German, immigration. Characteristic artifact assemblages from sites dating to this period include metal, glass, and white earthenware (Mauldin and Kemp 2016).

During the colonial and early historic period, northern Bexar County was primarily rural farm and ranchland located outside of San Antonio proper, including a number of German immigrant communities that developed in the nineteenth century. The introduction of stagecoach lines in the mid to late 19th century, and later railroads in the late nineteenth century, encouraged the growth of these communities and contributed to expansion of San Antonio's urban core. The farming community located in closest proximity to the project area is the Wetmore community, which grew up after the introduction of the International-Great Northern railroad (Thompson et al. 2008). By 1992 the community had been subsumed by the larger San Antonio area and no longer appeared on maps (Long 2023).

Previous Archaeology

A review of available data from the Texas Archaeological Sites Atlas (THC 2023) indicates that 20 archaeological sites have been recorded within 1 km of the project area (Figure 2-2, Table 2-1). Eighteen of the 20 sites are prehistoric in nature. Those prehistoric sites containing temporally diagnostic material dated primarily to the Archaic through the Late Prehistoric periods, and many of them are associated with the Salado Creek watershed creek system in the area, of which Elm Waterhole Creek is a part. The Salado Creek watershed is known to be associated with a number of the San Antonio area's significant prehistoric archaeological sites (Potter et al. 1995). Four previous surveys (Acuna 2016; Anderson and Smith 2020; Fox 1977; Moore and Marceaux 2019) and one monitoring project (Bonorden and Salgado

Figure 2-2. Archaeological sites within 1 km of the project area.

Table 2-1. Summary of Archaeological Sites within 1 km of the Project Area

Site	Time Period	Site Type
41BX68	Prehistoric	Lithic procurement
41BX356	Prehistoric	Burned rock midden
41BX630	Prehistoric	Lithic procurement
41BX901	Archaic through Late Prehistoric	Lithic procurement
41BX903	Archaic through Late Prehistoric	Burned rock midden
41BX904	Archaic through Late Prehistoric	Lithic scatter
41BX905	Archaic to Late Prehistoric	Lithic procurement
41BX906	Archaic	Lithic procurement/lithic scatter
41BX907	Archaic	Lithic procurement
41BX909	Archaic	Lithic scatter
41BX914	Historic	Log cabin
41BX1459	Prehistoric	Information missing
41BX1625	Prehistoric	Lithic procurement
41BX1786	Prehistoric	Lithic scatter
41BX1787	Transitional Archaic	Lithic scatter
41BX2131	Late Archaic to Late Prehistoric	Occupation/procurement
41BX2204	Prehistoric	Lithic scatter
41BX2311	Historic	Historic scatter
41BX2312	Prehistoric	Lithic scatter
41BX2430	Prehistoric	Lithic scatter

2017) have previously been conducted within the project area. Archaeological sites were recorded during the course of three of these projects. The project area's location adjacent to the creek, as well as the results of previous work in the area, indicated a high probability that archaeological sites would be encountered during the course of the survey.

Site 41BX68 is a prehistoric site located approximately 844 m north of the project area, on the other side of Loop 1604. It is a lithic procurement site on a ridge bordering Elm Creek (Hester et al. 1974), recorded by the CAR during a survey for the construction of floodwater retarding structures. The site was originally defined by a surface lithic scatter including cores, bifaces, and debitage. Multiple revisits (Thompson et al. 2008, Salgado et al. 2020) to the site have found that it has been largely destroyed by development, and is therefore ineligible for the NRHP (THC 2023).

Site 41BX356 is a prehistoric site recorded during the course of a survey conducted by the CAR for wastewater treatment facilities (Fox 1977). It is approximately 948 m southwest of the project area along a tributary stream of Mud Creek. The site was originally recorded as a surface scatter of chipped stone as well as multiple burned rock features. A nearby landowner informed the crew that he had collected Middle and Late Archaic projectile points from the site, including Castroville and Ensor points. At the time it was recorded, additional testing was recommended. The project area for this survey also included a larger area which intersects with the western edge of the current project area (Fox 1977; THC 2023).

Sites 41BX901, 41BX903, 41BX904, 41BX905, 41BX906, 41BX907, and 41BX909 are all prehistoric sites recorded by the CAR during a survey (Potter et al. 1992). They are located northwest of the project area. Sites 41BX901, 41BX905, and 41BX907 are all identified as lithic procurement sites. Site 41BX903 is a burned rock midden site. Sites 41BX904, 41BX906 and 41BX909 are lithic scatters. Diagnostic artifacts dating from the Archaic period through the Late Prehistoric were documented at sites 41BX901, 41BX903, 41BX904, and 41BX905. Diagnostic artifacts dating to the Archaic period were recovered from sites 41BX906, 41BX907, and 41BX909. While most of these sites do not have formal eligibility reviews in the Texas Archaeological Sites Atlas, at the time the sites were recorded 41BX903 and 41BX905 were recommended as eligible for listing in the NRHP. Sites 41BX903 and 41BX904 were revisited in 2021 by Pape-Dawson during a survey (THC 2023). Site 41BX903 was recommended as ineligible within the ROW due to a lack of intact features and temporally diagnostic artifacts. Site 41BX904 was unable to be relocated, and that site was also recommended as ineligible (THC 2023). Site 41BX914 is a

historic log cabin site also documented during the course of the 1990 CAR survey. The structure was noted to be standing but in poor condition. No additional recommendations regarding this site were made (Potter et al. 1992; THC 2023).

