

Archaeological Investigation of the Bulverde Road Phase I Improvements, San Antonio, Bexar County, Texas



by
Sarah Wigley

Texas Antiquities Permit No. 8799

REDACTED

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Original Principal Investigator
Paul Shawn Marceaux

Prepared for:
City of San Antonio
Transportation and Capital Improvements
114 West Commerce Street, 6th Floor
San Antonio, Texas 78205



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Center for Archaeological Research
The University of Texas at San Antonio
One UTSA Circle
San Antonio, Texas 78249
Archaeological Report, No. 479

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Abstract:

On April 12-15, 2019, the Center for Archaeological Research (CAR) at The University of Texas completed an archaeological survey along a 1.4 km (0.9 mile) section of Bulverde Road in northeastern San Antonio, Bexar County, Texas. This work was carried out in advance of the Bulverde Road Phase I Improvements Project in response to a request from the City of San Antonio (COSA). This project includes updates to pavement, drainage, and utilities along this section of Bulverde Road. The project area is located within a City of San Antonio (COSA) Right of Way (ROW), and the work was performed in advance of a road improvements project funded by the COSA. The survey, conducted under the requirements of the COSA's Unified Development Code and the Antiquities Code of Texas, was carried out under Texas Antiquities Permit No. 8799. Dr. Paul Shawn Marceaux served as Principal Investigator for the fieldwork, and José E. Zapata served as the Principal Investigator for the report production as well as the remaining tasks associated with the permit. Sarah Wigley served as Project Archaeologist.

A pedestrian survey with shovel testing was conducted to identify potential cultural resources within the ROW. Thirty-six shovel tests were excavated, revealing that the project area is heavily disturbed by utilities and that soils are mostly shallow. Eight of the shovel tests were positive for cultural material. However, no temporally diagnostic artifacts or cultural features were documented within the project area. Two new archaeological sites, 41BX2311 and 41BX2312, were documented. Site 41BX2311 is a historic site containing fragments of large mammal bone and aqua container glass. Site 41BX2312 is a prehistoric site containing fragments of burned rock and debitage. The CAR recommends that neither site is eligible for inclusion to the National Register of Historic Places or designation as a State Antiquities Landmark within the ROW. The CAR recommends that construction be allowed to proceed as planned. All collected artifacts and records generated during the course of this project are permanently curated at the CAR.

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Table of Contents:

Abstract	iii
List of Figures	vii
List of Tables	ix
Acknowledgements	xi
Chapter 1: Introduction	1
Chapter 2: Project Background	5
Project Environment	5
Culture History	5
Prehistory	8
Historic Texas	8
Previous Archaeology	9
Chapter 3: Methodology	13
Field Methods	13
Laboratory Methods	13
Chapter 4: Results	15
Shovel Testing	15
Positive Shovel Tests	15
Isolated Positive Shovel Tests	15
Sites Recorded	15
41BX2311	20
41BX2312	20
Chapter 5: Summary and Recommendations	25
References Cited	27

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List of Figures:

Figure 1-1. Location of the project area (red dot) within Bexar County	1
Figure 1-2. The APE on an aerial map. The initial area targeted for shovel testing is highlighted in blue, and the area surrounding an unnamed tributary of Mud Creek that bisects the project area targeted for shovel testing is highlighted in yellow	2
Figure 1-3. The APE on a topographic map (unnamed tributary of Mud Creek in blue)	3
Figure 2-1. The APE on a topographic map; note the waterways in blue.....	6
Figure 2-2. The APE on a Bexar County soil map.....	7
Figure 2-3. Archaeological sites recorded within 1 km (0.62 mi.) of the APE.....	10
Figure 4-1. Distribution of shovel tests within the APE. Initial shovel tests are black, shovel tests excavated in order to investigate the creek are in blue, and shovel tests excavated in order to delineate positive shovel tests are in white	16
Figure 4-2. Left: ST 3 termination; note large amounts of limestone. Center: ST 11; note large amounts of sandy fill, likely related to utility construction. Right: ST 18 termination; note mottled fill to terminal depth	18
Figure 4-3. Upper left: project area; note narrow shoulder, power line pole, and fire hydrant (facing north). Upper right: example of creek modification within project area (facing south). Bottom left: gas lines near the creek (facing north). Bottom right: sewer grate and electrical poles near the creek (facing south)	18
Figure 4-4. Distribution of shovel tests within the APE: positive shovel tests in red and negative shovel tests in green.....	19
Figure 4-5. Site 41BX2311 on an aerial map: positive shovel tests in red and negative shovel tests in green	21
Figure 4-6. Vicinity of 41BX2311 (facing north)	22
Figure 4-7. Site 41BX2312 on an aerial map: positive shovel tests in red and negative shovel tests in green	23
Figure 4-8. Vicinity of 41BX2312 (facing north)	24

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List of Tables:

Table 2-1. Archaeological Sites Recorded within 1 km (0.62 mi.) of the APE 11
Table 4-1. Summary of Shovel Tests Excavated..... 17
Table 4-2. Isolated Shovel Test Material..... 20
Table 4-3. Shovel Tests Associated with the Delineation of 41BX2311 22
Table 4-4. Shovel Tests Associated with the Delineation of 41BX2312 24

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The fieldwork for this project was carried out by Sarah Wigley, Peggy Wall, and Aaron Acosta of the CAR. Dr. Paul Shawn Marceaux, CAR Director, served as the Principal Investigator and provided feedback and assistance throughout the fieldwork portion of the project. José E. Zapata served as Principal Investigator for the report production as well as the remaining tasks associated with the permit. Thank you to Dr. Raymond Mauldin for his feedback concerning field methodology and his helpful comments on a draft of this report. Thank you to Jason Perez for his comments on graphics and to Leonard Kemp for his assistance with map production. Megan Brown processed and inventoried the artifacts under the direction of CAR Lead Curator and Lab Director Cindy Munoz. Thank you to Dr. Jessica Nowlin for her work processing GIS data and producing maps included in this report, and to Dr. Kelly Harris for her work editing this report. Thank you to Kay Hindes, City Archaeologist for COSA, for her work facilitating and reviewing this project.

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Chapter 1: Introduction

In April of 2019, the Center for Archaeological Research (CAR) conducted a pedestrian survey with shovel testing in advance of the City of San Antonio's (COSA) Bulverde Road Phase I Improvements Project. This project includes updates to the pavement, utilities, and drainage within the project area. This work was carried out to identify any archaeological sites that may be impacted by the planned improvements and to assess the significance of the impact of the improvements on the site(s). The project area is located in a COSA Right of Way (ROW) and, therefore, falls under the Unified Development Code (Article 6 35-630 to 35-634). The project also required review by the Texas Historical Commission (THC) under the Antiquities Code of Texas. As required, the CAR obtained

a THC-issued Texas Antiquities Permit (No. 8799) prior to the commencement of archaeological investigations. Dr. Paul Shawn Marceaux served as the Principal Investigator for the fieldwork, and José E. Zapata served as the Principal Investigator for the report production as well as the remaining tasks associated with the permit. Sarah Wigley served as Project Archaeologist.

