Evaluation of Archaeological Sites at Camp Bullis and Lackland AFB, Joint Base San Antonio, Bexar County, San Antonio, Texas

by

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Archaeological Resources Protection Act Permit JBSA2019-AF001

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14. ABSTRACT

From November 22, 2019, to August 23, 2020, the Center for Archaeological Research conducted Phase II testing and evaluation at 16 sites located on Camp Bullis and Lackland AFB, San Antonio, Texas, in support of Argonne National Laboratory for Joint Base San Antonio. The work was conducted in accordance with and in partial fulfillment of National Historic Preservation Act of 1966, as amended (PL-96-515); Archeological and Historical Preservation Act of 1974, as amended (PL-93-291); National Environmental Policy Act of 1969 (PL-90-190); Executive Order #11593, "Protection and Enhancement of the Cultural Environment;" the American Indian Religious Freedom Act of 1978; the Native American Graves Protection and Repatriation Act of 1990; guidelines and standard operating procedures on the curation of DOD Archeological Collections (Griset and Kodack 1999); and AFM 32-7003, Environmental Conservation. The work was carried out under Archaeological Resources Protection Act permit JBSA2019-AF001. Dr. Raymond Mauldin, CAR Director, served as Principal Investigator, and Sarah Wigley served as Project Archaeologist.

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Abstract:

From November 22, 2019, to August 23, 2020, the Center for Archaeological Research (CAR) at the University of Texas at San Antonio (UTSA) conducted Phase II testing and evaluation at 16 sites located on Camp Bullis and Lackland Air Force Base (AFB), San Antonio, Texas, in support of Argonne National Laboratory (Argonne) for Joint Base San Antonio (JBSA). Seven sites (41BX432, 41BX1013, 41BX1445, 41BX1211, 41BX1277, 41BX1322, and 41BX1344) were located on Camp Bullis, and nine sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130) were located on Lackland AFB. The work was conducted in accordance with and in partial fulfillment of the National Historic Preservation Act of 1966, as amended (PL-96-515); the Archeological and Historical Preservation Act of 1974, as amended (PL-93-291); the National Environmental Policy Act of 1969 (PL-90-190); Executive Order #11593, "Protection and Enhancement of the Cultural Environment;" the American Indian Religious Freedom Act of 1978; the Native American Graves Protection and Repatriation Act of 1990; guidelines and standard operating procedures on the curation of Department of Defense Archeological Collections (Griset and Kodack 1999); and Air Force Manual (AFMAN) 32-7003, Environmental Conservation. The work was carried out under Archaeological Resources Protection Act permit JBSA2019-AF001. Dr. Raymond Mauldin, CAR Director, served as the Principal Investigator (PI), and Sarah Wigley served as the Project Archaeologist.

Camp Bullis and Lackland AFB are United States military installations that are part of JBSA. Camp Bullis, a US Army Training Camp, provides Base Operations and Training Support to JBSA. Lackland AFB is a USAF base providing basic training. JBSA is a United States military facility located in San Antonio, Texas, which includes Camp Bullis, Fort Sam Houston, Lackland AFB, and Randolph AFB. Camp Bullis consists of 27,990 acres (11,327 ha) in northwest Bexar County. Lackland AFB encompasses 7,000 acres (2,833 ha) in southwest Bexar County. Sites selected for testing at Camp Bullis spanned the installation. Sites chosen for testing at Lackland AFB were primarily concentrated along Medio Creek in the Chapman Training Annex, with the exception of one site located on Gateway Hills Golf Course on the main portion of Lackland AFB.

Testing was conducted to provide a recommendation of eligibility for each site for listing in the National Register of Historic Places (NRHP). The nine sites located on Lackland AFB additionally required geo-archaeological evaluation, with testing to a minimum of 2 meters below surface (mbs; 6.6 ft) based on the recommendation of the Texas Historical Commission (THC). 41BX1211, a historic system of stone fences spanning Camp Bullis, had not previously been fully recorded. The site was recorded and an evaluation of its eligibility for listing in the NRHP provided. The sites chosen for testing on Camp Bullis ranged in type from prehistoric sites to Works Progress Administration (WPA)-era training bunkers, while the sites chosen for testing at Lackland AFB were primarily prehistoric in nature.

Of the seven sites chosen for archaeological testing and evaluation on Camp Bullis, five sites (41BX432, 41BX1013, 41BX1211, 41BX1277, and 41BX1445) are recommended eligible for listing in the NRHP. All five eligible sites are historic in nature and are associated with periods of historic significance in the Texas Hill Country. Two sites (41BX1322 and 41BX1344) are recommended not eligible. Of the nine sites chosen for geoarchaeological testing and evaluation on Lackland AFB, four (41BX1093, 41BX1122, 41BX1125, and 41BX1127) are recommended eligible for listing in the NRHP, and five (41BX1069, 41BX1092, 41BX1107, 41BX1121, and 41BX1130) are recommended not eligible. Sites 41BX1093 and 41BX1122 contain buried, intact features. Site 41BX1125 contains deeply buried, stratified deposits as well as diagnostic artifacts, and 41BX1127 also contains buried, stratified deposits. All four sites contain material suitable for radiocarbon dating, and dates were successfully returned during this project.

Following laboratory processing and analysis, selected items that had no remaining scientific value were discarded with the concurrence of the JBSA Cultural Resources Manager. This discard conformed to THC guidelines. Remaining artifacts collected and records generated during this project are curated at the CAR in accordance with JBSA requirements and THC and federal guidelines.

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The completion of this project could not have occurred without the work of a number of individuals and organizations; thank you to all. Jason Perez, David Burns, Leonard Kemp, Dr. Raymond Mauldin, Peggy Wall and Sarah Wigley from the CAR completed the fieldwork. Artifacts were processed in the lab by Mikaela Razo, Jason Perez, and Peggy Wall under the supervision of the CAR's Laboratory Director Cindy Munoz. Jason Perez processed the Magnetic Soil Susceptibility samples. Jason Perez, Dr. Raymond Mauldin, Leonard Kemp and Jose Zapata assisted with artifact identification. Dr. Jessica Nowlin of the CAR edited this report. Report figures were created by Peggy Wall, Dr. Jessica Nowlin, and Leonard Kemp. Leonard Kemp created the 3D models. Thank you to Dr. Raymond Mauldin, Leonard Kemp and Jason Perez for their input on site discussions. Thank you to Dr. Raymond Mauldin, CAR Director and PI, for his direction and guidance during the field, analysis and writing process, as well as for preparing and submitting the radiocarbon samples. Dr. Paul Shawn Marceaux, former CAR Director, served as the Principal Investigator during the planning process until his departure from the CAR in November 2019.

Thank you to David Yelacic and Victoria Pagano of Terracon Consultants, Inc. They served as the project geoarchaeologists, and both assisted in the field.

Jerdon Enterprise, L.P., provided the operators and backhoe for this project. Thanks to Juan Lopez and Rudy Serna for serving as operators and for completing the machine excavations, and to Brent Watson for his assistance in coordinating this effort.

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Chapter 1: Introduction

From November 22, 2019 to August 23, 2020, the Center for Archaeological Research (CAR) conducted archaeological testing and evaluation of 16 sites at Lackland Air Force Base (AFB) and Camp Bullis in Bexar County, Texas. The CAR was contracted by Argonne National Laboratory to perform this work in coordination with the Joint Base San Antonio Cultural Resources Manager (JBSA-CRM). These sites were chosen for evaluation by the JBSA-CRM to provide a recommendation for each site's eligibility for listing in the National Register of Historic Places (NRHP). Additionally, site 41BX1211 was chosen to complete full recordation of the site, as well as to provide an evaluation. The investigations reported here were conducted in accordance with and in partial fulfillment of the National Historic Preservation Act of 1966, as amended (PL-96-515); the Archeological and Historical Preservation Act of 1974, as amended (PL-93-291); the National Environmental Policy Act of 1969 (PL-90-190); Executive Order #11593, "Protection and Enhancement of the Cultural Environment;" the American Indian Religious Freedom Act of 1978; Archaeological Resource Protection Act (ARPA); the Native American Graves Protection and Repatriation Act of 1990; Air Combat Command Policy on the Curation of Archeological Collections (15 June 1998); and Air Force Manual (AFMAN) 32-7003, Environmental Conservation. The work was carried out under Register of Professional Archaeologists permit JBSA2019-AF001. Dr. Raymond Mauldin, CAR Director, served as the Principal Investigator (PI), and Sarah Wigley served as the Project Archaeologist. David Yelacic of Terracon Consultants, Inc. (TCI), served as the project geoarchaeologist during most of the fieldwork, and Victoria Pagano of TCI completed the geoarchaeology at two sites (41BX1125 and 41BX1127) and the overall evaluation after Yelacic left the project.

Background and Work Summary

Seven sites were evaluated at Camp Bullis. The locations of the sites chosen spanned the base. Camp Bullis is a US Army training base that provides base operations support and training support to JBSA Mission Partners (JBSA 2020b). The base consists of 27,990 acres (11,327 ha) northwest of San Antonio. The sites selected for testing at Camp Bullis were identified by the JBSA-CRM as requiring additional testing and evaluation in order to produce an eligibility recommendation for listing in the NRHP (Figure 1-1). These sites were 41BX423, 41BX432, 41BX1013, 41BX1277, 41BX1322, with 41BX1344 and 41BX1445 as alternates. After the JBSA-CRM consulted with Range Safety at Camp Bullis, it was determined that CAR staff would be unable to gain access to 41BX423 due that site's location within the Impact Zone at Camp Bullis. Additionally, two sites at Lackland AFB–41BX1102 and 41BX1103–were found to have already been identified as eligible for listing in the NRHP. Therefore, the JBSA-CRM requested that the two alternate sites, 41BX1344 and 41BX1445, be substituted. In total, the CAR evaluated the eligibility for listing in the NRHP of seven sites located on Camp Bullis: 41BX432, 41BX1013, 41BX1211, 41BX1277, 41BX1322, 41BX1344, and 41BX1445. The CAR reviewed reports of previous investigations and developed site-specific methodologies intended to address gaps in the site data previously collected.

The CAR also completed recording of 41BX1211, a system of stone fences spanning Camp Bullis. These fences had been noted, described and roughly mapped during previous investigations, but complete global positioning system (GPS) data and information on their current condition did not exist. Additionally, apart from a small section associated with a homestead located on Cibolo Creek, the site had not been formally recorded on the Texas Historical Commission's (THC's) Texas Archaeological Sites Atlas.

Nine sites were evaluated on Lackland AFB. One site (41BX1107) was located on the main Lackland AFB, and eight sites were located on the Chapman Training Annex, an addition to Lackland AFB. Lackland AFB is located in western San Antonio and spans 7,000 acres (2,833 ha). It is known as the "Gateway to the Air Force" due to its role as the location of all basic training for enlisted airmen (37th Training Wing 2020).

The JBSA-CRM selected 11 sites for testing at Lackland AFB (Figure 1-2). With the exception of site 41BX1107, located on Lackland's Gateway Hills Golf Course, the sites on Lackland AFB are located in the Safety Danger Zones (SDZs) of Chapman Training Annex's shooting ranges. All of the tested Lackland sites were recommended by the THC for geoarchaeological evaluation to a depth of 2 mbs (6.6 ft.) due to the potential for deeply buried deposits based on their geological context. These sites were 41BX1069, 41BX1092, 41BX1093, 41BX1102, 41BX1103, 41BX1107, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130. Sites 41BX1102 and 41BX1103, located near the dog training area of Chapman Training Annex, were not investigated in the field, but the CAR performed a literature review of past investigations. This review established that both sites had previously been recommended eligible after Phase II testing (Houk and Nickels 1997) and the THC had

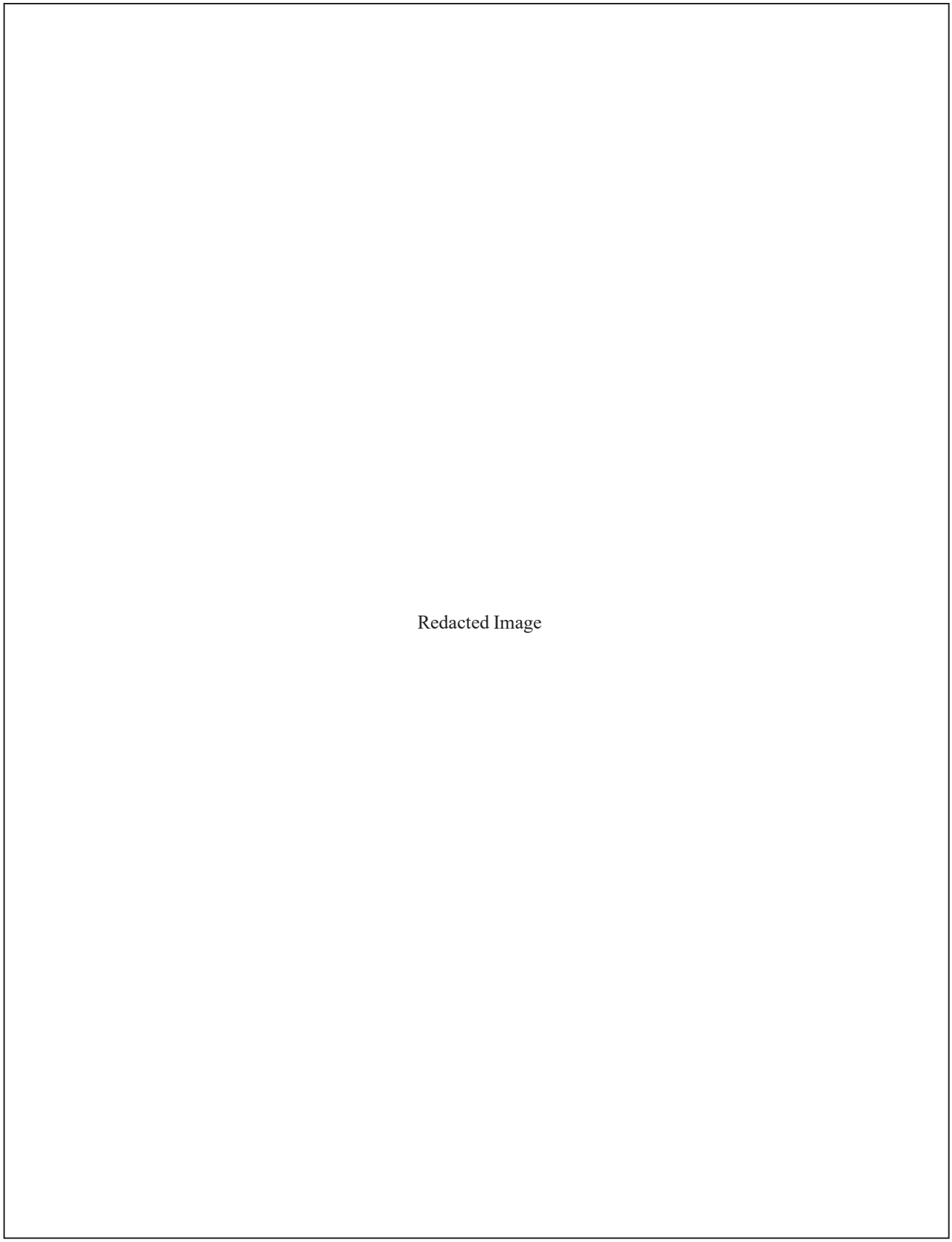

Figure 1-1. Sites selected for testing at Camp Bullis; inset depicts location within Bexar County.