Site 41BX1459 is prehistoric site located approximately 875 m northwest of the project area. The site was recorded during an unknown project. The original site form is missing from the Texas Archaeological Sites Atlas, but a 1995 eligibility review states that the site is ineligible for listing in the NRHP. A recent (2023) revisit conducted by SWCA found the site to be an upland lithic procurement area consisting of a surface scatter of tested cobbles, debitage, and a biface fragment. No cultural features or temporal diagnostics were noted (THC 2023).

Site 41BX1625 is a prehistoric site located approximately 900 m northwest of the project area. The site was recorded during the course of a survey conducted by SWCA in 2005 (Houk and Acuna 2005; THC 2023). The site is described a large lithic procurement area containing debitage, cores, and two biface fragments. The site was recommended as having little research potential due lack of buried deposits, cultural features, or temporally diagnostic artifacts (Houk and Acuna 2005).

Sites 41BX1786 and 41BX1787 are prehistoric sites recorded during the course of a survey conducted by SWCA in 2008 (Galindo 2008; THC 2023). Site 41BX1786 is a relatively sparse surface scatter of chipped stone and burned rock, approximately 482 m northeast of the project area on an upland terrace of Elm Waterhole Creek. Shovel tests and backhoe trenches excavated within the site encountered no buried cultural material and generally shallow (50-110 cm), rocky soils. The site was recommended as not significant and ineligible for designation as a State Antiquities Landmark (SAL). Site 41BX1787 is a Transitional Archaic lithic scatter that includes both a surface and buried component located south of Elm Waterhole Creek. The surface scatter included lithic tools, cores, debitage, and burned rock. Shovel tests were relatively shallow, reaching a maximum depth of 35 centimeters below surface (cmbs). Debitage, burned rock, and a Frio point were recovered from shovel tests. No backhoe trenches were excavated within the boundaries of site 41BX1787. No cultural features were documented. Site 41BX1787 was recommended as not significant and ineligible for designation as a SAL. The boundaries of this site were expanded to include an area within the northern portion of the current project area during a site revisit conducted by Pape-Dawson in 2019 (Anderson and Smith 2020; THC 2023). This portion of the site was revisited during the current survey. Shovel tests within the expanded portion of the site were shallow, primarily terminating at 20-30 cmbs. Debitage and burned rock were recorded in buried contexts (0-40 cmbs). The expanded portion of site 41BX1787 was also recommended as not eligible for designation as a SAL or listing in the National Register of Historic Places (NRHP), due to heavy disturbance, sparse cultural material, and lack of diagnostic artifacts or features (Anderson and Smith 2020).

Site 41BX2131 was recorded by Pape-Dawson in 2015-2016 during the course of an intensive survey followed by data recovery (Galindo 2018; THC 2023). The site is located approximately 760 m west of the project area at the confluence of Mud Creek, Elm Creek and Elm Waterhole Creek. Dates returned from radiocarbon samples as well as the recovery of two Frio points date the site to the Transitional Archaic to early Late Prehistoric period. Artifacts recovered in addition to the points included a variety of lithic tools, a groundstone fragment, cores, debitage, burned rock, and faunal bone, including large and very large mammal bone. The site was recommended as eligible for listing in the NRHP and designation as a SAL; damage to the site during construction was mitigated by the data recovery work (Galindo 2018).

Site 41BX2204 was recorded by SWCA during a monitoring project in 2017 (Bonorden and Salgado 2017; THC 2023). The site is located entirely within the current project area and straddles the unnamed drainage which crosses Bulverde Road. The site is described as a prehistoric lithic scatter recorded within a utility trench extending from the surface to approximately 47 cmbs. Cultural materials included a core, debitage and mussel shell. The site was recommended as ineligible for listing in the NRHP or designation as a SAL due to the level of disturbance by previous construction activities, lack of cultural features and common types of artifacts (Bonorden and Salgado 2017). The entirety of the project area for this previous monitoring project is encompassed by the project area for the current investigation, extending from the drainage at the north to a commercial driveway located to the south (approximately 179 m). The remainder of the trench outside the site boundaries was negative. Overall extensive disturbance due to existing utilities within the project area was noted, primarily as result of road construction and existing utilities. Construction proceeded through the site within the project area, resulting in further disturbance to the current project area as well as site 41BX2204 (Bonorden and Salgado 2017). This site was revisited during the course of the current investigation.

Sites 41BX2311 and 41BX2312 were recorded during the course of a survey conducted by the CAR in 2019 as part of the Bulverde Road Phase I Improvements Project (THC 2023; Wigley 2019). Site 41BX2311 consists of a small historic scatter located approximately 66 m south of the project area within the Bulverde Road ROW. The site contained faunal bone and aqua glass. Site 41BX2312 is a prehistoric lithic scatter located approximately 80 m south of the project area, also within the Bulverde Road ROW. The site consisted of a buried lithic scatter

containing debitage and burned rock. Both sites were shallow, low-density, and contained evidence of prior disturbance. They were recommended as not eligible for listing in the NRHP or designation as SALs within the ROW (Wigley 2019).