The project area is located in northeastern San Antonio, Texas (Figure 1-1). The Area of Potential Effect (APE) encompasses the section of Bulverde Road south of Green Springs Drive and north of Butterleigh Drive and the accompanying ROW (Figures 1-2 and 1-3). The project area is bisected by a

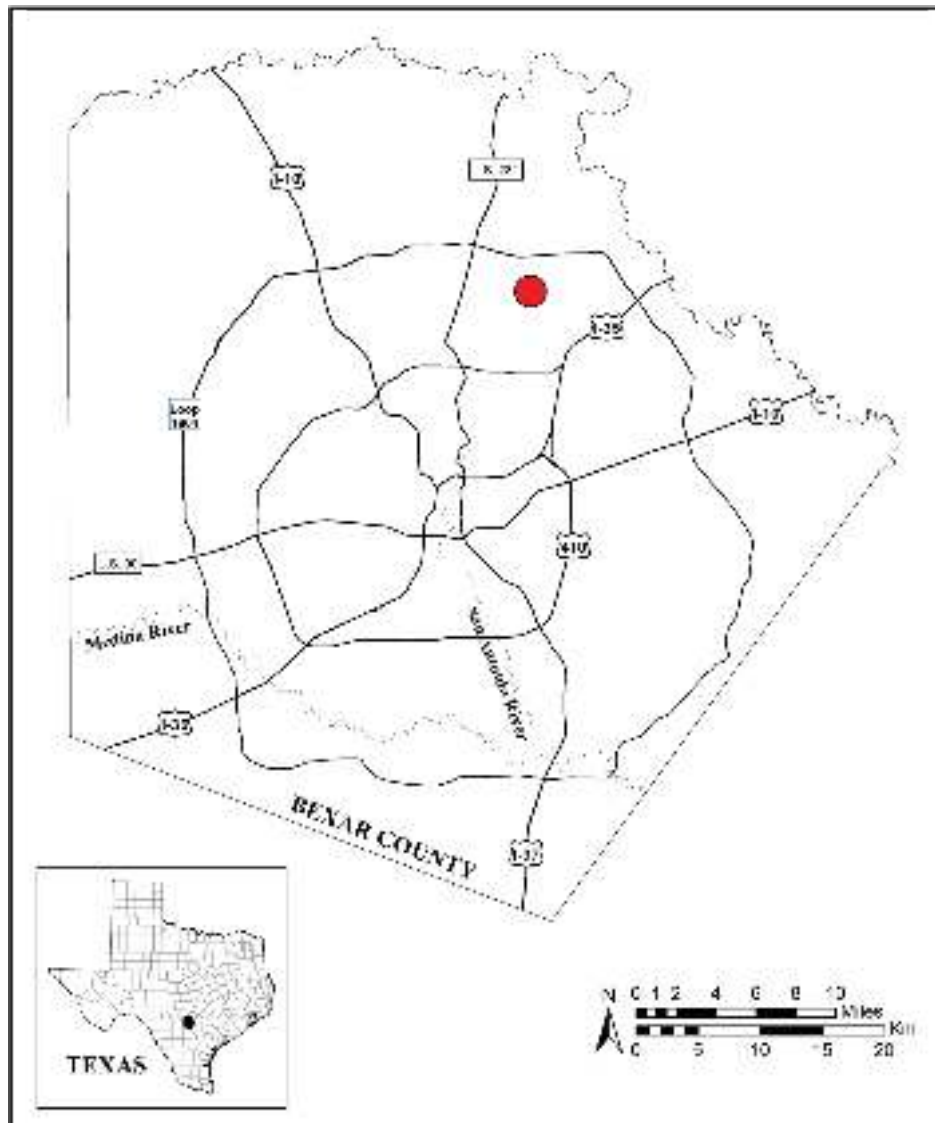


Figure 1-1. Location of the project area (red dot) within Bexar County.



Figure 1-2. The APE on an aerial map. The initial area targeted for shovel testing is highlighted in blue, and the area surrounding an unnamed tributary of Mud Creek that bisects the project area targeted for shovel testing is highlighted in yellow.

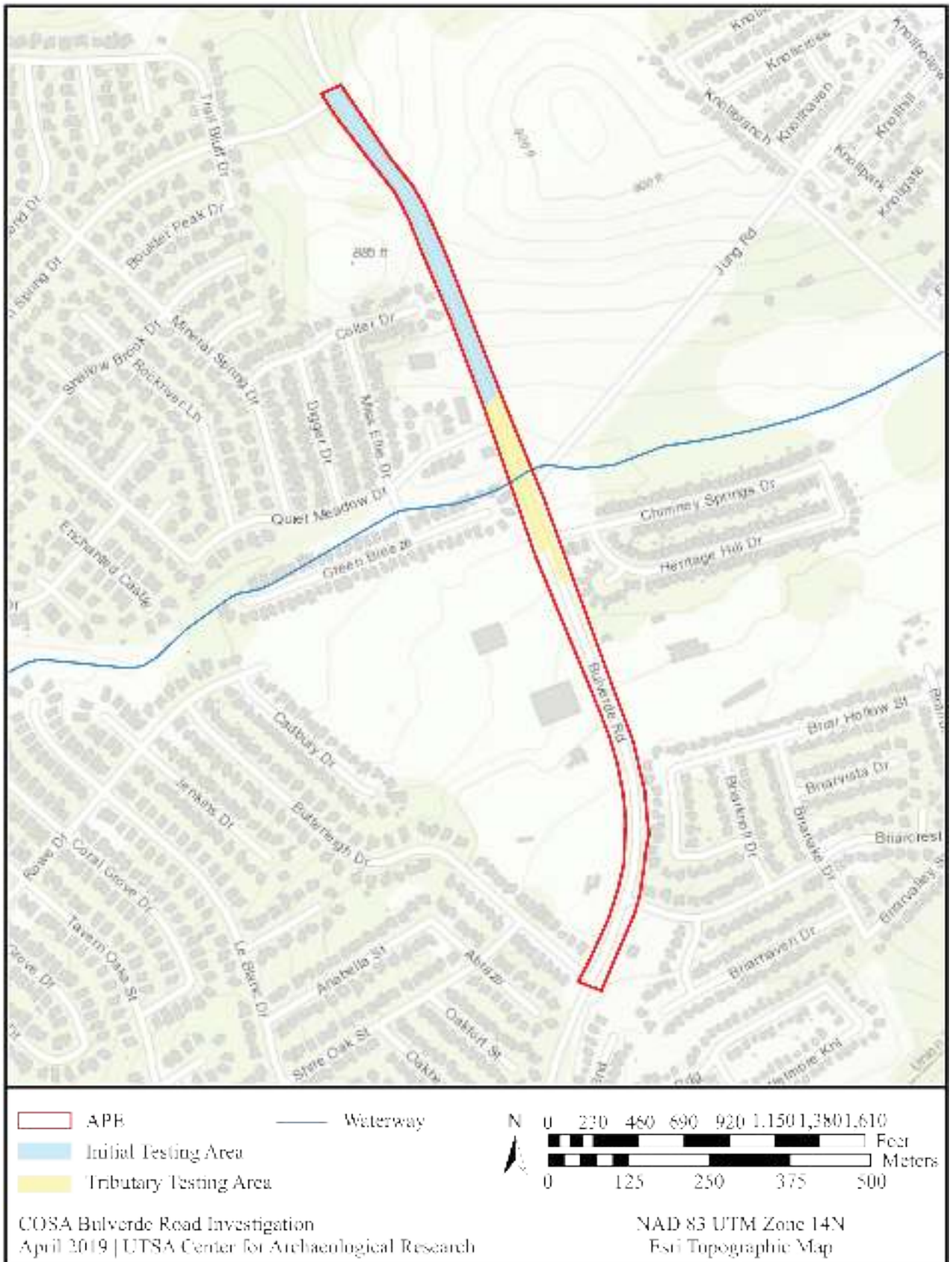


Figure 1-3. The APE on a topographic map (unnamed tributary of Mud Creek in blue).

tributary of Mud Creek south of the Jung Road intersection (Figure 1-3). The APE is approximately 30-37 meters (m; 100-120 ft.) wide and 1.4 kilometers (km; 0.9 miles [mi.]) long, encompassing an area of 4.5 hectares (11 acres). After reviewing aerial maps of the project, the CAR decided, in consultation with COSA Office of Historic Preservation (OHP) and the THC, the southern portion showed significant development and was considered unlikely to contain intact deposits and to target the northern 575 m (1,886 ft.) section of the project area for investigation. This section is located south of Green Spring Drive and north of Quiet Meadow Street. Due to a need to explore the deposits surrounding the creek, the targeted section was extended south about 300 m (984 ft.).