Figure 1-2. Sites selected for testing at Lackland AFB. Inset depicts location within Bexar County.

issued a letter concurring with this finding (Bruseth 1998). However, the eligibility recommendation is not currently part of either site's record on the Texas Archaeological Sites Atlas.

Of the six sites suggested for Phase II testing at Camp Bullis, shovel testing was conducted at three sites (41BX1013, 41BX1344, and 41BX1445). CAR personnel excavated 18 shovel tests (STs) in these three, none of which had previous below-surface investigations. Shovel testing was attempted at 41BX1277, but there was too little soil accumulation to permit excavation. No further fieldwork was initially recommended at 41BX1322, based on previous findings and recommendations (Cestaro et al. 2000). However, the CAR made a field visit at the request of the JBSA-CRM when he was unable to relocate the site. CAR staff was also unable to relocate the site definitively, and it appears that the site has been so heavily eroded that it is no longer recognizable. Three backhoe trenches (BHTs) and two test units (TUs) were excavated at 41BX432 to explore potential buried deposits and features previously identified in the historic component of the site. At all six sites, surface features and structures that had been previously identified were recorded with a GPS unit to provide clearly established site boundaries for each site.

Site 41BX1211, also located on Camp Bullis, had not been fully recorded. CAR staff reviewed previous reports that discussed the locations of the stone fencing walls. Additionally, CAR staff reviewed available aerial map data to identify potential wall segments. CAR staff then visited sections of the wall in the field to verify each feature's presence, record its condition, and record its location with a GPS unit. 41BX1211 was then evaluated for potential eligibility for listing in the NRHP and recommended eligible.

On Lackland AFB, backhoe trenching was conducted at seven sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, and 41BX1130). Trenches were excavated to 2 mbs (6.6 ft.). In total, 15 BHTs were excavated. At those sites where potential buried material was identified in the trenches, 50 cm by 50 cm (19.7 in. by 19.7 in.) units were excavated to explore the deposits (41BX1069, 41BX1093, 41BX1107, 41BX1121, and 41BX1122). Sites 41BX1125 and 41BX1127 were found to be inaccessible by backhoe. To reach the necessary depth of 2 m (6.6 ft.), as well as expose a profile appropriate for geoarchaeological evaluation, CAR staff excavated a 2 m by 1 m (6.6 ft. by 3.3 ft.) test unit in each site to a depth of 140 cmbs (55.1 in.). A ST was then excavated in the bottom to a depth of 60 cmbs (23.6 in.), to reach the necessary 2 mbs (6.6 ft.). In total, 11 TUs were excavated. After trench and test unit excavations were completed, the excavations were evaluated by the project geoarchaeologists.

At Camp Bullis, five of the seven sites evaluated are recommended eligible for listing in the NRHP (41BX432, 41BX1013, 41BX1211, 41BX1277, and 41BX1445) while two of the seven are recommended not eligible (41BX1322 and 41BX1344). Both 41BX1322 and 41BX1344 are recommended not eligible due to lack of site integrity. Site 41BX432 is recommended as eligible for listing in the NRHP under Criterion A due to its association with early ranching in Bexar County; under Criterion B due to its association with William Parrish, Gustavus Hoerle, Henry Fink, and the Oppenheimer brothers, all significant individuals in the establishment and growth of the mohair industry in Texas; and under Criterion D due to intact site layout and the presence of buried features, which offer research data concerning early ranching activities in the Texas Hill Country. Site 41BX1013 is recommended for listing in the NRHP under Criterion B due to its association with John O. Meusebach and his early settlement of the area, which drew more German immigrant settlers. Site 41BX1211 is recommended eligible for listing in the NRHP under Criterion A as an example of an agricultural landscape feature associated with early ranching activities in Bexar County, as well as under Criterion D due to its potential research value for examining land use patterns, agricultural practices and labor practices in the Texas Hill Country. Site 41BX1277 is recommended eligible for listing in the NRHP under Criterion A due to its association with the activities of the Triangular Division prior to WWII, as well as WPA activity on the base. Site 41BX1445 is recommended eligible for listing in the NRHP under Criterion A due to its association with early ranching activities in Central Texas and the Hill Country. The CAR recommends that impacts on the structures and landscape modifications at these sites, as well as below ground impacts, should be avoided.

At Lackland AFB, five of the nine sites evaluated are recommended not eligible for listing in the NRHP (41BX1069, 41BX1092, 41BX1107, 41BX1121, and 41BX1130). At sites 41BX1092 and 41BX1130, deposits were found to be restricted to the surface. At 41BX1069, 41BX1107, and 41BX1121, buried deposits were sparse, and Magnetic Soil Susceptibility (MSS) profiles suggested a lack of integrity of the deposits. Four of the nine sites evaluated are recommended eligible for listing in the NRHP under Criterion D (41BX1093, 41BX1122, 41BX1125, and 41BX1127). At 41BX1093 and 41BX1122, intact, buried features were documented. Buried, stratified deposits were encountered at 41BX1125 and 41BX1127, and MSS results indicate that the deposits may have good integrity. All four sites yielded material suitable for radiocarbon dating. Charcoal recovered from two features recorded at 41BX1093 dated to the Late Archaic and the Late Prehistoric periods. Charcoal recovered from a feature documented at 41BX1122 yielded a historic date, although this is inconsistent with the material recovered from the feature. Three samples recovered from 41BX1125 returned

dates that fall within the Late Prehistoric period, although the distribution of the samples indicates some bioturbation in the immediate area. A sample recovered from 41BX1127 falls within the Late Archaic period. These four sites were found to have significant research potential, and the CAR recommends that below-surface impacts to these sites should be avoided.

Report Outline

This report is divided into six chapters. Following this introductory chapter, Chapter 2 provides a project background, including a brief overview of the project environment, regional culture history, and a summary of archaeological work previously conducted in the area as well as at the sites under investigation. Chapter 3 presents a discussion of field and laboratory methods used throughout the completion of this project. Chapter 4 provides a discussion of the results of the investigations conducted at Camp Bullis. The fifth chapter provides the results of the investigations at Lackland AFB. Finally, the sixth chapter presents a summary of the project, as well as the CAR's recommendations.

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Chapter 2: Project Background

This chapter provides a background discussion of the project area to provide context for the results of this investigation. This discussion includes the project area's natural environment as well as a regional summary of the area's culture history. Finally, it presents a review of the previous archaeology conducted at the individual sites, as well as a broad discussion of the previous archaeology conducted at both bases.

Environment

The city of San Antonio is positioned where the southernmost Great Plains meet 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 2020). It is also near a significant climate boundary, partitioning a humid-subtropical zone to the east from a semi-arid zone to the west (Petersen 2001). The city's location near these significant geological and climactic boundaries results in a varied resource base (de la Teja 2001). The area contains a number of reliable freshwater sources, including the San Antonio River, freshwater artesian springs created by the fault zone, and the Edwards Aquifer, located south of the Edwards Plateau (Eckhardt 2020; Peterson 2001). The growing season averages 270 days (Petersen 2001:22). The temperature reaches average lows of 4°C (39°F) in January and average highs of 36°C (97°F) in July (Long 2017). Though highly variable, the average annual rainfall is approximately 76.2 cm (30 in.), with seasonal peaks in the spring and fall (Petersen 2001:22). Northern Bexar County is located within the borders of the Balconian biotic province, which is described as an intermediate ecological area between the eastern forest and the western desert, while south and southeastern Bexar County is within the Tamaulipan biotic province, which has semi-arid climate and is dominated by thorny brush (Blair 1950). Bexar County's location near these various boundaries means that the two military bases where testing occurred, Camp Bullis and Lackland AFB, are found within significantly different environmental contexts.

Camp Bullis is located in the Edwards Plateau Ecoregion, also known as the Texas Hill Country (TPWD 2020). This region is known for its limestone hills, shallow soils, and natural springs. Elevations on the Edwards Plateau range from 30 m (100 ft.) above sea level to 914 m (3,000 ft.) above sea level; within Camp Bullis, elevations range from 320 to 457 m (1,050 to 1,500 ft.). Modern vegetation includes grasslands, juniper-oak woodlands, and live oak or mesquite savannah. Historically open grasslands and savannahs were common. Ranching was a common industry in the area. Rainfall is highest in May-June and September (TPWD 2020).

Lackland AFB and Chapman Training Annex are located south of the Edwards Plateau within the Blackland Prairie Ecoregion (TPWD 2020). This region is characterized by deep, alkaline clay soils that are dark in color. The region once supported a tallgrass prairie that included grasses such as big bluestem, little bluestem, Indiangrass, and switchgrass. However, due to the fertility of the soil much of the prairie has been plowed for agriculture. In this area May is the peak month for rainfall (TPWD 2020). Elevations at Lackland-Chapman Training Annex range from 229-244 m (750-799 ft.) above sea level.

Camp Bullis

Surrounded by residential development, Camp Bullis is located north of San Antonio, within Bexar and Comal counties. I-10 runs to the west, and Loop 1604 to the south. The upland limestone formations are generally hilly with shallow soils, and flash flooding is common. Chert deposits are present (Hudler 2000), and several creeks run through the base, including Cibolo Creek along the northern end of the installation, Panther Springs through the eastern part, Lewis Creek through the central part, and the Salado Creek through the western portion of the base. Sites that were tested on Camp Bullis were found along Cibolo Creek, Salado Creek and Meusebach Creek. Cibolo Creek rises 16 km (10 mi.) northwest of Boerne and runs 161 km (100 mi.) southeast to its mouth at the San Antonio River in Karnes County. It forms part of the northeast boundary of Bexar County (TSHA 2020a). The Salado Creek rises in northern Bexar County and runs southeast for 61 km (38 mi.) to the San Antonio River (TSHA 2010b). Meusebach Creek, significantly smaller, runs east to west across the northeastern portion of the base. It runs intermittently from a high point near Herr Hill to the Cibolo Creek near Whiskey Ranch Road, approximately 8.9 km (5.5 mi.).

A wide variety of soils are found across Camp Bullis (Figure 2-1). Soils found at the sites tested during this project include Eckrant cobbly clays (TaB, TaC), Brackett gravelly clay loams (BrD, BrE), and Krum clays (Kr), Tinn Clay (Tc), and Orif soil (Or). Eckrant cobbly clays and Brackett gravelly clay loams are formed on ridges and reach depths of less than 51 cm (20 in.). Both soil types are well-drained. Eckrant cobbly clays are found on 1-8% slopes, while Brackett gravelly clay loams are formed on slopes of 3-12%. Krum clays are formed

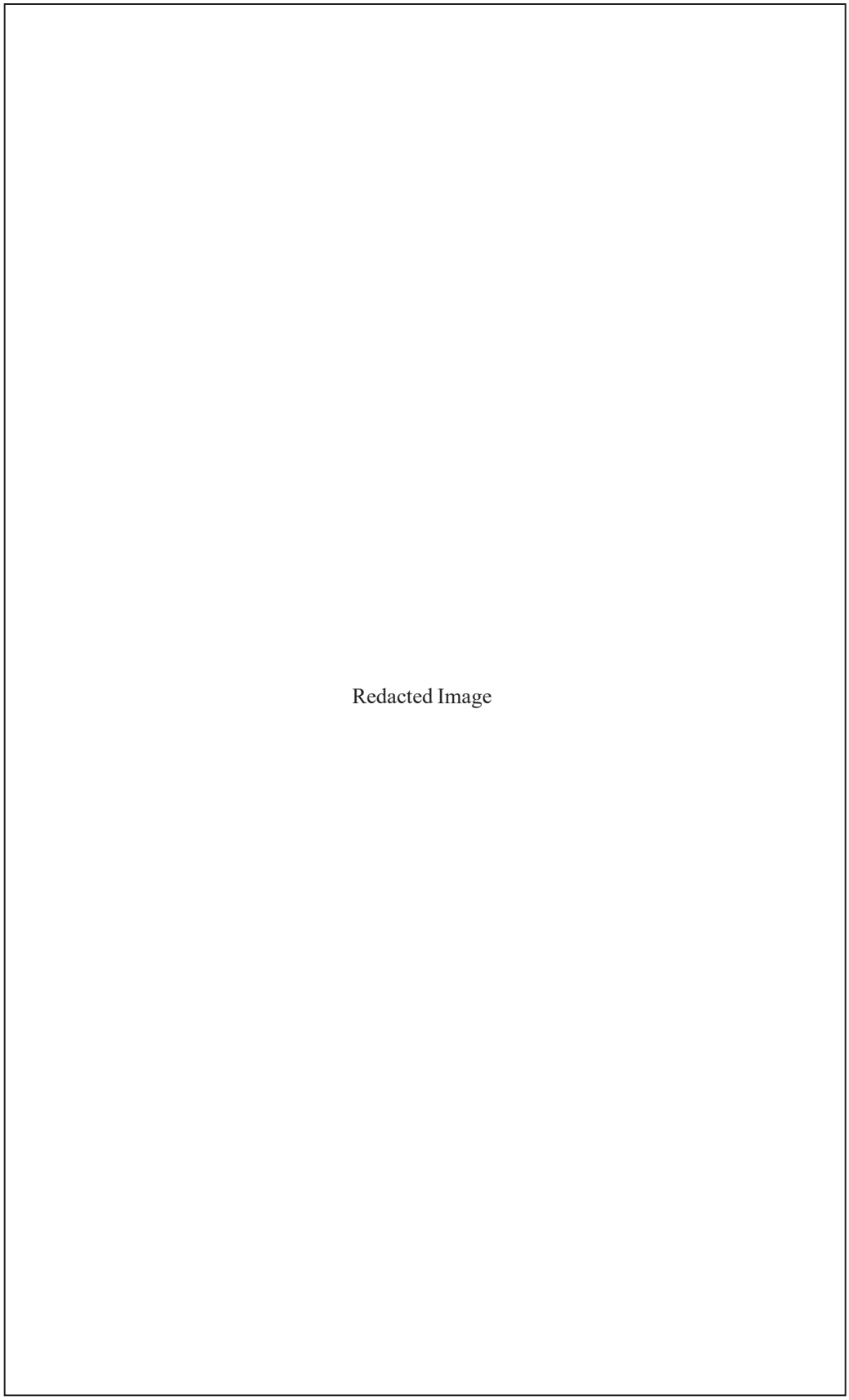

Figure 2-1. Soils map of Camp Bullis.

on stream terraces and reach depths of more than 203 cm (80 in.). They are well drained and have 1-5% slopes. Tinn Clays are found on flood plains and also reach depths of more than 203 cm (80 in.). They are moderately well-drained and have 0-1% slopes. Orif soils are found on flood plains and reach depths of more than 203 cm (80 in.). They are well-drained and have 0-3% slopes (NRCS 2020).