Site 41BX2430 was recorded in 2021 during the course of a survey conducted by Halff Associates (THC 2023). The site is approximately 33 m northwest of site 41BX2204, and about 15 m west of the current project area, adjacent to Elm Waterhole Creek and within the Bulverde Road ROW. Cultural material consists of a surface scatter of lithic cores and debitage. A significant scatter of natural chert cobbles was also noted. No buried material was encountered in shovel tests excavated within the site. The site is recommended as not eligible for listing in the NRHP or designation as a SAL due to sparse material, lack of temporally diagnostic artifacts, and previous impacts by utilities and roadway construction (THC 2023).

The northern project area at the intersection of Bulverde Road and Redland Road is included in the project areas of two additional previous investigations, a survey conducted by SWCA in 2014 (Acuna 2016; THC 2023) and a survey conducted by Pape-Dawson in 2017 (Moore and Marceaux 2019; THC 2023). The SWCA survey included one shovel test excavated within the current project area, which was negative for cultural material. Bedrock was encountered at 5 cmbs. These results were consistent with the remainder of the survey, which encountered no cultural material and extensive disturbance. No additional work was recommended (Acuna 2016). The Pape-Dawson survey excavated no shovel tests within the current project boundaries, but the shovel test excavated just north of the current project area encountered no cultural material and revealed heavily disturbed matrix. Overall results indicated heavy disturbance within the project area (Moore and Marceaux 2019).

Chapter 3: Field and Laboratory Methods

Pre-Fieldwork Review

CAR reviewed relevant literature and previously recorded archaeological resources within the project area prior to the commencement of fieldwork. Resources reviewed included the Texas Archaeological Sites Atlas (THC 2023) and relevant archaeological reports.

Fieldwork

In order to identify and document potential cultural resources, CAR staff completed excavation of 19 shovel tests. Initially, the plans called for the excavation of up to four backhoe trenches. However, during the course of a previous survey along Bulverde Road immediately south of the current project area (Wigley 2019), CAR staff ultimately were unable to safely locate backhoe trenches within the ROW due to the narrowness of the area and the extensive existing utilities within it. Therefore, because the current ROW posed similar challenges, CAR proposed to excavate eight additional shovel tests in lieu of the four backhoe trenches, focused on the areas where the backhoe trenches would have been located (the sites to be revisited and the crossing of the ephemeral drainage). This alternate strategy was appropriate due to the shallow nature of the deposits previously recorded in the area, and provided additional opportunity to define previously recorded site boundaries within the project area. Prior to enacting this alternate strategy, CAR staff coordinated with COSA-OHP and the THC.

Shovel tests were approximately 30 cm in diameter and excavated to a depth of 80 cm below the ground surface, terminating before that depth if excavators encountered obstructions, disturbance, or the water table. Shovel tests were excavated in arbitrary 20-cm levels and all soil matrixes were screened through one-quarter inch hardware cloth. CAR staff collected all artifacts recovered from shovel tests. A standardized shovel test form was completed for all shovel tests. The Project Archaeologist maintained a daily log. Activities and discoveries were documented and supported by digital data, including photographs, where appropriate. CAR staff recorded shovel test locations with a Trimble GPS unit.

Lab Analysis, Curation Preparation, and Final Curation

Throughout the project, the analysis and organization of records, artifacts, and daily logs was ongoing. All records generated during the project were prepared in accordance with Federal Regulations 36 CFR Part 79 and THC requirements for State Held-in-Trust collections. Field forms were printed on acid-free paper and completed with pencil.

Collected artifacts were tagged with an individual field sack number along with its description, quantity, feature number (if applicable), and location. The Project Archaeologist field checked the artifacts before turning them over to the Laboratory Director for processing. Artifacts were washed, air-dried, and stored in separate bags by provenience. All recovered artifacts were analyzed and their pertinent information (i.e., provenience, artifact type, metrics, etc.) was entered into an Excel database.

Prior to final curation, in accordance with Chapter 26.27(g)(2) of the Antiquities Code of Texas, CAR requested from COSA-OHP and THC to discard artifact classes that had no remaining scientific or historical value, including non-diagnostic modern glass, synthetic material, and metal container scrap. As a result all artifacts collected were discarded following concurrence from COSA-OHP and the THC. CAR curated all records related to the discarded material and the discard procedure. All field notes, forms, photographs, and drawings were placed in labeled archival folders. Digital photographs were printed on acid-free paper, and placed in archival-quality page protectors to prevent accidental smearing due to moisture. Finally, following completion of the project, all recovered artifacts and project-related materials, including the final report, are permanently stored at the CAR's curation facility under accession number 2750.

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Chapter 4: Results

Beginning June 12, 2023, through June 22, 2023, CAR staff conducted an intensive pedestrian survey with shovel testing along a 1-km section of ROW along Bulverde between Redland Road and Green Spring Drive. Two previously recorded archaeological sites, 41BX1787 and 41BX2204, were revisited during the course of this project.