The Scope of Work (SOW) initially called for exploratory backhoe trenching in the vicinity of the Mud Creek tributary. During the course of the pedestrian survey, the CAR staff observed that the ROW in the portion of the project area targeted for investigation was both extremely narrow and included a variety of utilities on both sides of the road, with electrical and water lines within the western ROW of Bulverde Road and gas and sewer within the eastern ROW. These factors prevented the CAR from excavating backhoe trenches within the ROW. The CAR instead excavated nine shovel tests in vicinity of the creek in order to explore these deposits.

Thirty-six shovel tests were excavated within the project area. These revealed extensive disturbances within the ROW. Eight of the 36 tests were positive for cultural material, which included historic and prehistoric artifacts. Two previously unrecorded sites were documented. Neither contained any cultural features or temporally diagnostic artifacts. Site 41BX2311 is a historic site containing fragments of large mammal bone and aqua glass. The site is disturbed within the ROW and is not recommended for inclusion to the National Register of Historic Places (NRHP) or registration as a State Antiquities Landmark (SAL) within the ROW. Site 41BX2312 is a prehistoric site containing debitage and burned chert. The site is disturbed within the ROW and is not recommended for inclusion to the NRHP or registration as a SAL within the ROW. Cultural material recovered from isolated positive shovel tests includes an edge-modified flake, lithic core, debitage, and clear and aqua glass.

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

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 and, as the CAR recovered both prehistoric and historic materials, a regional summary of both sequences. Finally, a review of previous archaeology conducted in the vicinity of the project is presented.

Project Environment

The project area is located in northern San Antonio, Bexar County, Texas, east of US 281 North and south of Loop 1604 East. The APE encompasses Bulverde Road and its ROW south of Green Springs Drive and north of Butterleigh Drive; however, the investigation focused on the portion of the ROW north and immediately south of an unnamed tributary of Mud Creek that bisects the project area (Figure 2-1). The section of the project area south of Quiet Meadow Drive showed significant residential and commercial development. While the northern portion of the project area appeared less developed on aerial maps (see Figure 1-2), within the ROW significant disturbances were encountered in shovel tests. These disturbances were frequently due to utility installations, including lines for electricity, water, gas, and sewer services. The Mud Creek tributary runs just north of Green Breeze Drive and has been significantly modified within the project area. Mud Creek is located 1.4 km (0.9 mi.) west of the project area, Elm Waterhole Creek is located 0.5 km (0.31 mi.) to the north, and another unnamed, intermittent stream is located 0.5 km (0.31 mi.) southeast.

San Antonio is located where the southernmost Great Plains meets the Gulf Coast, demarcated by the Balcones Escarpment (Petersen 2001). 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. 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 inches [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 259-274 meters (m; 850-900 feet [ft.]) above sea level.

The soils in the northern portion of the project area are Eckrant cobbly clays (TaC; Figure 2-2). These soils are well-drained, located on 5 to 15 percent slopes, and reach depths of 20-51 cm (8-21 in.) before encountering bedrock. They are found on ridges (Natural Resources Conservation Service [NRCS] 2019). The soils within the north-central portion of the project area are Austin (AuC) and Lewisville (LvB) silty clays. These soils range from 1 to 5 percent slopes and are well-drained. Austin silty clays reach depths of 56-99 cm (22-39 in.) before bedrock is encountered and are located on ridges. These soils are also found in parts of the southern project area. Lewisville silty clays reach depths of more than 203 cm (80 in.), and are found on stream terraces (NRCS 2019). The soils in the portion of the project area around the Mud Creek tributary, as well as part of the southern project area, are Houston Black clays (HsB). These soils are located on 1 to 3 percent slopes and moderately well-drained. They are formed on ridges and reach depths of more than 203 cm (80 in.). Soils in the vicinity of the APE (see Figure 2-2), but not within it, include Eckrant cobbly clay (TaB), Austin silty clay (AuB), Brackett gravelly clay loam (BrD), and Houston Black gravelly clay (HuC).

The northern half of the project area is characterized as a low stony hill ecological site, which are open grasslands with scattered Texas live oak. An ecological site is defined by the NRCS as a framework for classifying soils and vegetation (NRCS 2019). Grass species include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), sideoats grama (*Bouteloua hirsuta*), and Eastern gramagrass (*Tripsacum dactyloides*). The land is not suitable for farming but has historically been used for grazing. The southern portion of the project area is characterized as Blackland Prairie. This was historically a true tallgrass prairie with lesser amounts of midgrasses. Grass species include big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), eastern gramagrass (*Tripsacum dactyloides*), and little bluestem (*Schizachyrium scoparium*), with midgrasses such as sideoats grama (*Bouteloua hirsuta*) and Virginia wildrye (*Elymus virginicus*). A variety of forbs, as well as mottes of live oak and hackberry, are native to the area. These sites are suitable for farming, and extensive row crop agriculture in the first half of the nineteenth century led to over 80 percent loss of native vegetation (NRCS 2019).

Culture History

Shovel testing on the current project recovered both prehistoric and historic materials. However, for the long



Figure 2-1. The APE on a topographic map; note the waterways in blue.