The vegetation type found within the majority of Camp Bullis is Live Oak-Ashe Juniper Parks (TPWD 2020) (Figure 2-2). These vegetation areas are found primarily on gently rolling uplands and ridges of the Edwards Plateau. Commonly associated plants include oaks (*Quercus sp*.), cedar elms (*Ulmus crassifolia*), hackberries (*Celtis reticulata*), agarito (*Mahonia trifoliolata*), prickly pear (*Opuntia sp*.), greenbriar (*Smilax bona-nox*), and grasses such as Texas wintergrass (*Nassella leucotricha*), little bluestem (*Schizachyrium scoparium*), and Texas grama (*Bouteloua rigidiseta*) (TPWD 2020). The western edge of the base, where a few of the tested sites were located, includes Live Oak-Mesquite-Ashe Juniper

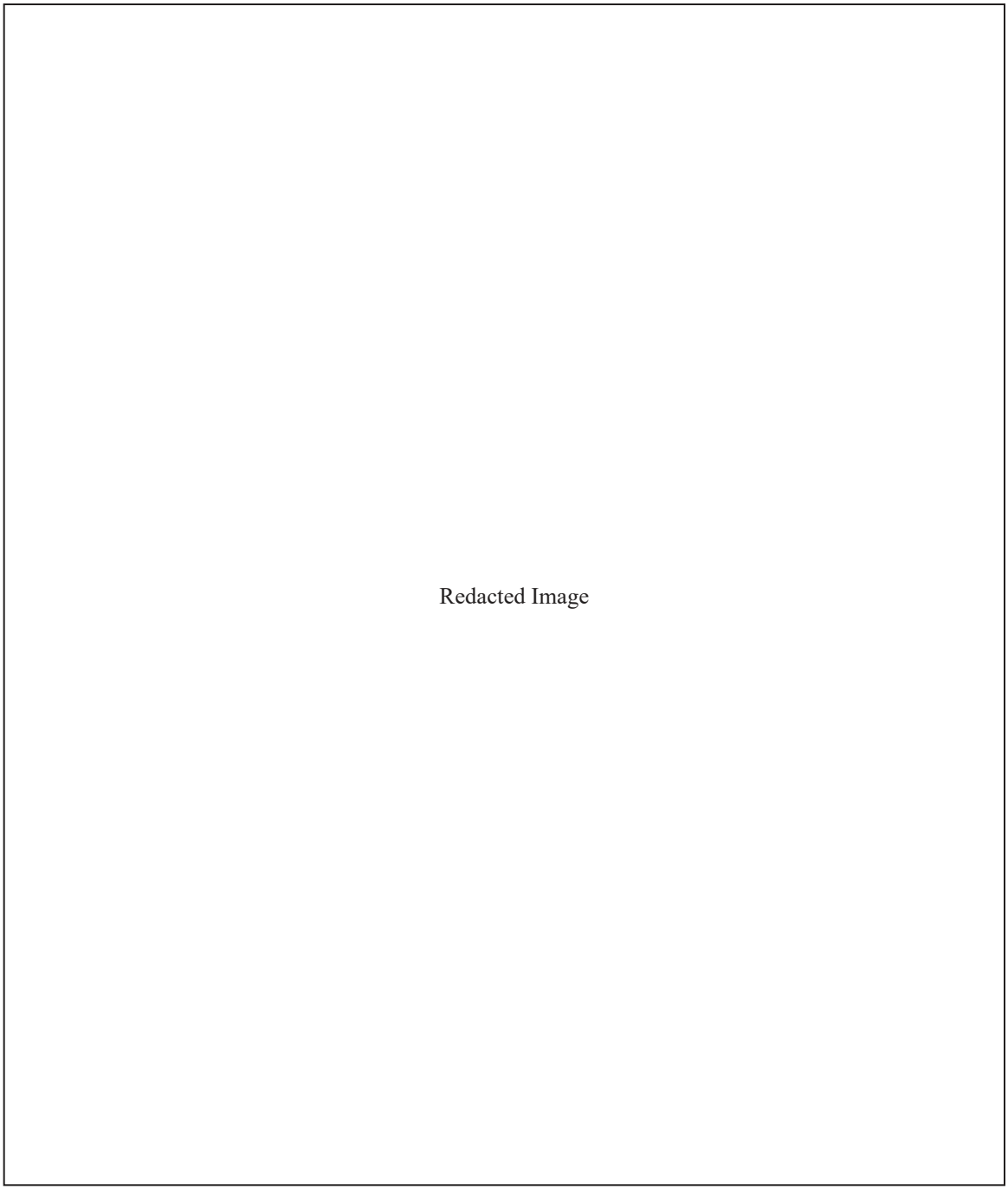

Figure 2-2. Vegetation map of Camp Bullis.

Parks (Figures 2-2; 2-3). These areas are similar but include curly mesquite (*Hilari belangeri;* TPWD 2020).

Hudler (2000) carried out paleoenvironmental reconstruction research as part of his study at the base, centered on magnetic susceptibility and pollen data obtained from soil columns from caves. This data suggests a gradual drying trend from 11,000-6000 BP, although parts of the data set contradict this, including pollen data which suggests an increase in arboreal species. From 6000 to 4000 BP, general drying trends appear to continue, with some fluctuation to wetter conditions from 5400-5100 BP. From 4000 to 1500 BP, there is evidence of fluctuation in available moisture, ending with arid conditions around 1700 BP. Data from 1500 BP to the historic period suggests further climate fluctuation, with a peak in moisture around 700 BP followed by a decrease to 300 BP (Hudler 2000).

Lackland AFB

Lackland AFB is located in southwest San Antonio in Bexar County. The base is south of US 90, located on either side of West Military Drive. Chapman Training Annex is located across Loop 410 to the west, and south of US 90. The area is primarily residential in nature. Leon Creek meanders through the eastern side of Lackland, and Medio Creek runs north-south through the eastern side of Chapman Training Annex. Leon Creek rises 11.2 km (7 mi.) northeast of Leon Springs and runs southeast for 58 km (36 mi.) through Leon Valley and western San Antonio to the Medina River. The stream traverses flat to gently rolling terrain (TSHA 2010a). Medio Creek rises 3.2 km (2 mi.) southwest of Rio Medina in eastern Medina County and runs for 24 km (15 mi.) southeast to Medina Creek in western Bexar County (TSHA 2010b). The majority of the sites tested at Lackland-Chapman Training Annex were located along Medio Creek, which crosses a rolling terrain.

Soils found at the main Lackland AFB include Houston Black gravelly clays (HuB, HuC, HuD), Lewisville silty clays (LvA), Branyon Clays (HtA, HtB), and Loire clay loams (Fr; Figure 2-4). Houston Black gravelly clays are formed on ridges and reach depths of more than 203 cm (80 in.), Lewisville silty clays and Branyon clays are formed

Figure 2-3. Vegetation near 41BX1322 at Camp Bullis.

on stream terraces and reach depths of more than 203 cm (80 in.), and Loire clay loam is found in floodplains and reaches depths of more than 203 cm (80 in.) (NRCS 2020). Site 41BX1107, the only site tested on Lackland proper, is located in a small section of Sunev clay loams (Vcc) located on the base. Sunev clay loams are found on slopes of 3-5 % and reach depths of more than 203 cm (80 in.). These soils are well drained and formed on stream terraces (NRCS 2020).

Soils found at Chapman Training Annex are primarily Houston Black gravelly clays (HuB, HuC, HuD) (Figure

Figure 2-4. Soils map of Lackland AFB.

2-4). These soils are moderately well-drained and reach depths of more than 203 cm (80 in.) Houston Black gravelly clays (HuB, HuC) have slopes of 1-5% and are formed on ridges. Lewisville silty clays (LvA) are also found within the project area. Lewisville silty clays are found on stream terraces, are well-drained, and reach depths of more than 203 cm (80 in.). They have 0-1% slopes. Sunev clay loams (VcC) are formed on stream terraces and have 3-5% slopes. These soils are well-drained and reach depths of more than 203 cm (80 in.) Tinn and Frio (Tf) soils are found within the project area. These soils have 0-1% slopes and are found on flood plains. These soils are moderately well-drained and reach depths of more than 203 cm (80 in.; NRCS 2020).

The major vegetation type at Chapman Training Annex is Mesquite-Live Oak-Bluewood Parks (Figure 2-5). These vegetation suites are found in the south Texas plains. Commonly associated plants include huisache (V*achellia farnesiana*), huisachillo (*Vachellia bravoensis*), whitebrush (*Aloysia gratissimia*), granjeno (*Celtis ehrenbergiana*), lotebush (*Ziziphus obtusifolia*), Berlandier wolfberry (*Lycium berlandieri*), blackbrush (*Coleogyne ramosissima*), prickly pear (*Opuntia sp.*), woollybucket bumelia (*Sideroxylon lanuginosum*), tasajillo (*Cylindropuntia leptocaulis*), agarito (*Mahonia trifoliolata*), three-awn (*Aristida sp.*), pink pappusgrass (*Pappophorum bicolor*), Halls panicum (*Panicum hallii*), and slimlobe poppymallow (*Callirhoe involucrate*; TPWD 2020). Dense white brush was observed at the sites located along the patrol roads (Figure 2-6). Along the creeks, vegetation was more open (Figure 2-7). Northeast of 41BX1092 is an area described as "crops" in data provided by Texas Parks and Wildlife. While no crops were observed on base during this project, this description can also apply to grassland associated with crop rotation (TPWD 2020), and likely describes cleared, grassy areas used for training in this context. The Lackland proper area is categorized as urban, including the area surrounding 41BX1107 (Figure 2-5; TPWD 2020). These categorizations for the vegetation at Lackland-Chapman Training Annex outside of the SDZs are indicative of the high level of disturbance to the natural vegetation in those areas.

No specific paleoenvironmental work was located that was conducted at Lackland AFB or Chapman Training Annex. However, stable isotope analysis of charcoal recovered from soil samples taken at the Richard Beene site (41BX831), located approximately 16 km (9.9 mi.) southeast of the project area, offer some paleoenvironmental data (Mandel et al. 2018; Nordt et al. 2002). This study suggests that cooler conditions occurred from 13,000-11,000 BP, with a warmer climate from 11,000-10,000 BP. Cooler temperatures occurred from 8800-8600 BP. Between 8500-7000 BP, fluctuation is apparent with an overall trend towards cooler and wetter conditions. From 7000-5000 BP, warm, dry conditions were present. A cooler, wetter period occurred around 4500 BP. The warmest and driest conditions of the Holocene in the area occurred from 4000-3000 BP, and temperatures continued to be high until 1500 BP. From this point to around 400 BP, conditions appear to have been somewhat cooler (Mandel et al. 2018; Nordt et al. 2002).

Culture History

The Prehistoric period in Texas spans roughly 13,000-350 BP (Bousman et al. 2004; Collins 2004). It is generally divided into the Paleoindian, Archaic, and Late Prehistoric periods. Bexar County lies near the boundary of two cultural regions often discussed by Texas archaeologists, Central and South Texas, and it has been included in reviews of both regions (see Collins 2004; Hester 1980). This review primarily follows a Central Texas chronology, focusing on significant shifts such as changes to temporally diagnostic cultural material through time, but includes some discussion of South Texas as well.

Paleoindian (13,000-9000 BP)

The Paleoindian period begins near the end of the Pleistocene epoch and beginning of the Holocene, spanning 13,000-9000 BP (Collins 2004). The material culture of this period is characterized by fluted points such as Folsom and Clovis in the early Paleoindian period and in the Late Paleoindian by projectile points such as Angostura and Plainview (Bousman et al. 2004). Most Texas Paleoindian sites consist primarily of surface finds, and buried contexts are rare. However, some Paleoindian sites have been documented in buried contexts, including the Lubbock Lake site (41LU1), the Wilson-Leonard site in Williamson County (41WM235), Bonfire Shelter (41VV218) and Baker Cave (41VV213) in Val Verde County, and the Richard Beene site (41BX831) in Bexar County (Bousman et al. 2004:34). The Paleoindian components at the Gault site (41BL323) in Central Texas are stratified deposits showing evidence of repeated occupation. Lithic cache sites, such as Hogeye cache in Bell County, are common in the Clovis period (Jennings 2013). Art, such as engraved stones and bones recovered from the Gault site, is known from this period (Lemke et al. 2015). Burials known from this time period in Central Texas include Horn Shelter No. 2 in Bosque County, which contains a double burial with grave goods including ochre, turtle shells, and shell beads (Young et al. 1987). The Debra L. Freidkin site contains evidence of human occupation in Texas underlying Clovis levels, between 13,200 and 15,500 BP (Waters et al. 2011). This suggests that human occupation of Texas began earlier than is traditionally thought.

Figure 2-5. Vegetation map of Lackland AFB.

Figure 2-6. Brushy vegetation at 41BX1122 at Lackland AFB.

Figure 2-7. Vegetation along Medio Creek at 41BX1125.

Paleoclimate studies indicate that this period was colder and wetter than modern conditions, and there was a broad, gradual warming trend throughout the Holocene, with some fluctuation (Bousman 1998; Nickels and Mauldin 2001). Dramatic environmental shifts occurred during the Late Pleistocene and early Holocene. These changes include extinction of Pleistocene megafauna. Significant vegetation shifts also occurred during the early Holocene epoch. For example, pollen analysis indicates fluctuations between extensive woodlands and open grassland environments (see Bousman 1998). In addition to these shifts in vegetation, severe droughts also occurred. Despite the extinction of many animal species during this time period, it has been argued that bison populations may have increased due to reduced competition (Bousman and Oksanen 2012: 201-202).