Shovel Testing and Survey

CAR excavated 19 STs within the project area (Figure 4-1). Soils were heavily disturbed by previous utility installation. The tests frequently encountered dense limestone cobbles or bedrock, with 15 of 19 (79%) tests terminating prior to

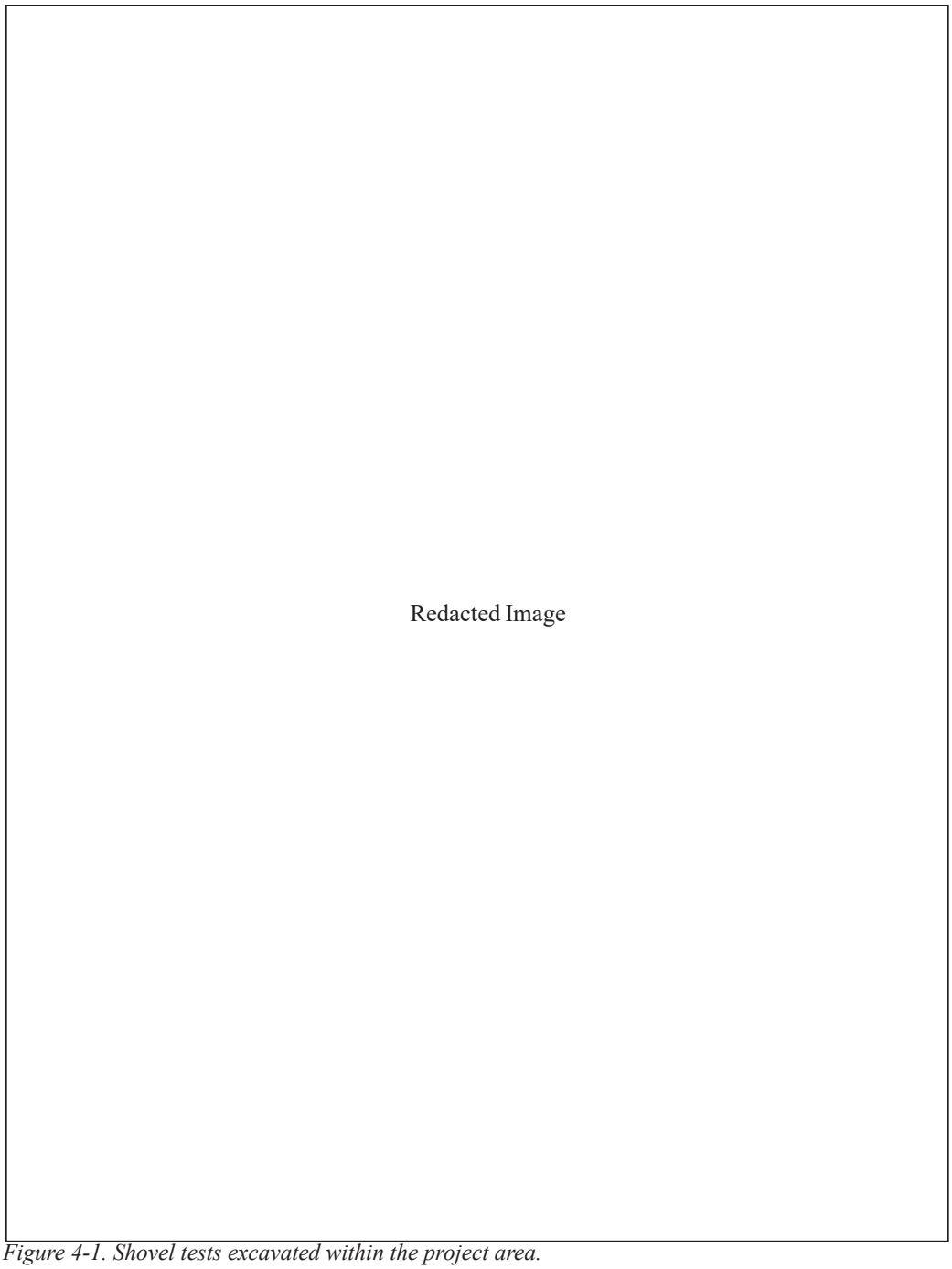

Figure 4-1. Shovel tests excavated within the project area.

completion. Table 4-1 summarizes shovel test results. The average terminating depth was 60 cmbs. Of the four shovel tests that reached the target depth of 80 cmbs, two of them encountered disturbed soils in all levels (STs 7 and 10). The only cultural materials recovered consisted of modern trash such as modern clear glass, tin cans, and metal tops (Table 4-2). This modern debris extended from 20-60 cmbs. Survey results suggest that any deposits related to sites 41BX1787 and 41BX2204 within the project area were removed by previous construction. No prehistoric materials were encountered within the project area, and extensive disturbance was documented. This is consistent with the recommendations provided by the recorders of each site; that construction in the site areas proceed as planned (Anderson and Smith 2020; Bonorden and Salgado 2017; Galindo 2008).

About half of the STs excavated within the project area contained significant fill deposits (see Figure 4-2), including road base, orange gravel fill, and yellow gravelly fills. In some areas, orange gravel fill deposits extended all the way to shovel test termination. When fill was encountered, excavation continued if possible in an attempt to reach potential intact deposits located below the disturbance until termination depth (80 cmbs) was reached or obstruction was encountered, usually limestone. In areas of the project area containing mostly intact soils, soils were rocky and often shallow, terminating anywhere from 38-80 cmbs. Natural soils consisted of primarily very dark grayish brown silty clay (10YR 3/2) with increasing limestone gravels and, near termination, fist-sized limestone cobbles that increased in frequency with depth. A layer of modern trash at the top of the shovel test was common. A variety of material was noted including plastic containers, modern beer bottles, and debris such as a discarded bungee cord. A planned shovel test in the far southern portion of the project area was canceled because this area was actively under construction (Figure 4-3). Open excavations observed in the area indicated extensive gravelly fill deposits in this portion of the project area.