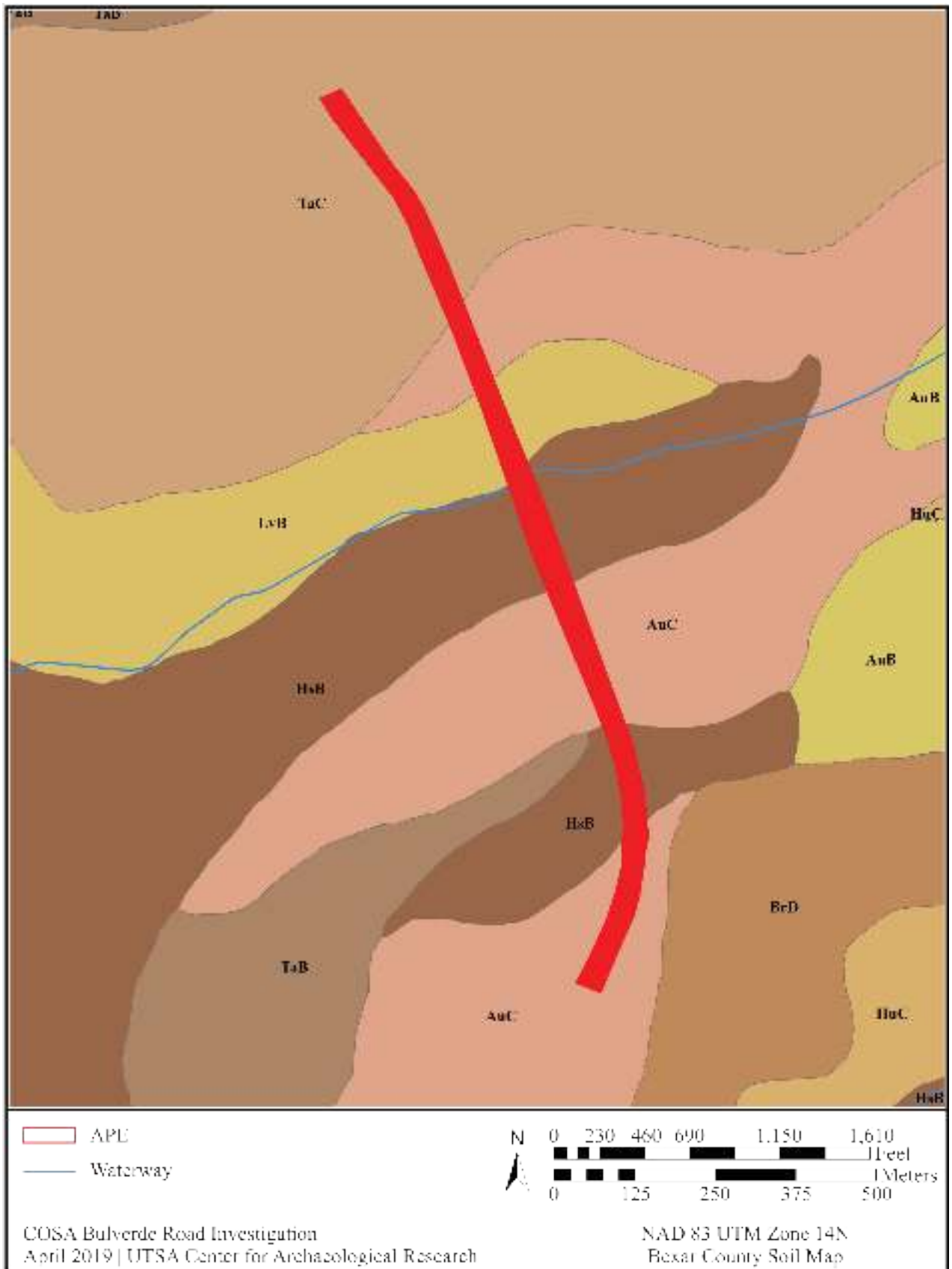


Figure 2-2. The APE on a Bexar County soil map.

prehistoric sequence, which minimally runs from 13,000 to 350 years ago (Bousman et al. 2004, Collins 2004), the CAR did not recover any temporally diagnostic artifact types that would allow a focus on a specific time period. While the Historic period (AD 1528 to 1950) is considerably shorter, the CAR was unable to more precisely place the historic material recovered from in time. Consequently, only a general review is provided for both the prehistoric and historic time frames.

Prehistory

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.

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). There are no Paleoindian sites in the immediate project area.

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 being common (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). As discussed in the following section, several Middle and Late Archaic sites are located near the current project, including 41BX356 (Fox 1977; THC 2019a) and 41BX2131 (Galindo et al. 2018; THC 2019a).

The Late Prehistoric period begins at 1200 BP and terminates around 350 BP (see Carpenter 2017; Kenmostsu 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 sites (Mauldin et al. 2012), though they may have more intensively exploited toward the end of this period (Lohse et al. 2014). While no Late Prehistoric sites are in the immediate area of the project, Late Prehistoric sites are common in the Upper Salado watershed (Katz 1987; Potter et al. 1995), an area that includes Mud Creek.

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. 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 (Kenmostsu and Arnn 2012).

Colonial Period (AD 1700-1821)

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 2018) 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 2018).

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 irregular limestone architectural features, Spanish Colonial ceramics, Native American ceramics, and faunal bone (Figuroa and Mauldin 2005; Hanson 2016; Kemp et al. 2019; 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. 2019), and the various missions (Fisher 1998), including Mission de Valero (41BX6; Anderson et al. 2017; Cox 1997; Fox 1976; Zapata 2017).

Mexican Period (AD 1821-1835)

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 time 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 time 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)

During the Texas Revolution (1835-1836), San Antonio was the site of numerous battles, including the Battle of the Alamo, at the site of the Mission Valero. The population of the city was decimated by the warfare. The number of people living in San Antonio grew rapidly after Texas became part of the United States in 1845, and in 1860, it was the largest city in Texas (Jasinski 2018).

The state joined the Confederacy in 1861, and San Antonio served as a Confederate depot during the Civil War (Jasinski 2018). Confederate forces in Texas surrendered on June 2, 1865 (Wooster 2018). Union forces arrived and declared freedom for all slaves on June 19, 1865 (Acosta 2018).

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 2018). 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 2018) and it 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).

Previous Archaeology

There are five archaeological sites recorded within 1 km (0.62 mi.) of the project area (Figure 2-3). Three of these sites are prehistoric in age and two are historic. Table 2-1 summarizes these sites.

Site 41BX356 was recorded during a 1977 (Fox 1977) survey conducted by the CAR located west of the current project area. The survey assessed 11 drainages and three sewage treatment plant areas. The project consisted primarily of pedestrian survey. Site 41BX356 was recorded as part of the assessment of the Salado Creek planning area portion of the project. The site is located on a tributary of Mud Creek (Figure 2-3). Lithic tools, debitage, and possible burned rock middens were observed during the course of the survey, and Middle and Late Archaic points were reported to have been collected by the landowner. At the time the site was recorded, further testing was recommended. However, a subdivision is now present covering the original location of the site (Fox 1977; THC 2019a).

Site 41BX624 was recorded in 1984 during the course of a survey conducted by the CAR (Cox 1984) prior to the development of the Knollcreek subdivision (Figure 2-3). The survey was located east of the project area. One hundred and fifty-five acres were surveyed, and no subsurface testing was conducted. Site 41BX624 consisted of a limestone structure set with sandy lime mortar. Dark olive glass with a pontil scar was recorded in the vicinity (Cox 1984; THC 2019a). During the course of this project, archival work determined that the area surrounding the APE was first surveyed for a land grant in 1851. While small historic homesteads dating to the late nineteenth century have been recorded, the area does not appear to have been extensively developed until the 1980s (Cox 1984).

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Figure 2-3. Archaeological sites recorded within 1 km (0.62 mi.) of the APE.

Table 2-1. Archaeological Sites Recorded within 1 km (0.62 mi.) of the APE

Site	Name	Time Period	Site Type	References
41BX356	Site 6E-1	Middle and Late Archaic	occupation, including lithic debitage, tools, projectile points and possible burned rock middens	Fox 1977; THC 2019a
41BX624	Theis site	Historic	limestone structure with sandy lime mortar	Cox 1984; THC 2019a
41BX914	N/A	Historic	log house	THC 2019a
41BX2204	N/A	Prehistoric	lithic scatter	Bonorden et al. 2017; THC 2019a
41BX2131	N/A	Transitional Archaic to Late Prehistoric	lithic debitage, tools, projectile points, burned rock, ochre, faunal bone, and shell	Galindo et al. 2018; THC 2019a

Site 41BX914 was recorded by C.K. and Virginia Chandler in 1990. The site is located northeast of the project area (Figure 2-3). The site consists of a log cabin with a galvanized, corrugated roof and dirt floor, and scattered cut limestone blocks were noted (THC 2019a).

Site 41BX2204 was recorded by SWCA Environmental Consultants in 2017 (Bonorden et al. 2017) during the course of a sewer main monitoring project. The project took place directly north of the current project area (Figure 2-3). A core and lithic debitage were observed on the surface, and mussel shell and a historic Coca-Cola bottle were observed below the surface during monitoring (Bonorden et al. 2017; THC 2019a).