Early Paleoindian subsistence practices are often viewed as heavily dependent on the hunting of megafauna such as mammoth and bison, and available faunal assemblages indicate that these species played a significant role (Bousman et al. 2004; Waters et al. 2011). However, a broad range of other vertebrate and invertebrate species has also been identified at sites with faunal material present such as Lubbock Lake, Wilson-Leonard, and Baker Cave (Bousman et al. 2004), as well as the Gault site (Waters et al. 2011). These data indicate a subsistence base beyond megafauna. Bamforth (2011) argues that changes in hunting practices in the Great Plains from the Paleoindian to the Archaic period are more gradual than previously thought. Bousman et al. (2002) suggest based on evidence from Wilson-Leonard that the shift from Paleoindian to Archaic is marked by a broadening of the resource base, in both plants and faunal resources. Mobility during the Paleoindian period is characterized as very high with populations using large home ranges. Edwards chert has been recorded from both the Folsom site in New Mexico and the Lindenmaier site in Colorado (Hofman et al. 1991), suggesting significant movement of people or materials.

Archaic Period (9000-1200 BP)

The Archaic period in Central Texas spans more than 7,500 years, and is often broken into the Early, Middle and Late Archaic periods. Material culture shifts during the Archaic period include greater diversity in lithic technology and the use of heated rock technology such as burned rock middens (Collins 2004). Burned clay features have also been identified in the region (Black 1989). Greater diversity in technology is often connected with broadening and intensification of resource use during this period (Black et al. 1997; Bousman and Quigg 2006; Collins 2004; Wack 2011). This shift has also been connected to environmental changes (Buchanen et al. 2016; Collins et al. 2011).

Early Archaic

Temporally diagnostic artifacts from the Early Archaic (9000-6800 BP) include Martindale-Uvalde points, as well as Clear Fork and Guadalupe tools (Collins 2004; Turner et al. 2011). Subsistence data for this period is scarce (Quigg et al. 2008). Collins (2004) and Quigg and others (2008) both note that deer, small animals, and a variety of bulbs were significant subsistence species during the Early Archaic. Hyacinth bulbs were recovered from burned rock features dated to 8000 BP at Wilson-Leonard, indicating that this type of plant resource was in use during this time period, and processed using heated rock technologies (Collins 1998; Quigg et al. 2008). Large, burned rock features have been dated to the Early Archaic at many sites, including Richard Beene, Wilson-Leonard, and the Sleeper site (41BC65), indicating that the processing of large quantities of plant resources may have been widespread (Quigg et al. 2008). Burned clay features have also been identified which date to this period (Kemp and Mauldin 2021).

Weir (1976) suggests that populations during this time period were small, highly mobile, loosely socio-politically structured and that subsistence practices were not specialized. However, evidence from the Buckeye Knoll (41VT98) cemetery indicates some sociopolitical inequality and possible territoriality in the region during this time period (Ricklis 2011). Sinkhole burials from this period are known from Bering Sinkhole (41KR241) (Bement 1994). Bement argues that the Early Archaic depositional patterns at Bering sinkhole suggest a seasonal, ossuary internment pattern, potentially associated with highly mobile populations (1994).

Significant sites dating to this time period include Wilson-Leonard, Richard Beene, the Sleeper site, and Hall's Cave (Collins 2004). At the Richard Beene site (41BX831) in Bexar County, Early Archaic diagnostics include Martindale points and Clear Fork tools. Burned rock features were present at most occupations dated to this time period, but occupations dated to the early and middle portions of the Early Archaic tend to have lower feature densities (Thoms and Clabaugh 2011). Pollen analysis from local sources indicates that climate conditions fluctuated somewhat but were generally cooler and wetter at the beginning of the subperiod, and drier towards the end. Late Early Archaic deposits are described as consistent with short-term, multiple family occupations (Thoms and Clabaugh 2011). Pollen analysis indicates a gradual increase in grasslands during this time period (Bousman 1998). At the beginning of this period, woodlands were present, but were replaced by grasslands by 7500 BP (Nickels and Mauldin 2001).

Middle Archaic

Temporally diagnostic artifacts from the Middle Archaic (6800-4200 BP) include Bell-Andice and Nolan-Travis points, as well as Clear Fork tools. Heated rock technology continued to be used, and large burned rock features became more frequent (Collins 2004). While some argue these features are associated with the processing of specific plant resources such as acorns

(Creel 1986; Weir 1976), others argue that the wide range of forms suggests that burned rock technology was used to process a similarly wide range of plant foods (Black et al. 1997). Burned clay features have also been identified which radiocarbon date to this period (Osburn et al. 2007; Turpin 2004, 2011), although their function is unclear (Osburn et al. 2007; Padilla and Nickels 2010). Bison were present at the beginning of this period (Quigg et al. 2008). Weir (1976) suggests that populations during this time period increased, were sociopolitically loosely structured (Weir 1976:119) and more spatially delimited than previously. He also suggests that subsistence practices were more specialized.

Both cemetery and sinkhole sites have been identified from this time period (Bement 1994). At the Bering Sinkhole, Bement argues that Middle Archaic burial deposits show evidence of increased ritual activity (1994). Significant sites dating to this time period include the Barton site (Collins 2004) and the Landslide site (Collins 2004). At the Richard Beene site, Thoms and Clabaugh (2011) describe the Middle Archaic component as having a higher density of scattered fire-cracked rock (FCR), and the upper portion of this component as having unusually high chipped stone density. They suggest that early Middle Archaic deposits at the site may represent short-term family encampments, while later Middle Archaic deposits may represent considerably longer-term settlements. Pollen analysis indicates that grasslands may have reached their peak during this period, at approximately 5000 BP, and that a long dry period (7000-3500 BP) took place, primarily during the Middle Archaic (Bousman 1998:210). However, there is also evidence for some climate fluctuation during this period, with brief wetter intervals (Nickels and Mauldin 2001).

Late Archaic

The Late Archaic period (4200-1200 BP) is defined by a wide diversity of projectile point styles, including Bulverde, Pedernales, Ensor, Marcos, Castroville, Marshall, and Fairland, as well as the use of distinctive lithic tools such as corner-tanged knives. Heated rock technology continues to be commonly used, and its presence is thought to indicate continued processing of plant resources (Collins 2004; Quigg et al. 2008). Possible burned daub structures (DiVito and Oksanen 2012) as well as possible burned clay and charcoal cooking features have been identified that date to this time period (Highley 1986; Gadus et al. 2006; Turpin 2004, 2011), and other identified burned clay features (Prewitt 1982).

The beginning of this period is described by Weir (1976) as more highly structured socio-politically, with increased populations which may have been less mobile and had specialized subsistence practices. Weir characterizes the end of this period as more loosely structured socio-politically, having smaller more highly mobile populations, and unspecialized subsistence practices. Carpenter and Hartnett (2011) also suggest that groups became more highly mobile toward the end of the Archaic period based on examinations of lithic data at Fort Hood. Late Archaic components at the Richard Beene site are described as consistent with multi-family, short-term encampments. Compared to other occupations, this component contained the greatest density of FCR, including a very large cooking feature dated to 3090 ± 70 BP and several smaller burned rock concentrations (Thoms and Clabaugh 2011). A number of large cemetery sites date to this time period including Loma Sandia, Hitzfelder Cave and Olmos Dam (Munoz et al. 2011).

Climate during this period appears to trend generally more towards xeric conditions with some fluctuation (Nickels and Mauldin 2001). Pollen analysis indicates a gradual increase in tree canopy cover during most of this period (Bousman 1998:207-211). However, low percentages of arboreal pollen and increases in grass pollen suggest a shift to a grassland community around 1500 BP.

Late Prehistoric (1200-350 BP)

The early Late Prehistoric is marked by a shift to bow and arrow technology, indicated in material culture by a shift towards smaller arrow points such as Scallorn and Edwards forms (Turner et al. 2011). This shift is identifiable due to a significant change in the average neck width of projectile points. Arrow technology requires more investment and is less expendable but increases hunting efficacy for a wider range of prey (Miller 2009). There is evidence that burned rock middens increased in use (Black et al. 1997). Burned clay and charcoal cooking features dating to this period have been identified (Black 1989; Black and McGraw 1985; Gadus et al. 2006; Turpin 2011). Structures built of wattle and daub dating to this period have been identified north of the study area (Quigg 2013). Cemeteries remain in use in the area as well (Mauldin et al. 2013). The development of pottery is associated with the Toyah style interval beginning in approximately 800 BP (Collins 2004), occurring during the latter part of the Late Prehistoric in Central Texas, which is also characterized by Perdiz arrow points. There is some debate about whether this technological shift is associated with the migration of a specific cultural group, or the spread of ideas throughout groups inhabiting the region (Kenmotsu and Boyd 2012). Subsistence during this time period is thought to be focused on the hunting of bison, deer, and antelope, and mobility is characterized as high (Collins 2004). Quigg and others (2008) characterize subsistence practices during this time period as more focused on large game animals, and possibly the processing of bulk resources. Significant sites dating to this time period include the Toyah Bluff site (41TV441) (Karbula 2003) and the Biesenbach site (41WN88) (Nickels 2000). Scallorn and Perdiz points are

associated temporally with a shift towards a more xeric period and are widely distributed across the state (Collins et al. 2011). Pollen analysis indicates that grassland communities existed in central Texas from 500-300 BP (Bousman 1998).

Historic Period

The end of the Late Prehistoric Toyah, at 350 BP (AD 1650), overlaps with the beginning of the Historic Period, generally marked by the arrival of Europeans in the region in AD 1528. Early interactions between the indigenous population and the Spanish were infrequent and limited. Prior to the establishment of European settlements in the area, Native American populations in the area were impacted by invasive disease and the arrival of other Native American groups that had been displaced by European settlement to the north, south, and east (Kenmotsu and Arnn 2012).

Colonial Period (AD 1700-1824)

The area that would become San Antonio was first explored by Europeans in 1691 by a Spanish expedition led by Domingo de Terán (Cox 1997). Spanish occupation of the region began when San Antonio was founded in 1718 with the establishment of the San Antonio Bexar Presidio, intended to provide a waystation between the Rio Grande and east Texas missions (Cox 1997, Jasinski 2018). 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 (Campbell and Campbell 2004). People living at the missions raised livestock and grew crops, primarily corn, which were irrigated by the *acequia* system. The missions established an early free-range livestock tradition in the area (Dase et al. 2010). The San Antonio settlement expanded with Spain's charter of the Villa San Fernando de Béxar in 1731, which established a formal civilian settlement (Jasinski 2018). By 1775, populations in all San Antonio missions had declined considerably, and in 1793 the secularization of the missions began (Campbell and Campbell 2004, 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 (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 time period (Chipman and Joseph 2010; Cox 1997). During this period, settlement in Texas by United States citizens was primarily viewed as settlement by illegal "squatters" (Campbell 2003). In 1820, Moses Austin made an agreement with the governor of Texas to settle 300 American families near the mouth of the Colorado River. After his death in 1821, the project was taken up by his son, Stephen, who established the colony in 1824 (Campbell 2003). 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 inexpensive land to settlers was created. Recruitment of settlers by Stephen Austin and others continued (Campbell 2003). This policy played a role in an influx of settlers from the United States, ultimately resulting in the prohibition of immigration from the United States in 1830. Subsistence farming among these settlers was common. An interest in producing cash crops such as cotton contributed to an increased practice of slavery in Texas at this time (Campbell 2003). Conflict within the newly formed Mexican government, as well as between the existing inhabitants of Texas and the new arrivals, resulted in instability and unrest in the region (Campbell 2003).

In the early 1800s, farming and ranching practices remained largely unchanged in Bexar County. Subsistence farming was still the most common practice, and corn still the main staple crop. Livestock were still primarily free range. Agricultural activities did experience an increase proportionate to population growth. The proportion of Anglo-American landownership increased, and many landowners in the area lived in San Antonio while delegating the supervision of ranch activities (Dase et al. 2010). Formal organization and use of manufactured tools and equipment was limited. Production of cash crops was primarily for local use due to limited transportation (Moore et al. 2013).

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 (Jasinski 2018). The Texas Republic period saw significant conflict with Native Americans and Mexico, as well as financial difficulties for the state. The Republic's generous land policy, promising every family in Texas a league and a labor (4,605 acres; 1864 ha) of land, and every single man one third of a league (1,476 acres; 597 ha), drew a significant number of immigrants, but also caused conflicts due to lack of clarity over land titles (Campbell 2003).

During the century that followed Texas's break with Mexico, the city of San Antonio saw considerable growth despite the impact of numerous conflicts. In December of 1837, the city of San Antonio was incorporated as one of the early acts of the newly established Republic of Texas. After a turbulent period in which Texas saw conflict with both Mexico, which did not accept the new Republic's independence, and local Native American groups, Texas became part of the United States in 1846 (Jasinski 2018).

The number of people living in San Antonio grew rapidly after Texas became part of the United States in 1845. In 1860, San Antonio was the largest city in Texas (Jasinski 2018). A number of German immigrant settlements were established in Texas from 1840 to 1860, including New Braunfels, located 54 km (33.5 mi) northeast of Camp Bullis. This substantial settlement, later used as a base of operations for founding other settlements, was initially founded by the Society for the Protection of German Immigrants in Texas, or *Adelsverein*, first led by Prince Carl of Solms-Braunfel and later by Baron von Meusebach (also known as John O. Meusebach). Meusebach later directed the creation of a number of other settlements, including Fredericksburg (Biesele 1987).

In the 1840s, a number of French and German immigrants began to settle in San Antonio and the surrounding area. By the 1850s, recent European settlers outnumbered the Mexican and Anglo populations in the city (Cox 1997). Farming practices in Texas, particularly in the Hill Country, were strongly influenced by immigrants from both the American South and Germany (Jordan 1966). German immigrant farmers commonly planted corn and wheat, as well as a small amount of rye and oats. They also tended to focus on manure-producing livestock. They tended to settle in stream valleys and prioritize family labor; slavery was uncommon, in contrast to immigrants from the American South. In San Antonio, German immigrant farmers commonly made money providing crops to military bases (Jordan 1966). Texas seceded from the United States and joined the Confederacy in 1861, and primarily served a supply role during the Civil War. Five years later, Texas surrendered to the Union and rejoined the United States (Wooster 2018).

Between the end of the Mexican War in 1848 and the beginning of the Civil War in 1861, agriculture was negatively impacted by freezes and droughts. Despite this, economic growth continued in the area. The presence of federal troops provided a market for cash crops. The enslaved population in the state more than tripled in this period. In addition to Texas acting as an important center for cattle production, goat and sheep ranching became important during this time period (Moore et al. 2013).