Site 41BX1787 is recorded in the northern portion of the project area near the Redland Road intersection (Figure 4-4). Two initial shovel tests (STs 1 and 2) and 2 additional shovel tests (STs 12 and 13) were excavated in proximity to the site boundaries in an attempt to locate any remaining intact portions of 41BX1787 within the project area. The central portion of the site within the project area is occupied by sidewalk, a pedestrian pole, and an electrical box. Therefore, the shovel tests were located near the site boundaries. Soils in this area were shallow and rocky, terminating at an average depth of 56 cmbs. All because impassable once limestone was encountered. Shovel tests 2 and 13 encountered gravel fill deposits from previous impacts (Figure 4-5). No

Table 4-1. Summary of Shovel Tests Excavated within the Project Area

ST	Cultural Material Present	Termination Depth	Reason for Termination	Reason for Excavation
1	N	70	Limestone cobble bed	Initial Testing (41BX1787)
2	N	47	Limestone cobble bed	Initial Testing (41BX1787)
3	N	80	Complete	Initial Testing
4	Y (modern glass)	57	Limestone cobble bed	Initial Testing
5	N	65	Limestone cobble bed	Initial Testing
6	Y (modern glass)	40	Limestone	Initial Testing
7	N	80	Complete	Initial Testing (41BX2204)
8	Y (modern glass)	60	Limestone	Initial Testing (41BX2204)
9	N	80	Complete	Initial Testing
10	N	80	Complete	Initial Testing
11	Y (modern glass and tin can)	60	Limestone	Initial Testing
12	N	65	Limestone	Investigating 41BX1787
13	N	42	Limestone	Investigating 41BX1787
14	Y (modern glass)	51	Limestone	Investigating 41BX2204
15	N	42	Large tree root	Investigating 41BX2204
16	N	62	Limestone	Investigating 41BX2204
17	Y (metal cap)	67	Limestone	Investigating 41BX2204
18	Y (tin can)	38	Limestone	Investigating 41BX2204
19	N	50	Limestone	Investigating 41BX2204

Table 4-2. Material Recovered from Shovel Tests

Provenience	Level	Depth (cmbs)	Superclass	Class	Description	Count	Count Unit	Weight (gm)
ST 11	3	40-60	Construction	Other Synthetics	styrofoam fragment (frag)	1	bag	0.02
ST 4	3	40-60	Glass	Container/ Vessel	brown body frag, modern	1	each	
ST 6	2	20-40	Glass	Container/ Vessel	clear body frags, (1) stippled, modern	5	each	
ST 8	2	20-40	Glass	Container/ Vessel	brown body frags, (1) with paper label, modern	3	each	
ST 11	3	40-60	Glass	Container/ Vessel	brown body frag, modern	1	each	
ST 14	2	20-40	Glass	Container/ Vessel	clear body frags, modern	1	each	
ST 11	3	40-60	Metal	Containers/ Caps	tin can frag, partial red and white label	1	bag	16
ST 17	2	20-40	Metal	Containers/ Caps	crown cap	1	each	
ST 18	2	20-40	Metal	Containers/ Caps	tin can fragment	1	bag	20.15
ST 11	3	40-60	Metal	Other Metal Objects/ Unknown	aluminum scrap	1	bag	0.83
ST 11	3	40-60	Organic	Faunal Bone		1	bag	0.09

Figure 4-2. ST 11 termination; note layer of orange fill.

Figure 4-3. Area of canceled ST 12 facing south.

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Figure 4-4. Area of Site 41BX1787 within the project area, facing south. Note ST 1 location.

Figure 4-5. ST 2 termination (47 cmbs). Note gravelly fill, limestone.

cultural material was recorded within or in proximity to site 41BX1787 within the project area.

The recorded boundaries of site 41BX2204 lie entirely within the current project area (Figure 4-6). Eight shovel tests (STs 7, 8, 14, 15, 16, 17, 18 and 19) were excavated within or in proximity to the site, in an attempt to locate any remaining associated deposits or extensions of the site outside the previously recorded boundaries. Gravel fill deposits were common in the site area, and in the case of ST 7 extended all the way to 80 cmbs (see Figure 4-7 for an example). These deep fill deposits are likely associated with the installation of the sewer

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Figure 4-6. Area of 41BX2204, facing north. Note existing utilities in the foreground and ST location in the background.

Figure 4-7. ST 14 termination. Note rocky, gravelly fill deposits.

main that occurred (continuing through the site) at the time the site was recorded (Bonorden and Salgado 2017). Evidence of this sewer main was visible on the surface in the form of relatively new sewer manholes and gravel fill spread around and leveled in the area. The only cultural material recovered from site 41BX2204 during this investigation consisted of modern beer bottle fragments, a metal container cap, and a tin can, all of which were recovered from 0-40 cmbs. No evidence of prehistoric material or features was encountered in any of the shovel tests within or in the vicinity of 41BX2204.