Site 41BX2131 was recorded by archaeologists employed by Pape-Dawson Engineers (Galindo et al. 2018) during the course of an intensive survey of the Casa Estates development, northwest of the project area. The site is located at the confluence of Elm, Elm Waterhole, and Mud Creeks (Figure 2-3) and extends to a depth of 85 cm below surface (cmbs; 33.5 in). More than 2,000 pieces of debitage, lithic tools, fire-cracked rock, ochre, and shell were documented at the site, as well as two Frio points. The site was radiocarbon dated to the Transitional Archaic/early Late Prehistoric periods, and it was recommended for inclusion on the NRHP and designation as a SAL (Galindo et al. 2018; THC 2019a).

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Chapter 3: Methodology

This chapter provides a discussion of the field and laboratory methods used during the completion of this project. This includes discussion of excavation techniques, collection policy, site definitions, field documentation, and final curation. This methodology was defined in the SOW prior to beginning of this project and approved by the THC and COSA-OHP.

Field Methods

In order to identify and document potential cultural resources, CAR staff completed a pedestrian survey with shovel testing along a 1.4 km (0.9 mi.) linear area on either side of the APE's ROW. After consultation with COSA-OHP and the THC, it was decided that the shovel testing would be concentrated in the northern portion of the APE due to extensive development in the southern portion (Google Earth 2019; see Figures 1-2 and 1-3). CAR staff excavated a total of 36 shovel tests within 4.5 hectares (11.0 acres). This total included 12 initial shovel tests, 15 shovel tests excavated in order to delineate shovel tests that were positive for cultural material, and nine additional shovel tests excavated in order to explore the deposits surrounding the Mud Creek tributary. The coverage exceeded the recommended minimal THC coverage rate of one shovel test every two acres for a project area of 11-100 acres (THC 2019b).

The shovel tests around the Mud Creek tributary were excavated because the CAR's SOW originally called for exploratory backhoe trenching in the vicinity of the Mud Creek tributary. However, CAR staff were unable to locate areas for potential backhoe trenches as the project ROW was extremely narrow and numerous utilities were present on both sides of Bulverde Road. After consultation with COSA-OHP and the THC, it was decided that a number of shovel tests, which could be more easily placed within the narrow space and between utilities, would be excavated instead to explore the deposits surrounding the creek. Therefore, the CAR excavated additional shovel tests in an attempt to explore these deposits.

Shovel tests were approximately 30 cm (11.8 in.) in diameter and excavated to depths of 60 cm (23.6 in.) below the ground surface, terminating before that depth if excavators encountered bedrock, disturbances, sterile sub-soil, or the water table. Shovel tests were excavated in 10 cm (3.9 in.) arbitrary levels, and all soil matrixes were screened through one-quarter inch hardware cloth. At the conclusion of

shovel tests, the archaeologist recorded natural stratigraphic levels when possible and refilled the hole with the screened soil. CAR staff collected all artifacts recovered from shovel tests. No surface artifacts were observed during the course of this survey.

The Project Archaeologist maintained a daily log, and all archaeologists completed standard shovel test forms. Activities and discoveries were documented and supported by digital data, including photographs, where appropriate. CAR staff recorded both positive and negative shovel tests and attributes specific to those tests with a GPS unit.

For the purposes of this survey, an archaeological site was defined as containing: (1) five or more surface artifacts within a 15 m (16.4 ft.) radius (ca. 706 m²; 2,316.2 ft.²); (2) a single cultural feature, such as a hearth, observed on the surface or exposed in shovel testing; (3) a positive shovel test containing at least three artifacts within a 10 cm (3.9 in.) level; (4) a positive shovel test containing at least five artifacts; or (5) two positive shovel tests within 30 m (98.4 ft.) of one another. An archaeological site must contain cultural materials or features that are at least 50 years old within a given area.

Per THC guidelines, a minimum of six shovel tests were excavated to define the site boundaries within the limits of the project area. In some cases, a defining shovel test could not be excavated due to limits of the ROW or obstructions. When this occurred, the limiting factors were recorded. Site boundaries were plotted on aerial photographs and a topographic quadrangle map, and location data was collected using a Trimble GPS unit. A datum was established near the center of the site. This datum location was recorded with the GPS unit, along with any other cultural features, surface artifact densities, and landmarks, such as fences. The crew produced a sketch map of these elements to serve as a backup for the GPS site data. Digital photographs were taken of each site, and the CAR prepared and submitted Texas Archeological Sites Atlas forms for newly discovered archaeological sites.

Laboratory Methods

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. Artifacts collected were brought to the CAR

laboratory, washed, air-dried, and stored in 4 mil zip-lock, archival-quality bags. Materials needing extra support were double-bagged, and acid-free labels were placed in all artifact bags. Each laser printer generated label contains provenience information and a corresponding lot number. Artifacts were separated by class and stored in acid-free boxes that were labeled with standard tags.

All field notes, forms, photographs, and drawings were placed in labeled archival folders. Digital photographs were printed on acid-free paper, labeled, and placed in archival-quality page protectors to prevent accidental smearing due to moisture. All recovered artifacts and project-related materials, including the final report, are permanently stored at the CAR's curation facility.

Chapter 4: Results

This chapter summarizes the results of the pedestrian survey, with shovel testing, along a 1.4 km (0.9 mi.) section of Bulverde Road. Shovel testing was concentrated in the northern 850 m (2,788 ft.) of the project area, as the southern portion of the project area was extensively developed. The initial section of this chapter provides a review of the shovel testing effort, including a summary of shovel test depths, soils, and indicators of disturbances along the ROW. The review is followed by a discussion of isolated positive shovel tests (STs) and all shovel tests related to the identification of two new archaeological sites.

Shovel Testing

In all, 36 shovel tests were excavated on the project. Shovel testing was initially conducted along a 575 m (1,886 ft.) section of the ROW north of the Mud Creek tributary (Figure 4-1). There were essentially three different sets of shovel tests. During the initial set, 12 shovel tests (STs 1-12) were excavated with six on each side of the road. These were spaced roughly 80-100 m (262-328 ft.) apart. They are shown in black in Figure 4-1. As noted previously, a second set of shovel tests (STs 13-21) were excavated as a substitute for the exploratory backhoe trench originally proposed for the area around the Mud Creek tributary. This extended the portion of the ROW tested approximately 300 m (984 ft.) further south. Shovel tests associated with this second set are shown in blue. A final round of shovel tests (STs 22-36) was conducted to explore positive shovel tests discovered in the previous two sets. Positive shovel tests are defined as shovel tests containing cultural material at least 50 years old. This last set included shovel tests designed to determine site boundaries for the two new sites defined on the project. These additional shovel tests are shown in white in Figure 4-1.

Soils in shovel tests consisted of very dark grayish brown (10YR 3/2) clay with limestone gravels and cobbles. Near the Mud Creek tributary, a light brownish gray (10YR 6/2) to dark grayish brown (10YR 4/2), silty clay was present with limestone gravels and cobbles. Soils adjacent to the tributary consisted of very dark gray (10YR 3/1) to dark gray (10YR 4/1) clays. These soils contained less limestone gravels and cobbles than the northern section of the project area. These observations are consistent with the soil descriptions presented in the second chapter, suggesting a dominance of rocky, shallow sediments (see Figure 2-2).