The state joined the Confederacy in 1861, and San Antonio served as a Confederate depot during the Civil War (Jasinski 2018). The Civil War disrupted shipping and commerce, and significantly slowed European immigration (Dase et al. 2010). However, because Texas avoided major invasion during the war it served important supply purposes for the Confederate army (Campbell 2003; Dase et al. 2010). There was some friction, including occasional violence, with German immigrant groups because they often opposed slavery and were seen as anti-Confederate (Campbell 2003). While it was uncommon for German immigrants to own slaves, their support for the Confederacy was mixed (Jordan 1966). Confederate forces in Texas surrendered on June 2, 1865 (Wooster 2018). Union forces arrived and declared freedom for all enslaved peoples 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 Mexican border and the southwest (Cox 1997; Jasinski 2018). The arrival of the railroad in 1877 further increased growth in the city. Fort Sam Houston, established in 1876, served as an important consumer of agricultural goods (Dase et al. 2010). Sheep, goat and swine became more common, and the wool industry grew (Dase et al. 2010), with a sheep boom occurring during the 1870s and 1880s (Carlson 1982). Goat ranching in particular became important among German immigrant farmers in the early twentieth century (Jordan 1966). The Edwards Plateau was particularly important as an area of development for sheep and goat ranches, with the Hill Country being where the earliest ranchers started (Carlson 1982). Barbed wire, introduced in 1874, led to an increase in fencing. The arrival of the railroad in 1877 also provided important opportunities for farmers and ranchers (Dase et al. 2010). San Antonio was once again the largest city in the state in 1900, 1910, and 1920 and was known for its unique mix of cultures due to Mexican and European, particularly German, immigration (Jasinski 2018). Characteristic artifact assemblages from sites dating to this period in Bexar County include metal, glass, and white earthenware (Mauldin and Kemp 2016). The city continued to grow through the twentieth century, with an associated expansion of construction and infrastructure projects (Heusinger 1951).

Agriculture expanded significantly from 1870 to 1890. Ranching was important among German immigrant farmers in the Texas Hill Country after the Civil War, particularly cattle,

sheep and goats (Jordan 1966). Demand for Texas beef was significant in this period (Campbell 2003). In the 1870s, the Hill Country became known as an important sheep ranching area (Jordan 1981). Angora goats were introduced to the area after 1880. These introductions led the area to be known for its combination ranching economy, in contrast to other parts of Texas where cattle were dominant (Jordan 1981). Farmer organizations became more significant in the 1870s (Campbell 2003). Larger, big-business oriented ranches became prevalent over smaller family operations by 1890. Farm tenancy increased dramatically, and subsistence farming became less common as cash crops expanded. (Campbell 2003).

The arrival of the railroad to the city in 1877 resulted in significant growth in San Antonio (Cox 1997). The late 1800s saw infrastructure and economic development throughout the city, including the introduction of water, electric, and gas utilities (Heusinger 1951). The adoption of the new water works system in 1878 transformed the *acequia* system into primarily a drainage system, and water flow was reduced in the 1890s due to the increased drilling of wells. The military remained an important driver of expansion in the city. As noted, San Antonio remained the largest city in Texas in 1900, 1910, and 1920, but its growth began to slow during the Great Depression. Activity during World War I and II further expanded the military's footprint in San Antonio as the city continued to develop (Jasinski 2018).

Camp Bullis

This section provides information on use of the land that would become Camp Bullis and its development for use by the military. It focuses primarily on historic development in the area; evidence of prehistoric use of the region is discussed in the Previous Archaeology section.

Cox (1990) conducted an archival review of the history of Camp Bullis. The first known European settlement within Camp Bullis was under the General Land Act, which offered land grants to married male immigrants to the Republic of Texas. The largest holdings within the boundaries of Camp Bullis belonged to Nathaniel Lewis and were acquired between 1838 and 1847. The land along the Salado Creek was acquired by Madison James in 1846 and John O. Meusebach in 1847. The northern portions of the modern base belonged to Enoch Jones, Joseph Landa, and George Pfeuffer and were acquired between 1844 and 1847. John O. Meusebach, Joseph Landa, and George Pfeuffer were all German immigrants, while Enoch Jones and Nathaniel Lewis emigrated from the United States. Nathaniel Lewis established a 10,678-ac (4,321 ha) ranch on the property, although it is unlikely he occupied it himself. Nathaniel Lewis owned a number of enslaved people who may have run the ranch under the supervision of an overseer. Lewis died in 1872; in 1877, his wife sold part of the ranch to William P. Gerfers. The land underwent several transfers before becoming the property of the US government in 1941. John O. Meusebach primarily practiced agriculture on his land. He constructed a two-story house at Comanche Springs in 1852 (41BX420), and inhabited the farm with his family until 1860, despite selling it to Henry Habermann in 1853. Habermann used the land for ranching after Meusebach left. In 1881, Habermann sold the Comanche Spring site to Conrad Schasse, who did not occupy the property but continued to operate a ranch. In 1906, Schasse sold his land to the US government. Enoch Jones transferred his property to his daughter in 1860, and she and her husband sold it to General John S. Mason in 1867. Mason lived there briefly in the 1860s, before selling portions in the 1890s. Two houses were constructed on the property in the 1890s, and the E. George ranch was created out of the property in 1905. In 1866, Joseph Landa sold property to William D. Parrish, who used the land for sheep and goats. Parrish sold the land to G.A. Roll in 1883, who sold it to Daniel and Anton Oppenheimer in 1896. The Oppenheimers operated the ranch until 1906, when they sold it to the US government. George Pfeuffer's land was divided in the late 1800s and a number of small residences were constructed, before ultimately being acquired by the government in 1941.

In 1906, a portion of the land that would become Camp Bullis, primarily the Oppenheimer and Schasse ranches, was acquired by the US Government and began to be used by the Third Brigade, Maneuver Division, who camped at the Schasse ranch. Freemen (1994a) and Fort Sam Houston Museum (1990) provide in-depth discussions of the base's development. This early military facility was known as the Leon Springs Military Reservation (Fort Sam Houston Museum 1990). In 1917, as the US entered WWI, it became an officer training camp, and was expanded. The earliest facility was named Camp Funston in February 1917, and then renamed Camp Stanley in October 1917 to avoid confusion with another Camp Funston located in Kansas, although in archival documents the use of the two names seems to have remained fungible for many years (see Boyd et al. 1990). This early facility was later considered a separate installation from Camp Bullis. The boundaries between the facilities fluctuated throughout the early history of the base as training activity needs varied, with the earliest boundaries of Camp Stanley including portions of modern-day Camp Bullis (Freemen 1994a). The facility that was given the name Camp Bullis was located on land acquired to the south. Both facilities were considered part of the Leon Springs Military Reservation, and their respective boundaries and functions shifted according to military needs over the next 30 years (Fort Sam Houston 1990). After WWI, military activity was greatly reduced, and

the area was used for munitions storage. The base was used as a movie set twice, for the movies "Wings" and "Rough Riders." The base, particularly the Camp Bullis area, was greatly expanded when the US entered WWII, and activity substantially increased. A prisoner of war (POW) camp operated on the base during the war. After the war, there was again a reduction in activity (Cox 1990). Today, Camp Bullis is currently part of JBSA, and Camp Stanley, also part of JBSA, is located immediately to the west (JBSA 2020a). JBSA was established in 2009 following recommendations from the Base Realignment and Closure Commission in 2005. The Air Force is the lead agency for JBSA (JBSA 2020a). Today Camp Bullis offers training facilities to JBSA mission partners (JBSA 2020b).

Lackland AFB

This section provides information on use of the land that would become Lackland AFB and its development for use by the military. It focuses primarily on historic development in the area; evidence of prehistoric use of the region is discussed in the Previous Archaeology section.

Archival research and oral interviews were conducted by the CAR prior to a 1994-1995 survey of Lackland AFB completed by the CAR (Nickels et al. 1997). That review indicated that by 1809, multiple ranches were located in the area along Leon Creek and the Medina River. In 1913, the land that became Lackland AFB and Chapman Training Annex was occupied by more than 30 landowners who primarily used the land for ranching and farming. The survey noted that identified remains of farmsteads were primarily located near the creeks. During the late nineteenth and early twentieth centuries, the area was one of the state's most significant producers of cotton and corn. Mineral, gas, and oil speculation also occurred. The land was obtained by the US government by eminent domain in 1954 and 1955 (Nickels et al. 1997).

The earliest military development in the area that would become Lackland AFB was Kelly Airfield in 1916 (Leatherwood 2018a). Lackland AFB was first separated from Kelly Airfield in 1942. Lackland AFB was at that time known as San Antonio Aviation Cadet Center. The newly separated part of the base was located west of Leon Creek. The base experienced rapid growth due to the onset of WWII. After the war, the base went through a series of name changes, with its primary mission being basic training of airmen. In 1947, the base was named after Brigadier General Frank Lackland, who first had the idea to construct a training facility in the area. Construction at the base when it was initially created was intended to be temporary; upgrades continued from the 1960s through the 1990s. Kelly Airfield closed in 2001 (37th Training Wing 2020).

Medina Base, today known as the Chapman Training Annex, was constructed between 1953 and 1955, and initially served as a National Stockpile Site; the base was later used to disassemble weapons. In 1963, a large chemical explosion occurred at Medina Base as a result of weapons disassembly activity, breaking windows up to 48 km (30 mi.) away. This work was secret at the time, but was publicly acknowledged in 2001 (McCormack 2015). Weapons modification work was transferred away from Medina in 1965. In 1966, Medina became part of Lackland AFB (Leatherwood 2018b). Since the 1990s, Chapman Training Annex has served as a primary location for Air Force training. The facility was renamed the Chapman Training Annex in 2019 in honor of Medal of Honor recipient Master Sgt. John A. Chapman (Manning 2020).

Previous Archaeology

This section provides a broad summary of the previous archaeology conducted at both bases to provide context for the findings of this investigation. Discussion of the previous work conducted at the specific sites chosen for testing will be included in the results chapters (Chapters 4 and 5). This previous work indicates that both Camp Bullis and Lackland AFB have been occupied by humans for thousands of years. Hudler's broad examination of human occupation suggests occupation on land currently occupied by Camp Bullis occurred as early as 10,100 BP. The availability of water and the variety of microenvironments at Camp Bullis facilitated continuous use of the landscape, although site size and location vary (Hudler 2000). Based on the recovery of diagnostic artifacts, the earliest human occupations at Lackland AFB date to the Early Archaic period (Nickels et al. 1997).

To date, a total of 352 archaeological sites have been recorded on Camp Bullis according to the most recent Integrated Cultural Resources Management Plan (ICRMP; JBSA 2020c). Two hundred and forty-three archaeological sites within Bexar County are recorded on Camp Bullis in the Texas Archaeological Sites Atlas (THC 2020; Appendix A). A total of 76 archaeological sites are recorded on Lackland AFB according to the most recent ICRMP (JBSA 2020c). Seventy-four archaeological sites are recorded on Lackland AFB in the Texas Archaeological Sites Atlas (THC 2020; Appendix B).

Camp Bullis

The earliest known archaeological investigations at Camp Bullis were conducted at 41BX36 (Gerstle et al. 1978). Work there was carried out by T.C. Kelly in 1959, and the site was formally recorded by T.R. Hester in 1969 (Gerstle et al. 1978). In 1971, sections of two creeks within the

modern base, Salado Creek and Lewis Creek, were surveyed by the Texas Archaeological Survey prior to the development of watershed retarding structures by the Soil Conservation Service, US Department of Agriculture (Dibble 1979). Three prehistoric sites were recorded, but not assigned trinomials. In 1977, the CAR carried out a large-scale survey of approximately 20 percent of the base, spanning several widely spaced transects (Gerstle et al. 1978). This survey documented 72 sites within the base. From 1988 to 2001, Prewitt and Associates carried out several surveys and a data recovery project at the base, recording at least 226 sites in Bexar and Comal counties (Boyd et al. 1990; Cestaro et al. 2000, Kibler and Gardner 1997; Kibler and Scott 2000; Maslyk 1999; Maslyk and Kibler 1998; Quigg 1988; Scott 1997, 1998, 1999; Wilder et al. 2003). George Veni and associates carried out a karst investigation. This investigation was focused on documenting karst landforms, but also recorded 10 archaeological sites encountered during the process, including cave sites containing human remains (Veni et al. 1998, 2002). The CAR conducted a survey of a WWII-era POW camp located on base in 2003 (Mahoney 2004). From 2003 to 2006, the Camp Bullis Cultural Resources Office carried out a pedestrian survey of the impacted area as well as assessment and testing of previously recorded sites (Pagoulatos 2006). This survey recorded 21 sites. These are the most recently recorded sites located in Camp Bullis on the Texas Archaeological Sites Atlas (THC 2020).

A broad review of the sites recorded within the Bexar County portion of Camp Bullis on the Texas Archaeological Sites Atlas (THC 2020) found 243 recorded sites, presented in Appendix A. This table provides the site trinomial, time period, site type, date first recorded, whether a THC NRHP eligibility recommendation has been made, and, if applicable, the nature of that recommendation. According to the Texas Archaeological Sites Atlas, 192 of these sites are prehistoric; 38 are historic sites, related primarily to either pre-military ranching or early military activity; and 13 sites contain both prehistoric and historic components. There are 13 sites that have been found eligible for listing in the NRHP (41BX377, 41BX397, 41BX420, 41BX425, 41BX428, 41BX430, 41BX432, 41BX918, 41BX1029, 41BX1044, 41BX1211, 41BX1251, 41BX1276, and 41BX1277); 159 sites have been found not eligible; 33 sites have undetermined eligibility status; and 37 sites have no eligibility recommendation or determination recorded in the Texas Archaeological Sites Atlas (THC 2020).