Chapter 5: Summary and Recommendations

In June of 2023, CAR staff conducted an intensive pedestrian survey of an approximately 1-km section of Bulverde Road ROW located between Redland Road and Green Spring Drive, spanning 3 ha (7.4 acres) total. This survey was conducted in advance of the Bulverde Road Improvements Phase II project, which includes updates to pavement, utilities and drainage. Two previously recorded sites within the project area, 41BX1787 and 41BX2204, were revisited during the survey.

In total, 19 shovel tests were excavated within the project area, including 11 initial shovel tests, and eight additional shovel tests focused on the archaeological sites that were revisited. Soils encountered during the survey indicated significant disturbance to the project area, including the previously recorded sites, and no cultural material associated with either of the two sites was identified. In areas where the natural soils were present, deposits were shallow and rocky. No material associated with the two previously recorded sites was documented, and the results suggest that the portions of the both site 41BX1787 and 41BX2204 located within the ROW were removed by previous construction. The only cultural material recovered during shovel testing consisted of modern trash. No cultural features were encountered during the survey. Therefore, CAR recommends that development proceed as planned, due to the lack of cultural material and level of disturbance within the project area. However, if cultural materials are encountered during project activities, work should cease in the immediate area and COSA-OHP and the THC should be notified. All records generated during this project are permanently curated at the CAR under accession number 2750 in accordance with THC guidelines. All artifacts collected were discarded with the permission of COSA and THC.

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References Cited:

Acosta, T.P.
2023 Juneteenth. Handbook of Texas Online. Electronic document, https://www.tshaonline.org/handbook/entries/juneteenth, accessed June 29, 2023.

Acuna, L.I.
2016 *CPS Energy 2014 Annual Permit: Final Report for Eight CPS Energy Projects under Antiquities Permit Number 6851, Bexar County, Texas.* SWCA Cultural Resources Report No. 15-669. SWCA Environmental Consultants, San Antonio, Texas.

Anderson, N.J., K.M. Nichols, S. Tomka, C. McKenzie, A. Young, M. Nichols, M.J. Galindo, S. Marceaux, J. Zapata, J. Perez, and S. Wigley
2017 *Archaeological Testing of Site 41BX6, The Alamo, City of San Antonio, Bexar County, Texas.* Pape-Dawson, San Antonio.

Anderson, N., and S. Smith
2020 *Intensive Archaeological Survey of the Proposed E-4 Sanitary Sewer Line Project, San Antonio, Bexar County, Texas.* Pape-Dawson, Austin.

Bauer, K.J.
2023 Mexican War. Handbook of Texas Online. Electronic document, https://www.tshaonline.org/handbook/entries/mexican-war, accessed June 29, 2023.

Black, S.L., and A.J. McGraw
1985 *The Panther Springs Creek Site: Cultural Change and Continuity within the Upper Salado Creek Watershed, South-Central Texas.* Archaeological Survey Report, No. 100, Center for Archaeological Research, The University of Texas at San Antonio.

Black, S.L., L.W. Ellis, D.G. Creel, and G.T. Goode
1997 *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas*. Studies in Archeology 22. Texas Archeological Research Laboratory, the University of Texas at Austin. Archeology Studies Program, Report 2. Texas Department of Transportation Environmental Affairs Department, Austin.

Blair, W.F.
1950 The Biotic Provinces of Texas. *Texas Journal of Science* 1(2): 93-116.

Bonorden, B., and S. Salgado
2017 *Cultural Resources Monitoring Conducted for the San Antonio Water System Bulverde Road LS Elimination Project, Bexar County, Texas*. SWCA Cultural Resources Report No. 17-692, SWCA Environmental Consultants, San Antonio.

Bousman, C.B., B.W. Baker, and A.C. Kerr.
2004 Paleoindian Archaeology in Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 205-265. Texas A&M University Press, College Station.

Campbell, R.
2003 *Gone to Texas: A History of the Lone Star State*. Oxford University Press, New York.

Campbell, T.N., and T.J. Campbell
2004 *Indian Groups Associated with the Spanish Missions of the San Antonio Missions National Historic Park*. Special Report No. 16. Center for Archaeological Research, The University of Texas at San Antonio.

Cargill, D.A.
1996 Stable Isotope Analysis at Mission San Juan de Capistrano, San Antonio, Texas. Master's Thesis, The University of Texas at San Antonio.

Carpenter, S.M.
2017 The Toyah Complex of South and Central Texas: Long-Range Mobility and the Emergence of Dual Economies. *Plains Anthropologist* 62(242):133-156.

Carpenter, S., and C. Hartnett.
2011 Archaic Macroeconomic Spheres: A Case Study from Fort Hood, Central Texas. *Bulletin of the Texas Archaeological Society* 82:223-251.

Chipman, D.E., and H.D. Joseph
2010 *Spanish Texas, 1519-1821*. Rev. ed. University of Texas Press, Austin.

Collins, M.B.
2004 Archeology in Central Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 205-265. Texas A&M University Press, College Station.

Collins, M.B., D.B. Hudler, and S.L. Black
2003 *Pavo Real (41BX52): A Paleoindian and Archaic Camp and Workshop on the Balcones Escarpment, South-Central Texas.* Studies in Archeology 41. Texas Archeological Research Laboratory, The University of Texas at Austin.