The individual shovel test numbers, their associated set, information on terminal depths, reasons for termination, and the presence/absence of prehistoric or historic material are

listed in Table 4-1. Only 10 of the tests were completed to 60 cm (23.6 in.), with the average depth of all 36 tests being 36.4 cm (14.3 in.; see Table 4-1). Most of the terminations (n=23) were caused by encountering the underlying limestone. In those tests, limestone was encountered as early as 8 cm (3.1 in.). The average depth of 27.8 cm (10.9 in.) for the underlying limestone demonstrates that sediments are shallow for most of the ROW. Three shovel tests were terminated because of dense gravels, contact with PVC pipe, and encountering secondary, sandy fill. Figure 4-2 presents examples of the underlying limestone, the secondary, sandy fill consistent with a utility trench fill, as well as a case where the shovel test was completed to 60 cm (23.6 in.), but the fill was clearly mixed. Modern trash was found in multiple shovel tests, often in the same level as prehistoric and historic artifacts. For example, ST 19, which contained debitage in Level 2 (10-20 cm; 3.9-7.9 in.), showed evidence of fill and modern trash to a depth of 60 cm (23.6 in.). In addition, electrical and waterlines ran along the west side of Bulverde Road within the ROW, while gas and sewer lines ran along the east side. The area around the Mud Creek tributary was extensively modified, and utilities including sewer and gas were installed in this area. Figure 4-3 shows several examples of these modifications.

Positive Shovel Tests

Of the 36 shovel tests excavated, eight were positive: STs 1, 2, 9, 10, 13, 19, 23, and 29. Figure 4-4 shows all shovel test locations with the eight positive tests highlighted in red. Shovel Tests 1, 9, 13, and 19 were found to be isolated occurrences. Shovel Tests 2, 10, 23, and 29 were associated with two new sites, 41BX2311 and 41BX2312, and details for these tests are provided in the individual site descriptions.

Isolated Positive Shovel Tests

A summary of STs 1, 9, 13, and 19 is provided in Table 4-2. Artifacts recovered from these shovel tests include an edge-modified flake, a lithic core, debitage, and clear and aqua container glass. All of these isolated positive shovel tests show evidence of mixed context, with prehistoric, historic, and modern materials being recovered from the same levels. This suggests that larger, possibly intact sites may have existed within the project area prior to development that have since been disturbed.

Sites Recorded

The remaining four positive shovel tests (STs 2, 10, 23, and 29) met the site definitions provided in Chapter 3 (Figure

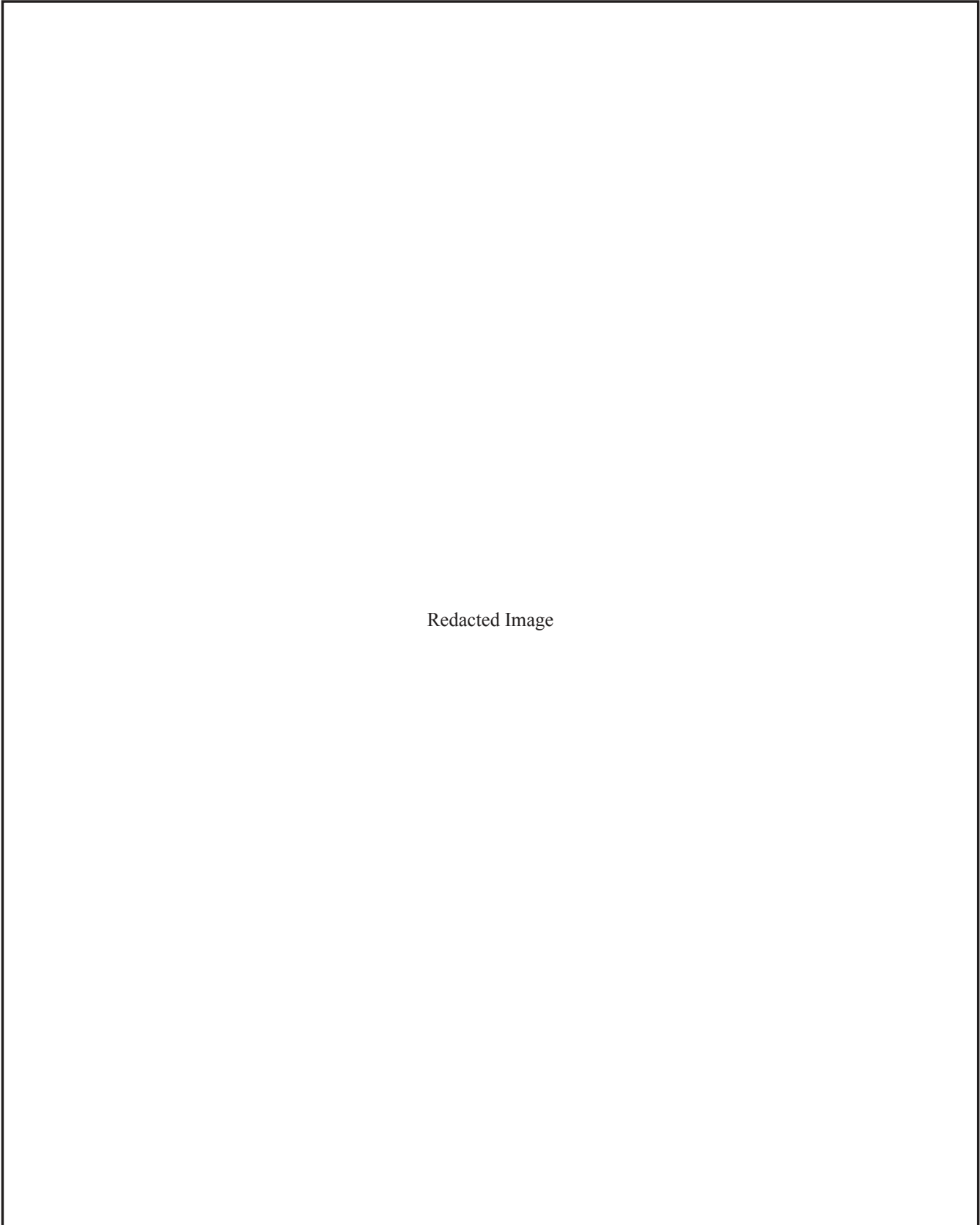


Figure 4-1. Distribution of shovel tests within the APE. Initial shovel tests are black, shovel tests excavated in order to investigate the creek are in blue, and shovel tests excavated in order to delineate positive shovel tests are in white.

Table 4-1. Summary of Shovel Tests Excavated

ST	Cultural Material Present	Termination Depth (cmbs)	Reason for Termination	Shovel Test Set
1	Yes	20	Limestone	Initial Testing
2	Yes	60	Complete	Initial Testing
3	No	20	Limestone	Initial Testing
4	No	31	Limestone	Initial Testing
5	No	8	Limestone	Initial Testing
6	No	28	Limestone	Initial Testing
7	No	21	Gravel	Initial Testing
8	No	40	Limestone	Initial Testing
9	Yes	60	complete	Initial Testing
10	Yes	18	Limestone	Initial Testing
11	No	23	Limestone	Initial Testing
12	No	23	Limestone	Initial Testing
13	Yes	40	Limestone	Tributary Testing
14	No	60	Complete	Tributary Testing
15	No	20	Limestone	Tributary Testing
16	No	60	Complete	Tributary Testing
17	No	33	PVC	Tributary Testing
18	No	60	Complete	Tributary Testing
19	Yes	60	Complete	Tributary Testing
20	No	60	Complete	Tributary Testing
21	No	48	Limestone	Tributary Testing
22	No	23	Limestone	Positive Test Delineation
23	Yes	60	Complete	Positive Test Delineation
24	No	19	Limestone	Positive Test Delineation
25	No	38	Limestone	Positive Test Delineation
26	No	39	Limestone	Positive Test Delineation
27	No	28	Limestone	Positive Test Delineation
28	No	33	Limestone	Positive Test Delineation
29	Yes	39	Limestone	Positive Test Delineation
30	No	18	Fill	Positive Test Delineation
31	No	60	Complete	Positive Test Delineation
32	No	60	Complete	Positive Test Delineation
33	No	9	Limestone	Positive Test Delineation
34	No	30	Limestone	Positive Test Delineation
35	No	22	Limestone	Positive Test Delineation
36	No	40	Limestone	Positive Test Delineation



Figure 4-2. Left: ST 3 termination; note large amounts of limestone. Center: ST 11; note large amounts of sandy fill, likely related to utility construction. Right: ST 18 termination; note mottled fill to terminal depth.