Lackland AFB

Nickels and others (1997) and Huhnke (2006) provide overviews of previous archaeological work conducted at Lackland AFB. The earliest formal archaeological work at Lackland AFB was conducted in 1989 by Espey Huston & Associates, Inc. (EH&A 1989). The work consisted of a limited survey of the Leon Creek area. No cultural resources were documented (Huhnke 2006). Four surveys were carried out in 1993, conducted by the US Army Corps of Engineers (Dalbey 1993), US National Park Service (NPS) (DeVore 1993a, 1993b), and Engineering Sciences, Inc. (Petraglia and Knepper 1993). These studies were largely brief and localized. The survey conducted by the US Army Corps of Engineers discovered two sites (41BX1001 and 41BX1002), but these sites were not formally documented until the NPS survey (DeVore 1993a). One site, 41BX1006, was identified during testing conducted by Engineering Science, Inc. (Petraglia and Knepper 1993). Limited testing of areas planned for construction was conducted by the CAR in 1994 (Durst 1997; Nordt 1994; Raymond 1997; Rector 1997; Taylor 1997), before a large-scale survey (3,860 acres; 1,562 ha) of the base was conducted by the CAR in 1994 to 1995 (Nickels et al. 1997). A total of 71 previously undocumented sites were recorded during the survey, and three previously recorded sites were revisited (Nickels et al. 1997). Seventy-one of these 74 sites were recommended as potentially eligible for listing in the NRHP. Eight of these sites were subject to further testing by the CAR in 1996 due to potential impact by on-base housing development, and one new site was recorded, 41BX1208 (Houk and Nickels 1997). This is the most recently recorded site on Lackland AFB in the Texas Archaeological Sites Atlas. In 2003, Geo-Marine, Inc. (Geo-Marine), conducted archaeological delineation and NRHP evaluation of 23 sites on Lackland AFB (Huhnke 2006). Testing consisted of STs and small excavation units to minimize site disturbance. The investigation determined that most sites lacked contextual integrity in the first 50 cmbs (ca. 19.7 in.), but the potential for deeper deposits was not evaluated.

A broad review of the 74 sites recorded on the Texas Archaeological Sites Atlas (THC 2020) within the boundaries of Lackland AFB is presented in Appendix B. This table provides the site trinomial, time period, site type, date first recorded, and whether a NRHP eligibility recommendation has been made by the THC and, if so, what that recommendation is. Due to the large number of sites, this review includes only data available on the Texas Archaeological Sites Atlas rather than individual site reports. According to this review, 71 of the 74 recorded sites have a prehistoric component, and three historic sites have been recorded. Five sites have both a prehistoric and historic component. Three prehistoric sites - 41BX1001, 41BX1108, and 41BX1126 - have been found eligible for listing in the NRHP, and two of those sites (41BX1001 and 41BX1126) were determined to be one large site during testing (Huhnke 2006.) Another 13 sites have been found not eligible, while 12 sites are listed by the THC as having undetermined eligibility status. Forty-six of the 74 sites have no eligibility recommendation or determination recorded on the Texas Archaeological Sites Atlas.

Review of Sites 41BX1102 and 41BX1103

Sites 41BX1102 and 41BX1103 were originally recorded during a pedestrian survey (Nickels et al. 1997) and were subsequently subjected to eligibility testing (Houk and

Nickels 1997). The sites are located in the northern portion of Chapman Training Annex near the dog training area. The sites were selected for testing by the JBSA-CRM because they were formally recorded in the JBSA archaeological database as having unknown eligibility for listing in the NRHP.

Site 41BX1102 is a prehistoric open campsite. Debitage, formal and informal lithic tools, cores, a Pedernales dart point, and a substantial quantity of burned rock were recorded on the surface. Two cultural strata, one from 0-20 cmbs (0-7.9 in.), and one from 50-60 cmbs (19.7-23.6 in.) were recorded in a ST. The site was revisited by Houk and Nickels (1997) for significance testing prior to the development of the dog training area. Surface observations and the results of 21 STs were used to determine site boundaries. To explore buried deposits, three TUs and nine BHTs were excavated. BHTs were excavated to a depth of 1.5-2.5 m (4.9-8.2 ft.) and examined by the project geoarchaeologist. Cultural material was recovered to a depth of 100 cmbs (39.4 in.). Geoarchaeological assessment of the site indicated that there was potential for deeply buried deposits, but no such deposits were found in the BHTs. The majority of cultural material was recovered from the surface, but distribution of buried cultural material showed evidence of two intact buried components, one at 50 cm (19.7 in.) and another at 70 cm (27.6 in.). No intact features were documented but testing recovered 2,042 pieces of chipped stone. The component at 50 cmbs (19.7 in.) may date to the Middle or Late Archaic, based on the recovery of a Pedernales projectile point. Geoarchaeological assessment indicated good geological context. The site was recommended as eligible for listing in the NRHP under Criterion D in that it has potential for addressing issues of settlement patterns and chronology. Avoidance of impact to the site, and mitigation if impact could not be avoided, was recommended (Houk and Nickels 1997). The THC concurred with this recommendation (Bruseth 1998).

Site 41BX1103 is a prehistoric open campsite. A lithic scatter was recorded on the surface, including cores, lithic tools, burned rock, and a Late Archaic Edgewood projectile point base. A ST recorded materials extending to 80 cmbs (31.5 in.), and dense burned rock from 50 to 70 cmbs (19.7-27.6 in.), suggesting a possible feature. This site was revisited for significance testing by Houk and Nickels (1997) at the same time they examined 41BX1102. Surface material was mapped and 42 STs were excavated to determine site boundaries and deposit characteristics. Five TUs and three BHTs were excavated to explore buried deposits. BHTs were excavated to a depth of 1.5-2.5 m (4.9-8.2 ft.) and examined by the project geoarchaeologist. Cultural material was recovered to a depth of 100 cmbs (39.4 in.) in TUs. The possibility of deeply buried deposits was noted, but none recorded in the BHTs. The site dates from 3600 BP to 1400 BP (Middle to Late Archaic) based on the recovery of diagnostic artifacts. Burned rock was recovered from one of the BHTs at a depth of 40 cmbs (15.7 in.), and from all levels of TUs. No intact features were documented, but testing recovered over 6,800 pieces of chipped stone, primarily from buried contexts. While the archaeological context was called into question due to gravel deposits, artifact analysis found minimal evidence of stream damage. The subsurface integrity of the site was considered good and 41BX1103 had good preservation of faunal material. The site was recommended as eligible for listing in the NRHP under Criterion D as it has potential to address research issues of chronology, settlement patterns, and subsistence. Avoidance of impact to the site, and mitigation if impact could not be avoided, was recommended (Houk and Nickels 1997). The THC concurred with this recommendation (Bruseth 1998).

After the information encountered in this literature review was presented to the JBSA-CRM, the JBSA-CRM concurred that further testing at sites 41BX1102 and 41BX1103 was not necessary as both sites had already been found eligible for listing in the NRHP, and further testing was not likely to impact that finding. The CAR did not revisit or perform further testing in the field at either site during the course of this investigation, beyond an initial reconnaissance visit with the JBSA-CRM.

Chapter 3: Methodology

This chapter provides a discussion of the field and laboratory methods used during this project. This includes discussion of excavation techniques, collection policy, field documentation and final curation. This methodology was defined in the work plan prior to the beginning of this project and approved by Argonne National Laboratory and the JBSA-CRM.

Pre-Fieldwork

Prior to the start of fieldwork, the Project Archaeologist and Principal Investigator reviewed reports of previous investigations and site evaluations in order evaluate areas where site data was lacking and develop site-specific methodologies. Previously recorded site locations and boundaries were loaded onto a Global Positioning System (GPS) unit and CAR staff produced paper maps prior to conducting fieldwork to establish site locations in the field.

Field Methods

The JBSA-CRM provided the CAR with a list of nine sites proposed for geoarchaeological testing and evaluation and seven sites for archaeological testing and evaluation, as well as two alternates. Additionally, the CAR was provided data on 41BX1211, which had not been fully recorded. The nine sites requiring geoarchaeological testing and evaluation were investigated for deeply buried deposits based on recommendations by the THC. Sites that required archaeological evaluation and testing either had no eligibility recommendations or those recommendations were questioned.

The CAR excavated a minimum of two BHTs at each site requiring geo-archaeological testing and evaluation. The exact number of trenches per site was determined by the total site area as previously recorded. These trenches were examined and documented by CAR staff, as well a qualified geoarchaeologist. In cases where intact features or buried cultural material were uncovered, units were excavated to evaluate these deposits.

The THC recommendations required that these sites be tested to a depth of 2 m (6.6 ft.) for the sites to be fully evaluated geoarchaeologically. To fulfill this requirement while complying with US Occupational Safety and Health Administration standards, BHT excavation was halted prior to 1.5 m (5 ft.) to allow staff to examine and document the trench profiles. After this task was completed, a determination was made regarding the necessity for test unit excavation. If necessary, test unit excavation was completed. After documentation and test unit excavation was completed, excavation of the trench continued to a depth of 2 m (6.6 ft.). While trenches deeper than 1.5 m (5 ft.) were not entered, profiles were examined from the surface and backdirt was examined for cultural material. Trenches were examined by the geoarchaeologist from the surface after the trenches were excavated to their final depth.

At sites requiring archaeological testing and evaluation, CAR staff examined reports of previous work and identified areas where site data was lacking. Most of the sites identified for archaeological testing and evaluation previously had little or no subsurface testing, including 41BX1013, 41BX1277, 41BX1344, and 41BX1445. At these sites, the CAR excavated a minimum of six STs to identify potential buried deposits, with the exception of 41BX1277, which field examination demonstrated had little to no accumulated soil to excavate. Shovel testing was not proposed for 41BX1322 because further field work was not recommended for that site (Cestaro et al. 2000). CAR did attempt a field visit to this site at the JBSA-CRM's request to confirm the site's recorded location and its current condition, but the site could not be relocated (see Chapter 4, this report). Site 41BX432 included both a historic and a prehistoric component. The prehistoric component had previously been extensively tested and found to be not eligible for listing in the NRHP, but the historic component was considered potentially eligible and recommended for further testing (Pagoulatos 2006). The CAR focused their efforts on this historic component. These efforts consisted of BHTs in the vicinity of the previously mapped historic features to locate potential outbuildings or cultural deposits, as well as TUs intended to explore features that had been previously identified from surface finds. This permitted a more thorough evaluation of the historic component.

BHTs were documented with standardized forms, photographs, and measured drawings. Backdirt from trench excavations was examined for evidence of buried cultural material. After excavation was halted prior to reaching 1.5 m (5 ft.) in depth, trench profiles were also examined for evidence of buried features and cultural material. At a minimum a 1 m (3.3 ft.) section of one of the profile walls of each trench was recorded. In total 15 BHTs were excavated at Lackland AFB at seven sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, and 41BX1130), and three at Camp Bullis at 41BX432.

In the case of sites 41BX1125 and 41BX1127, BHTs were proposed, but the sites were found to be inaccessible by backhoe after reconnaissance. To meet the recommended

testing depth of 2 m (6.6 ft.) and provide an appropriate profile for geoarchaeological evaluation, while also remaining in compliance with US Occupational Safety and Health Administration standards, CAR proposed to excavate a 2 m by 1 m (6.6 ft. by 3.3 ft.) block of two units within the site to a depth of 140 cmbs (55.1 in.). One of the units was screened; the other was excavated in bulk, unless an intact feature was encountered within that unit. The screened test unit was excavated following the methodology detailed in this chapter. This excavation methodology provided greater artifact recovery and finer detail of data then the originally proposed and approved methodology of backhoe trenching, while allowing the CAR to complete work at sites located in the SDZs within the extremely limited schedule offered by Lackland AFB Range Operations. After excavation of the units was completed, CAR staff excavated shovel tests within the bottom of the test unit to reach a final depth of 2 m (6.6 ft) below surface. STs were excavated following the methodology detailed in this chapter. Argonne National Laboratory and the JBSA-CRM were consulted prior to executing this alternative methodology at 41BX1125 and 41BX1127, and the JBSA-CRM provided final approval of the proposed methodology (Arlan Kalina, personal communication Nov 21, 2019).

In cases where buried cultural material and/or intact buried features were encountered within the trench, TUs were excavated to provide more detailed data on the nature of these deposits. Units were located along the edge of the trench; specific locations were based on the positioning of materials in trench wall profiles. Units were excavated in 10 cm (3.9 in.) levels and documented using standard forms. All matrix removed from these units was screened through ¼-inch hardware mesh. Depth measurements were taken from a rebar datum placed outside the unit. String heights were 10 cm (3.9 in.) above surface in all cases except at 41BX1125, where the string was placed at 20 cm (7.9 in.) above surface. Units excavated adjacent to trenches measured 50 cm by 50 cm (20 in. by 20 in.), and the two-unit blocks excavated at 41BX1125 and 41BX1127 measured 2 m by 1 m (6.6 ft. by 3.3 ft.). In total 11 TUs were excavated at Lackland AFB at seven sites (41BX1069, 41BX1093, 41BX1107, 41BX1121, 41BX1122, 41BX1125, and 41BX1127) and two at Camp Bullis at 41BX432.

STs were excavated within sites identified for archaeological testing and evaluation that had no previous subsurface testing. They were distributed around previously recorded features to determine whether buried deposits associated with these features were present. STs were 30 cm (11.8 in.) in diameter and reached depths of 60 cmbs (23.6 in.) unless an obstruction was encountered. They were excavated on 10 cm (3.9 in.) levels, and all matrix was screened through ¼-inch mesh hardware cloth. All artifacts recovered from STs were collected. STs were documented using a standard form. In total, 18 STs were excavated at three sites at Camp Bullis (41BX1013, 41BX1344 and 41BX1445) and two STs were excavated at Lackland AFB at two sites (41BX1125 and 41BX1127).

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. Locations of BHTs, TUs, STs, and artifacts encountered on the surface were recorded using a Trimble Geo XT GPS unit.

The stone fences located on Camp Bullis (41BX1211) were initially investigated by reviewing previous reports which discussed encountering sections of the fences and recording their locations, consulting JBSA's existing maps recording their locations, and examining aerial and LiDAR maps of the base. Sections of fences were visited to establish their presence, and their location and condition were recorded using field notes, photographs, and a Trimble Geo XT GPS unit.

Laboratory Methods

All records generated during the project were prepared in accordance with 36 Code of Federal Regulations (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 are 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. Following cataloguing and analysis, artifacts with little remaining scientific value were discarded in accordance with THC guidelines and with the concurrence of the JBSA-CRM. These items include brick (163 g, 5.7 oz.), modern construction material (93 g, 3.3 oz.), flat/window glass (n=338), nonfeature burned rock (10.1 g, 0.4 oz.), rock determined to be noncultural (713 g, 25 oz.), crown caps and can rims (n=5), metal fasteners (n=17), bullets/cartridge casings (n=6), wire nails (465 g, 16.4 oz.), unidentifiable metal scrap (110 g, 3.9 oz.), wire (78 g, 2.8 oz.), coal (189 g, 6.7 oz.), snail shell (267 g, 9.4 oz.), and picked soil samples (8,033 g, 283 oz.). All remaining recovered artifacts

and project-related materials, including the final report, are permanently stored at the CAR's curation facility.