Cox, I.W.
1997 The Growth of San Antonio. In *Archaeology at the Alamodome: Investigations of a San Antonio Neighborhood in Transition, Volume I, Historical, Architectural, and Oral History Research*, edited by A.A. Fox, M. Renner, and R.J. Hard, pp.8-44. Archaeological Survey Report No. 236.

Cruz, G.R.
1988 *Let There Be Towns: Spanish Municipal Origins in the American Southwest, 1610-1810*. Texas A&M University Press, College Station.

de la Teja, J.F.
1995 *San Antonio de Bexar: A Community on New Spain's Northern Frontier.* University of New Mexico Press, Albuquerque.

2001 "A Fine Country with Broad Plains-the Most Beautiful in New Spain": Colonial Views of Land and Nature. In *On the Border: An Environmental History of San Antonio*, edited by C. Miller, pp. 41-56. University of Pittsburgh Press, Pennsylvania.

Eckhardt, G.
2023 The Edwards Aquifer. Electronic document, https://www.edwardsaquifer.net/, accessed June 28, 2023.

Fisher, L.F.
1998 *The Spanish Mission of San Antonio.* Maverick Publishing Company, San Antonio

Figueroa, A.L., and R.P. Mauldin
2005 *Test Excavations and Monitoring at 41BX1598: A Multicomponent Historic Site in Bexar County, Texas*. Archaeological Report No. 360. Center for Archaeological Research, the University of Texas at San Antonio.

Fox, A.
1976 *The Archaeology and History of Alamo Plaza.* Archaeological Survey Report, No. 16. Center for Archaeological Research, the University of Texas at San Antonio.

1977 *An Archaeological Assessment of the San Antonio 201 Wastewater Treatment Project.* Archaeological Survey Report, No. 41. Center for Archaeological Research, the University of Texas at San Antonio.

Galindo, M.J.
2008 *Intensive Cultural Resources Survey of the Bulverde Marketplace Development, Bexar County, Texas*. SWCA Cultural Resources Report No. 2008-384, SWCA Environmental Consultants, Austin.

Galindo, M.J., K. Hill, and J.I. Sullivan
2018 Intensive Archaeological Survey of the Proposed Casa Bella Estates Land Development Project and Data Recovery at Site 41BX2131, San Antonio, Bexar County, Texas. Pape-Dawson, Austin.

Hanson, C.
2016 *Archaeological Investigations for the Main Plaza Redevelopment Project, San Antonio, Bexar County, Texas*. Atkins, Austin.

Hester, T.R.
1974 *Archaeological Survey of Areas Proposed for Modification in the Salado Creek Watershed, Bexar County, Texas*. Archaeological Survey Report, No. 3, Center for Archaeological Research, The University of Texas at San Antonio.

1977 Excavations at St. Mary's Hall (41BX229): A Buried Plainview Campsite in South Central Texas. Paper presented at the 1977 Texas Archaeological Society Meeting, Arlington. Manuscript on file, Center for Archaeological Research, The University of Texas at San Antonio.

1980 11,000 Years of South Texas Prehistory. In *Digging into South Texas Prehistory*, pp. 131-164. Corona Publishing, San Antonio.

2004 The Prehistory of South Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 127-151. Texas A&M Press, College Station.

Houk, B.A., and L.I. Acuna
2005 *Results of a Cultural Resources Survey of the FCS Fischer MDP Project Area, Bexar County, Texas*. SWCA Cultural Resources Report No. 2005-454, SCWA Environmental Consultants, Austin.

Houk, B.A., K.A. Miller, and E.R. Oksanen
2009 The Gatlin Site and Early-to-Middle Archaic Chronology of the Southern Edwards Plateau, Texas. *Bulletin of the Texas Archeological Society* 80:51-75.

Jasinski, L.E.
2023 San Antonio, Texas. Handbook of Texas Online. Electronic document, https://www.tshaonline.org/handbook/entries/san-antonio-tx, accessed June 29, 2023.

Johnson, L., and G. Goode
1994 A New Try at Dating and Characterizing Holocene Climates, as well as Archaeological Periods, on the Eastern Edwards Plateau. *Bulletin of the Texas Archeological Society* 65:1-51.

Kemp, L., J.E. Zapata, C.M.M. McKenzie, M. Pfeiffer, and R. Curilla
2020 *Archaeological Monitoring Along North Main and Soledad with State Antiquities Landmark Testing of 41BX2164 and 41BX2170, San Antonio, Bexar County, Texas*. Archaeological Report, No. 462. Center for Archaeological Research, The University of Texas at San Antonio.

Kenmotsu, N.A., and J.W. Arnn
2012 The Toyah Phase and the Ethnohistoric Record: A Case for Population Aggregation. In *The Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu and D.K. Boyd, pp.19-43. Texas A&M University Press, College Station.

Kenmotsu, N.A., and D.K. Boyd
2012 The Toyah Phase in Texas: An Introduction and Retrospective. In *The Toyah Phase of Central Texas, Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu and D.K. Boyd, pp.1-18. Texas A&M University Press, College Station.

Krieger, A.D.
2000 *We Came Naked and Barefoot: The Journey of Cabeza de Vaca Across North America.* The University of Texas Press, Austin.

Lohse, J.C., D.B. Madsen, B.J. Culleton, and D. J. Kennett
2014 Isotope Paleoecology of Episodic Mid-to-late Holocene Bison Population Expansions in the Southern Plains, U.S.A. *Quaternary Science Reviews* 102:14-26.