Figure 4-3. Upper left: project area; note narrow shoulder, power line pole, and fire hydrant (facing north). Upper right: example of creek modification within project area (facing south). Bottom left: gas lines near the creek (facing north). Bottom right: sewer grate and electrical poles near the creek (facing south).



Figure 4-4. Distribution of shovel tests within the APE: positive shovel tests in red and negative shovel tests in green.

Table 4-2. Isolated Shovel Test Material

Level	Depth (cmbs)	ST 1	ST 9	ST 13	ST 19
1	0-10	aqua glass (n=1), burned chert (3.1 g)	modern clear glass (n=6)	debitage (n=1),	Negative
2	10-20	Negative	Negative	debitage (n=1)	edge-modified flake (n=1)
3	20-30	not excavated	lithic core (n=1), clear glass (n=9)	debitage (n=1), amber glass (n=1), plastic (not collected)	modern glass (n=2, not collected)
4	30-40	not excavated	Negative	Negative	Negative
5	40-50	not excavated	Negative	not excavated	Negative
6	50-60	not excavated	not excavated	not excavated	Negative

4-5). Two previously unrecorded sites were documented based on these tests. Shovel Tests 2 and 23 were associated with site 41BX2311, and STs 10 and 29 were associated with site 41BX2312.

41BX2311

Site 41BX2311 is a historic site located in the northern portion of the APE west of Bulverde Road (Figure 4-6). The site is bounded by Bulverde Road on the east and may extend outside the ROW onto private property to the west. Of the five shovel tests (STs 2, 23, 24, 25, and 26) excavated within the area, two were positive for non-modern cultural material (Table 4-3). Artifacts recovered include fragments of large mammal bone (23.3 g) and aqua glass (n=2). Non-modern cultural material was documented from 10-60 cmbs (3.9-23.6 in.), and potentially, site deposits may extend below 60 cmbs (23.6 in.). Soils within the site boundaries are Eckrant cobbly clays (TaC). Modern glass and plastic were recorded within the site to a depth of 40 cmbs (15.7 in.). No cultural features or temporally diagnostic artifacts were encountered. The site is most likely disturbed by the water and gas lines that run through this part of the ROW. Due to the limited amount of non-modern cultural material recovered and evidence of site disturbance, the site appears to have limited research

potential. The CAR recommends that this site is not eligible for inclusion to the NRHP or registration as a SAL within the ROW.

41BX2312

Site 41BX2312 is a prehistoric site located 130 m (426.5 ft.) north of the Coffey Drive intersection on the east side of Bulverde Road (Figures 4-7 and 4-8). The site is bounded by Bulverde Road to the west and may extend outside the ROW onto private property to the east. Of the four shovel tests (STs 10, 28, 29, and 30) excavated within the area, STs 10 and 29 were positive for cultural material (Table 4-4). Artifacts recovered from the site include burned rock (27.1 g) and debitage (n=1). Cultural material was documented from 10-30 cmbs (3.9-11.8 in.). Soils within site were shallow and rocky Eckrant cobbly clays (TaC), with the deepest shovel test terminating at 39 cmbs (15.4 in.). Modern glass was recorded in the shovel tests to a depth of 20 cmbs (7.9 in.). The site is likely disturbed by the gas and sewer lines within the ROW. Due to the limited amount of cultural material recovered and evidence of disturbance, the site appears to have limited research potential. No cultural features or temporally diagnostic artifacts were encountered. The CAR recommends that the site is not eligible for inclusion to the NRHP or registration as a SAL within the ROW.

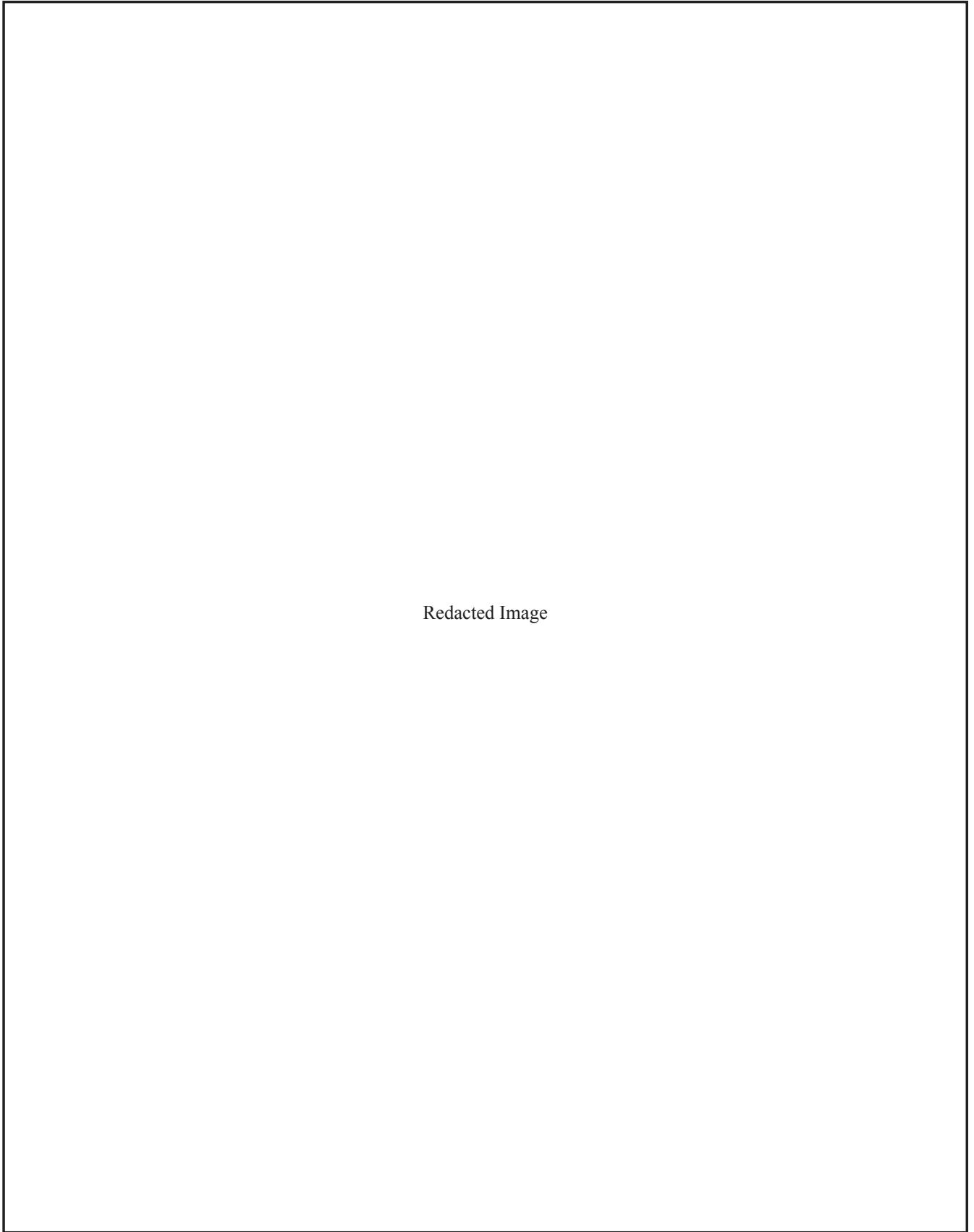


Figure 4-5. Site 41BX2311 on an aerial map: positive shovel tests in red and negative shovel tests in green.