After artifacts were dried, they were initially sorted by lab personnel into broad categories (class and superclass). The initial sort was reviewed by the Project Archaeologist, who provided more specific identifications where applicable. In specific cases where the Project Archaeologist deemed it appropriate, artifacts were reviewed by a subject matter expert.

In the cases of Feature 2 at 41BX432 and Feature 3 at 41BX1122, 3D models were created. As described in Zapata (2018), CAR staff used the 3D software Agisoft PhotoScan Professional. This software generates a vector mesh from digital images that creates a 3D model from photographs. The technique requires multiple and overlapping photographs to calculate camera position and scene geometry (Kemp et al. 2016; Zapata 2018). Such models can serve to depict the shape and depth of archaeological features in a more accurate manner than individual 2D photographs.

Soil samples for MSS testing were taken from the profiles of eight TUs at sites 41BX1069, 41BX1093, 41BX1107, 41BX1121, 41BX1125, and 41BX1127. Soil samples were taken from profiles in increments of 10 cm, except in the case of 41BX1125, where they were taken in increments of 5 cm (2 in; Figure 3-1). Mauldin and Smith (2015) as well as Dearing (1999) provide a discussion of the methods used to process MSS samples and interpret their results. Additionally, Kemp et al. (2018) provide a review of previous MSS studies in an archaeological context in the region, and associated examples of potential patterns and interpretations. Samples are initially dried, screened for size, and crushed. Samples are then placed into plastic pots, weighed, and assessed using a Barrington MSS susceptibility meter. Values are corrected by weight following Dearing's method (1999). Processes such as fires, organic deposition, and organic decay can result in increased MSS values (Crowther 2003; Mauldin and Figueroa 2006; Mauldin and Smith 2015). MSS values provide some insight into the stability of past surfaces exposed in the soil profile, in particular when examined in conjunction with density of cultural material (Kemp et al. 2018; Mauldin and Smith 2015).

Samples for radiocarbon dating were chosen based on availability, context, and association with potentially significant features or cultural deposits. Samples not chosen for processing at this time were curated for use in future research. Samples were initially processed in the CAR's Paleo-Research Laboratory before being sent to DirectAMS for analysis. Samples were first inspected to isolate the charcoal from roots or sediment. The sample

Figure 3-1. Example MSS profile from 41BX1125.

was then placed in reusable test tubes. The tubes had been treated in an autoclave at 450°C (842°F) for three hours to destroy any organics. The sample was then sonicated in ultra-pure water for 30-60-minute intervals. The sample was rinsed until the water was reasonably clear. The sample was then dried under low heat and re-inspected for any non-charcoal material. After any non-charcoal material observed was removed, the test tube containing the sample was placed in a heating block at 95°C (203°F). Hydrochloric Acid (HCL; 6N) was added and the sample was heated for 20 minutes. If the acid was yellow or black after heating, the sample was rinsed with ultra-pure water, the acid solution was replaced, and the sample was reheated. The process was repeated until the acid was clear. The sample was then rinsed at least four times with ultra-pure water until the pH reached neutral. Sodium hydroxide (NaOH) was then added for 20 minutes, at a temperature of 80°C (176°F). The strength of the NaOH varied from 0.1 to 0.25N depending on sample tolerance. The sample was then rinsed with ultra-pure water. This process was repeated if the base treatment liquid appeared dark, while monitoring the sample for potential deterioration. Afterwards, the sample was rinsed with ultra-pure water, then 0.1N HCL, then ultra-pure water again until the water was clear. The pH of the discarded rinse water was then checked to ensure it was neutral. The final step involved heating the sample

in 0.5N HCL for an additional 45 minutes at a temperature of 80°C (176°F). Afterwards, the sample was rinsed four times in ultra-pure water. The sample was then dried and placed in a new glass vial. It was placed in a small plastic bag and packed for transport. Samples were analyzed at DirectAMS in Bothell, Washington.

Chapter 4: Results of Investigations at Camp Bullis

Six sites were revisited for archaeological evaluation on Camp Bullis. The CAR was unable to revisit site 41BX423 because the CAR was not granted access due to the site's location within the Impact Zone. Of the six sites the CAR was able to revisit, shovel testing was conducted at three sites (41BX1013, 41BX1344, and 41BX1445), and was attempted at a fourth site, 41BX1277. Soils at 41BX1277 were not deep enough to allow excavation. Additionally, surface features and conditions were documented. While no further fieldwork was initially proposed at a fifth site, 41BX1322, the CAR documented the site conditions at the request of the JBSA-CRM. Due to its size and deeper soils, three BHTs and two TUs were excavated at the sixth site, 41BX432. Additionally, the CAR recorded the stone fences spanning Camp Bullis (41BX1211) and evaluated the site. These fences are associated with the early ranching activities on the property. The CAR reviewed previous reports and data provided by JBSA before revisiting areas where fence sections were reported to record the fences and their current condition.

41BX432

Site 41BX432 contains both a historic and prehistoric component. The historic component of the site was initially recorded in 1977 by the CAR during a pedestrian survey (Gerstle et al. 1978). The site was originally described as containing a cut limestone foundation with two chimney bases, two flagstone walkways, and a possible collapsed well or cistern. A doorstep, fence posts, and the remains of outbuildings were described as still being present. A large pit had been dug into the main room of the structure. The artifacts associated with the structure documented on the surface dated from 1880 to 1940. The site is located in the northern portion of Camp Bullis (Figure 4-1). Soils consist of Krum clays (Kr) (NRCS 2020) and vegetation consists of Live Oak-Ashe Juniper Parks (TPWD 2020).

According to Cox's Camp Bullis archival review (1990), as well as Freemen's history of the property (1994b), the land where the site is located was acquired by Joseph Landa, a German immigrant, in 1847. The records do not indicate that Landa occupied the property or engaged in ranching and farming activities during the time the property was in his possession. Landa sold the land to William D. Parrish in 1866 (Cox 1990). Parrish was an early pioneer of Angora goat ranching in Texas who served as the first president of the American Mohair Growers Association. He emigrated from Kentucky in the mid-1800s. He developed a bloodline of Angora goats which carried his name and was seen as a founder of the Angora goat and mohair industry in Texas, as well as one of the earliest ranchers in the Camp Bullis area (Freemen 1994b). He had constructed a stone house on the property by 1867 and used the land to raise sheep and goats until 1882 (Freemen 1994b). He sold the land to Gustavus Hoerle in 1882, who employed Henry Fink to continue to run the ranch. Gustavus Hoerle and his wife emigrated from New York, and Henry Fink was a young German immigrant with ranching experience. It appears that during this period the house remained simple in plan; Fink remarked in a letter that the house had a good fireplace and good bed, and that was about all. Both Fink and Hoerle were active in the American Mohair Growers Association, and Hoerle was an enthusiastic proponent of Angora goats (Freemen 1994b). In 1886, a drought brought economic pressure to the ranchers in the area. In 1896, Daniel and Anton Oppenheimer became owners of the property after the Hoerles defaulted on the loan (Freemen 1994b). The Oppenheimers ranched cattle (Cox 1990), but also continued the tradition of goat ranching at the site (Ornish 2020). They retained Henry Fink as a ranch manager, who continued to occupy the house until the ranch was sold in the early 1900s (Freeman 1994b).

The Oppenheimers owned the land from 1896 to 1906, when the land was acquired by the US government. While purchase was considered as early as 1902, it was not finalized until four years later. The ranch was one of the early government acquisitions in the area and served as one of the original campgrounds for Camp Bullis (Fort Sam Houston Museum 1990). For a while the ranch house provided lodging for game wardens living on the land (Freeman 1994b). A town movie set was also constructed nearby for the movie "Wings," and was bombed during the movie production. The ranch continued to be used during military training, and some improvements such as a pump house were constructed around WWI. The ranch was also used as a mess area during training for the Vietnam War (Fort Sam Houston Museum 1990). It is unclear when the house was destroyed; a photo depicts it still standing in July of 1939 (Freeman 1994b).

The site was revisited by Prewitt and Associates in 1998 during a pedestrian survey (Scott 1999). In addition to the historic site components documented in the original work, the survey documented a further walkway and stone foundations for an entry porch on the southern end, as well as potential remains of a stone bathhouse. An additional prehistoric component containing intact burned rock features was documented. This component is located west of the

historic house foundation, across Oppenheimer Road. It had been impacted by borrow pit activity. Further investigation of both components was recommended, the prehistoric for isolable, interpretable components and the historic for potential data about ranch spaces and lifeways of Hill Country ranchers. The prehistoric component was revisited by the Camp Bullis Cultural Resources Office between 2003 and 2006 and found to be not eligible due to poor integrity (Pagoulatos 2006). No further fieldwork was conducted at the historic component at that time, but Pagoulatos (2006) recommended that the historic component of the site remain eligible for listing in the NRHP under Criterion D. The THC concurs with this recommendation (THC 2020). The JBSA-CRM recommended additional testing of the site to reevaluate the previous eligibility recommendation.

Current Investigations at 41BX432

The CAR revisited the historic component of the site to assess its eligibility for listing in the NRHP. The prehistoric component of the site appears to have been nearly eradicated by a large borrow pit (Figure 4-1) The historic outbuildings noted to the north could not be relocated due to development of a mock training village in that space, which was in use during the investigation. The house foundation was found to have been damaged by mechanical clearing around the site but was still present. However, stones had been damaged and pulled out of place by machinery (Figure 4-2). The standing remains of the chimneys and walls described in Gerstle and others (1978) are no longer standing, but rubble remains. During the investigation, a significant number of blackberry plants were noted growing around the house foundation. Blackberries were not noted growing wild elsewhere around Camp Bullis during survey so these plants may represent the remains of a kitchen garden (Dase et al. 2010).

The CAR excavated three BHTs around the site to locate potential buried deposits or structural remains of outbuildings associated with the house (Figure 4-3). Remains of such outbuildings had been noted during previous surveys (Gerstle et al. 1978). Additionally, TUs were excavated within two features identified in the previous surveys (Scott 1999).

Figure 4-1. CAR crew examining the borrow pit where the prehistoric component on 41BX432 was located.

Figure 4-2. Stones pulled out of foundation and broken during clearing activity, 41BX432. Note the fresh breaks on the stones.

All BHTs were shallow. A prepared surface, likely a walkway or driveway, was documented in BHT 2. No features and little cultural material were documented in BHTs 1 and 3. BHT 1 was excavated west of the house foundation. BHT 2 was located south of the house foundation. BHT 3 was located southwest of the foundation in the area described by Scott 1999 as "bathhouse debris."

BHT 1 was oriented roughly north south. It was 4 m (13.1 ft.) in length and 1 m (3.3 ft.) wide. It reached a maximum depth of 60 cmbs (23.6 in.) before encountering degraded limestone. No features were encountered. Previous site plans and photo of the house in Freeman (1994b) suggest that this area would have been behind the house. Four layers were identified in the soil profile (Figure 4-4). Layer 1 extended 0-30 cmbs (0-11.8 in.). It consisted of very dark gray clumpy clay with lots of roots (10YR 3/1). Layer 2 extended from 30-50 cmbs (11.8 -19.7 in.). It consisted of very dark grayish-brown blocky clay with roots (10YR 3/2). Layer 3 extended from 50-60 cmbs (19.7-23.6 in.). It consisted of dark brown blocky clay with roots and flecks of carbonates (10YR 3/3). Layer 4 was a light yellowish brown (10YR 6/4) caliche layer extending from 60-70 cmbs (23.6-27.6 in.).

BHT 2 was oriented roughly east west. It was 5.1 m (16.6 ft.) in length and 1.1 m (3.5 ft.) wide. It reached a maximum depth of 70 cmbs (27.6 in.) before encountering limestone. Some type of surface was encountered at 40 cmbs (15.7 in.) in the western portion of the trench and designated Feature 3 (Figure 4-5). The photo of the house in Freeman (1994b) is taken from approximately the same area where the trench was excavated, suggesting a possible driveway or road. The surface consisted of limestone gravels. Three layers were identified in the soil profile (Figure 4-6). Layer 1 extended 0-30 cmbs (0-11.8 in.) and consisted of black, blocky clay with roots (10YR 2/1). Layer 2 extended 30-50 cmbs (11.8-19.6 in.). It consisted of dark brown compact clumpy clay with large roots (10YR 3/3). Layer 3 extended from 50-70 cmbs (19.6-27.6 in.) and consisted of dark yellowish-brown clays with carbonate (10YR 3/6).

BHT 3 extended 3.2 m (10.5 ft.) and was 1.3 m (4.2 ft.) wide. It was oriented roughly north south. It reached a maximum

Figure 4-3. Site 41BX432 on a topographic map.

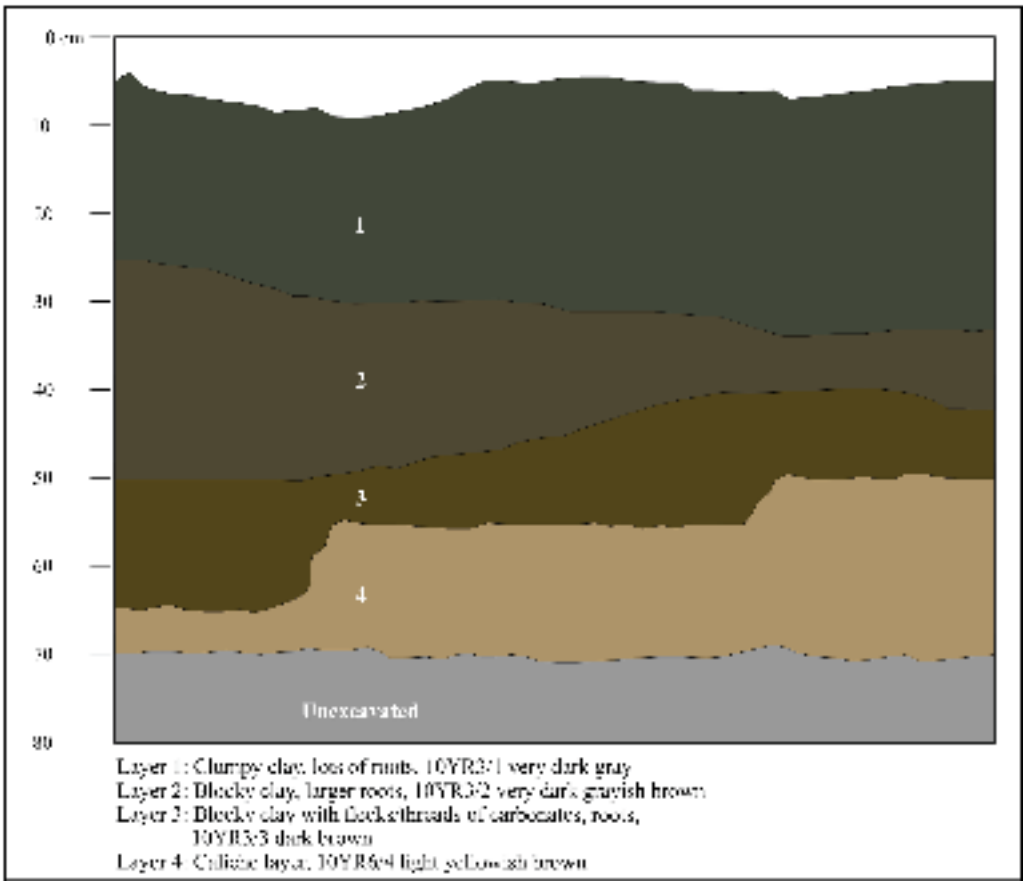

Figure 4-4. BHT 1, west profile, 41BX432.