Long, C.
2023 Wetmore, TX. Handbook of Texas Online, Texas State Historical Association. Electronic document, https://www.tshaonline.org/handbook/entries/wetmore-tx, accessed June 29, 2023.

Mauldin, R., and L. Kemp
2016 Chapter 12: Spatial Patterns at the Plaza de Armas Buildings. In *Archaeological Monitoring and Test Excavations at the 1722 Presidio San Antonio de Bexar (Plaza de Armas Buildings)*, by C. McKenzie, L. Martinez, and R. Mauldin, pp.123-134. Archaeological Report, No. 445. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R.P., D.L. Nickels, and C.J. Broehm
2003 *Archaeological Testing to Determine the National Register Eligibility Status of 18 Prehistoric Sites on Camp Bowie, Brown County, Texas*. Archaeological Survey Report, No. 334. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R., J. Thompson, and L. Kemp
2012 Reconsidering the Role of Bison in the Terminal Late Prehistoric (Toyah) Period in Texas. In *Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu, pp. 90-110. Texas A&M University Press, College Station.

Moore, V., and P.S. Marceaux
2019 *Intensive Archaeological Survey of the Proposed SAWS NWC Bulverde/1604 Sewer Extension Project, San Antonio, Bexar County, Texas*. Pape-Dawson, Austin.

Munoz, C.M., R.P. Mauldin, J.L. Thompson, and S.C. Caran
2011 *Archaeological Significance Testing at 41BX17/271, the Granberg Site: A Multi-Component Site along the Salado Creek in Bexar County, Texas*. Archaeological Survey Report, No. 393. Center for Archaeological Research, The University of Texas at San Antonio.

Natural Resources Conservation Service (NRCS)
2023 Web Soil Survey. United States Department of Agriculture. Electronic document, https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed June 28, 2023.

Potter, D.R., C.K. Chandler, and E. Newcomb.
1992 *Archaeological Salvage Research at 41BX901, a Prehistoric Quarry in Bexar County, Texas.* Archaeological Survey Report, No. 211, Center for Archaeological Research, The University of Texas at San Antonio.

Potter, D.R., S.L. Black, and K. Jolly.
1995 *Archaeology Along the Wurzbach Parkway Module 1: Introduction, Conceptual Framework, and Contexts of Archeological Investigations in Bexar County, South-Central Texas*. Studies in Archeology 17, Texas Archeological Research Laboratory, The University of Texas at Austin.

Petersen, J.F.
2001 San Antonio: An Environmental Crossroads on the Texas Spring Line. In *On the Border: An Environmental History of San Antonio*, edited by C. Miller, pp. 17-41. University of Pittsburgh Press, Pennsylvania.

Salgado, S., Z.M. Overfield, R. Lackowicz, B. Bonorden, C. Roush, M. Martin, J. Welch, K.M. Atwood, V.C. Pagano, R. Jenson, L. Vilsack, and P. Lopez.
2020 *CPS Energy 2017 Annual Permit: Final Report for 41 CPS Energy Projects under Antiquities Permit Number 7961, Bexar, Comal and Medina Counties, Texas.* SWCA Cultural Resources Report No. 18-301. SWCA Environmental Consultants, San Antonio.

Schuetz, M.K.
1966 *The Granberg Site: An Archaic Indian Habitation in Bexar County, Texas.* Witte Museum Studies, No. 1. San Antonio.

Texas Historical Commission (THC)
2023 Texas Archaeological Site Atlas. Electronic document, https://atlas.thc.state.tx.us/, accessed June 28, 2023.

Thompson, J.L., K.M. Ulrich, and B.A. Meissner
2008 Intensive Pedestrian Archeological Survey of Loop 1604 North Improvements Project, City of San Antonio, Bexar County, Texas. Archaeological Report, No. 384. Center for Archaeological Research, The University of Texas at San Antonio.

Thoms, A.V., and P.A. Clabaugh
2011 The Archaic Period at the Richard Beene Site: Six Thousand Years of Hunter-Gatherer Family Cookery in South-Central North America. *Bulletin of the Texas Archaeological Society* 82:77-117.

Turner, E.S., T.R. Hester, and R.L. McReynolds.
2011 *Stone Artifacts of Texas Indians*. Taylor Trade Publishing, Lanham, Maryland.

Wigley, S.
2018 Hunter-Gatherer Mobility at the Granberg (41BX17), Bexar County, Texas. Master's thesis, The University of Texas at San Antonio.

Wigley, S.
2019 *Archaeological Investigation of the Bulverde Road Phase I Improvements, San Antonio, Bexar County, Texas.* Archaeological Report, No. 479, Center for Archaeological Research, The University of Texas at San Antonio.

Wooster, R.A., revised by B.J. Derbes
2023 Civil War. Handbook of Texas Online, Texas State Historical Association. Electronic document, https://www.tshaonline.org/handbook/entries/civil-war, accessed June 29, 2023.

Zapata, J.E.
2017 *The UTSA 2006 Field School at Mission de Valero (41BX6), the Alamo, San Antonio, Bexar County, Texas*. Archaeological Report, No. 453. Center for Archaeological Research, The University of Texas at San Antonio.