Figure 4-6. Vicinity of 41BX2311 (facing north).

Table 4-3. Shovel Tests Associated with the Delineation of 41BX2311

Level	Depth (cmbs)	ST 2	ST 23	ST 24	ST 25	ST 26
1	0-10	modern trash and glass (not collected)	modern trash, including plastic (not collected)	modern glass (n=10), fence wire (not collected)	plastic (not collected)	Negative
2	10-20	large mammal bone (9.5 g), modern glass (not collected)	clear modern glass (n=1-5, not collected)	modern glass (n=3), asphalt (not collected)	modern glass (n=5, not collected)	Negative
3	20-30	large mammal bone (13.8 g), modern glass (not collected)	clear modern glass (n=1-5, not collected)	not excavated	Negative	clear modern glass (n=5, not collected)
4	30-40	modern glass (not collected)	aqua glass (n=1)	not excavated	Negative	7-up green modern glass (n=5, not collected), plastic (not collected)
5	40-50	Negative	Negative	not excavated	not excavated	not excavated
6	50-60	Negative	aqua glass (n=2)	not excavated	not excavated	not excavated

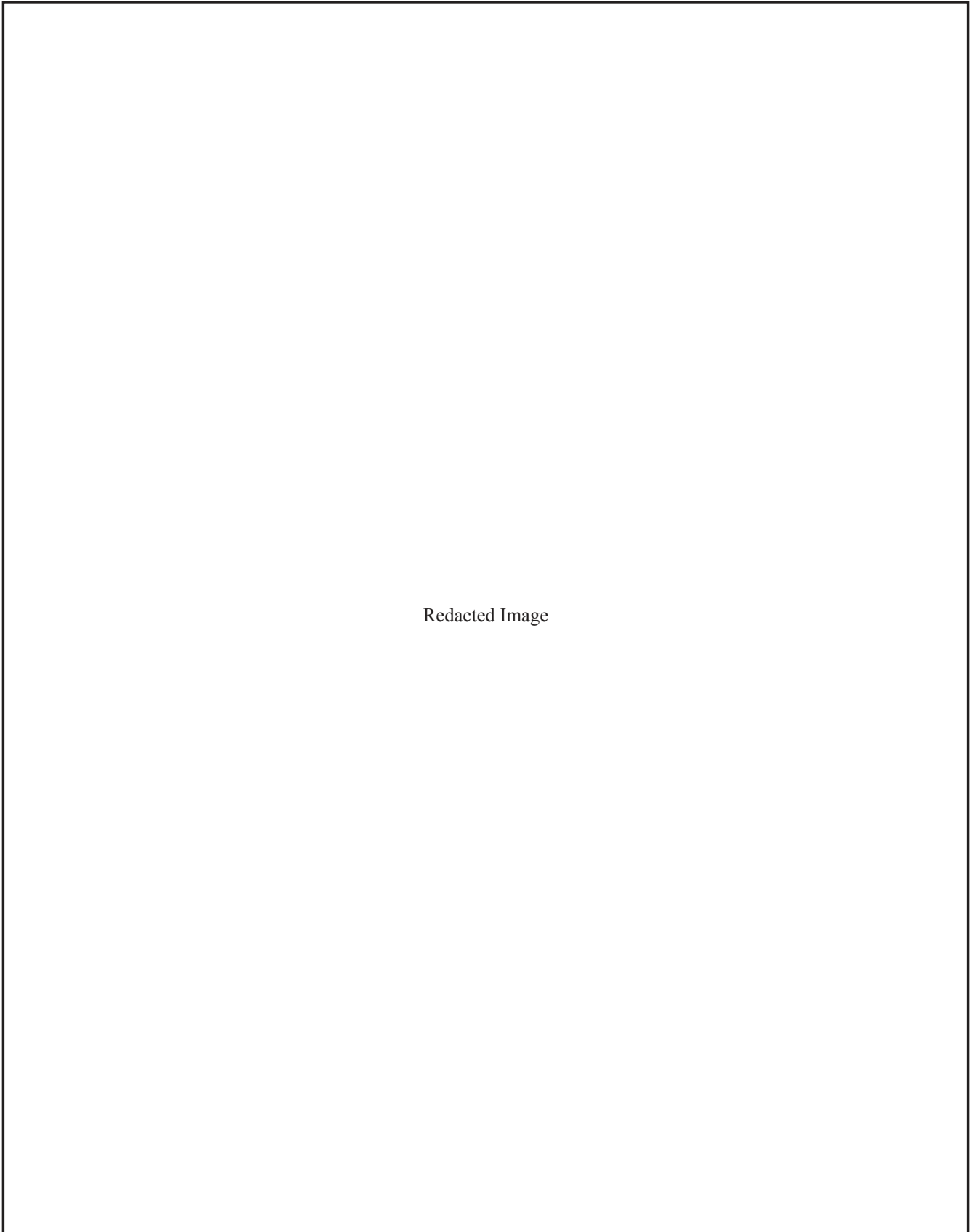


Figure 4-7. Site 41BX2312 on an aerial map: positive shovel tests in red and negative shovel tests in green.



Figure 4-8. Vicinity of 41BX2312 (facing north).

Table 4-4. Shovel Tests Associated with the Delineation of 41BX2312

Level	Depth (cmbs)	ST 10	ST 28	ST 29	ST 30
1	0-10	Negative	plastic, modern glass (n=5), landscape cloth, modern faunal (not collected)	Negative	modern glass (n=4, not collected)
2	10-20	burned chert	modern glass (n=5, not collected)	modern glass (n=5, not collected)	modern glass (n=1, not collected)
3	20-30	not excavated	modern glass (n=5, not collected)	debitage (n=1)	not excavated
4	30-40	not excavated	Negative	Negative	not excavated
5	40-50	not excavated	not excavated	not excavated	not excavated
6	50-60	not excavated	not excavated	not excavated	not excavated

Chapter 5: Summary and Recommendations

In April of 2019, the CAR conducted a linear pedestrian survey for the Bulverde Road Phase I Improvements Project. This project includes updating of pavement, utilities, and drainage within the project area. The survey consisted of a pedestrian survey with shovel testing on either side of a 1.4 km (0.9 mi.) section of Bulverde Road located between Green Springs Drive and Butterleigh Drive. The archaeological work was conducted in order to identify buried cultural deposits within the project area, document any previously unrecorded archaeological sites that were encountered, and to assess the impact of new construction on any archaeological deposits that were encountered.

Thirty-six shovel tests were excavated within the project area. Two previously unrecorded archaeological sites were documented. Site 41BX2311 is a historic site located in the northern portion of the APE west of Bulverde Road. The

site was defined by two positive shovel tests (STs 2 and 23) containing faunal bone and aqua glass. Site 41BX2312 is a prehistoric site located east of Bulverde Road. The site was defined by two positive shovel tests (STs 10 and 29) containing debitage and burned chert. No cultural features or temporally diagnostic artifacts were encountered at either site. Cultural material recovered from the four isolated positive tests (STs 1, 9, 13, and 19) includes a lithic core, edge-modified flake, debitage, and clear and aqua glass.

The low densities of cultural material and substantial impacts by the utilities that run along either side of Bulverde Road found at both of the recorded sites suggest that they have limited research potential. Therefore, the CAR recommends that neither site eligible for inclusion to the NRHP or designation as a SAL within the ROW. The CAR recommends that construction should proceed as planned.

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