Figure 4-5. Feature 3 in BHT 2, 41BX432.

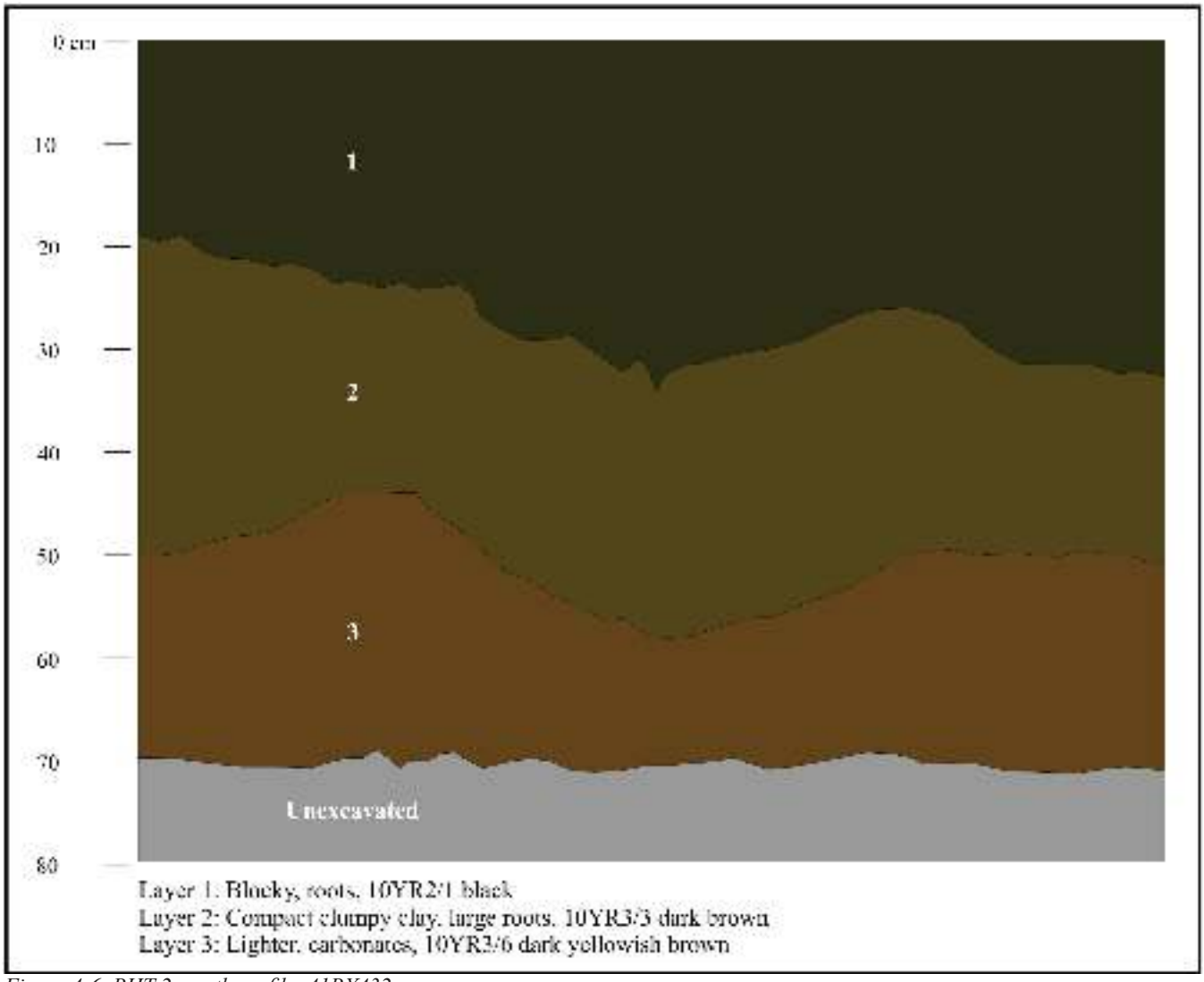

Figure 4-6. BHT 2, south profile, 41BX432.

depth of 70 cmbs (27.6 in.) before encountering degraded limestone. No intact features or artifacts were noted, aside from surface rubble. Three layers were identified in the soil profile (Figure 4-7). Layer 1 extended from 0-30 cmbs (0-11.8 in.). It consisted of loose, black clumpy clay with roots (10YR 2/1). Layer 2 extended from 30-40 cmbs (11.8-15.7 in.) and consisted of more compact very dark grayish-brown clays with rootlets and some gravels (10YR 3/2). Layer 3 extended from 40-70 cmbs (15.7-27.6 in.). It consisted of very pale brown caliche with limestone nodules (10YR 8/4).

Little cultural material was recovered from the backdirt of the BHTs, and none from the trench profiles (Table 4-1). A fragment of undecorated white earthenware was recovered from the first 60 cm (23.6 in.) of BHT 1, and a clear, tooled bottleneck fragment was recovered from the first 70 cmbs (27.6 in.) of BHT 2 (Figure 4-8). Sites containing only white earthenware are considered post-Civil War in Texas (THC 2006). Clear glass is most common post-1910, and tooled finishes generally date from 1875 to 1917 (Lindsey 2020). These time periods are consistent with the known use history of the site described previously.

TU 1 was excavated in the possible collapsed well or cistern identified by Gerstle et al. (1978), which was relocated by Scott (1999). The test unit documented a distinct soil change associated with what is likely a collapsed well, and a vertical pipe was noted emerging from the feature. While a number of loose stones were documented in the slump of the filled well, no intact well structure was encountered.

The well feature (Feature 1) is most likely the well noted by D. Bruns as Well #11. The well is described as hand-dug and filled in (Boyd et al. 1990: Figure 4-9). The previous archival discussion (Boyd et al. 1990) includes a map and compilation of all known wells on the base, including historic wells, many of which continued to be used during the early development of

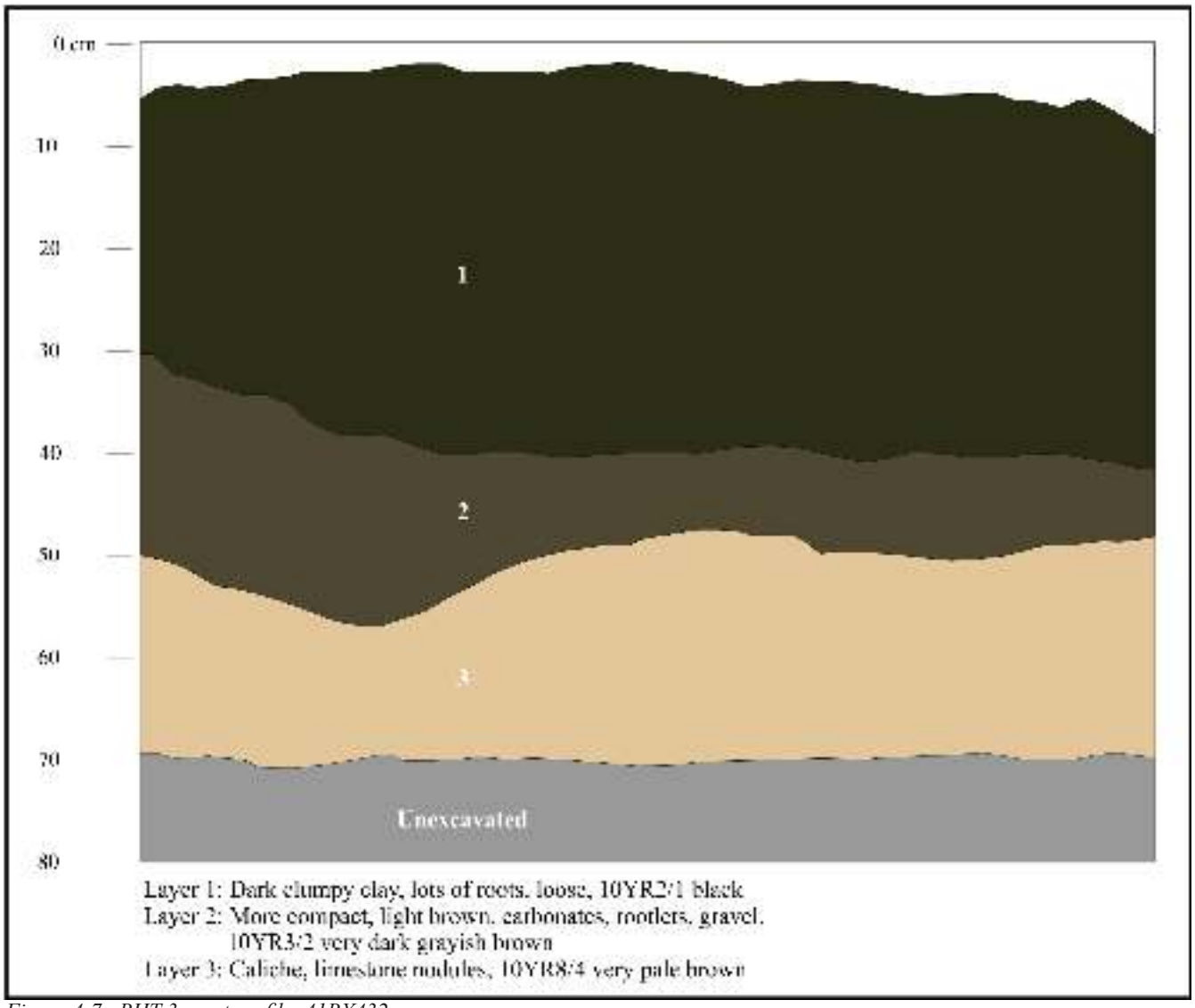

Figure 4-7. BHT 3, west profile, 41BX432.

the base until new wells could be drilled. There are two other wells associated with the Oppenheimer Ranch, numbers 15 and 16. Number 15 is described as a bore well blocked below the surface, while 16 was in use for livestock. These wells are located south of the site.

One hundred and eighty-three artifacts were recovered from TU 1, including 13 ceramic sherds, 64 pieces of glass, 2 personal items, 1,009 g (35.6 oz.) of metal, 202.4 g (7.14 oz.) of organic material, and a 126.5 g (4.46 oz.) sample of ash from Feature 1 (Table 4-2). The most common type of ceramic recovered was white earthenware (n=9). Only one of these sherds was decorated, a body fragment of flow blue recovered from Level 3 (30-49 centimeters below datum (cmbd); 11.8-19.3 in.). In Texas, flow blue dates from 1835 to 1900 (THC 2006). One burned fragment of semi-porcelain, likely utilitarian, was recovered from Level 6 (60-70 cmbd; 23.6-27.6 in.). This type of ceramic dates from the late nineteenth into the early twentieth century (THC 2006). Two sherds of stoneware were recovered from Levels 5 (50-60 cmbd; 19.6-

Table 4-1. Material Recovered from BHTs at 41BX432

FS #	Provenience	Depth (cmbs)	Superclass	Class	Description	Count (Each)
66	BHT 1 Backdirt	0-60	Ceramics	European Earthenware	Undecorated, body	1
67	BHT 2 Backdirt	0-70	Glass	Container/Vessel	Bottleneck fragment; clear, tooled finish	1

Figure 4-8. Artifacts recovered from BHTs at 41BX432: a.) bottleneck frag from BHT 2, b.) white earthenware from BHT 1.

23.6 in.) and 6 (60-70 cmbd; 23.6-27.6 in.), respectively. Both have an Albany slip interior, likely dating from 1850 to 1900 (THC 2006). One possible fragment of Native American ceramic was recovered from Level 6 (60-70 cmbd; 23.6-27.6 in.). The fragment is very small and appears to be poorly fired, making positive identification difficult (Figure 4-10).

Twenty-four of the glass fragments recovered from TU 1 were container glass, and 40 were window glass. A variety of container glass was recovered, including amber/brown, aqua, clear, and milk glass (Figure 4-11). Metal recovered included a crown cap, a mix of wire and cut nails, unidentified scrap, and fasteners. The mix of cut and wire nails suggests a date in the late 1800s to early 1900s (Fontana et al. 1962). Both personal items recovered were also metal, a copper button face stamped "C 98" and an aluminum comb (Figure 4-12). Construction materials recovered include brick, slate, and slag. Organic materials consisted of coal and faunal bone. A sample of ashy soil was taken from Level 6 (70 cmbd; 27.6 in.).

Feature 1 was defined within TU 1 from 51-71 cmbd (20.1-28.0 in.). While any previous existing structure was no longer intact, the feature is most likely a filled well. From the surface it appears to be a depression in the ground with associated scattered limestone. TU 1 was positioned straddling the limestone scatter to identify any intact well structure that may still have been present, but no structure was discovered and the well pit outline in the soil was not directly associated with the observed stones (Figure 4-13). It is unclear if the stones represent part of former well structure or debris from the former house, a portion of which was limestone (Freeman 1994b). The depression dimensions are 2.8 by 3.3 m (9.2-10.8 ft.). Excavation uncovered loose limestone and a vertical pipe extending deep below the ground (Figure 4-14). Soils were loose, light brownish-gray (10YR 6/2), distinct against the surrounding soil 10YR 3/4 (dark yellowish-brown) and included ashy material, but no charcoal (Figure 4-15). The dark yellowish-brown soil resembled the soils found just above degraded limestone deposits in the BHTs. The feature is likely the well identified in Boyd and colleagues as the #11 Oppenheimer House well, noted to be hand dug and previously filled (Boyd et al. 1990:75). Cultural material was mixed and historic in nature. The artifacts appear to be primarily household in nature, with some construction material present, and date to the late nineteenth to early twentieth century. This suggests the well was likely filled in during this time period, possibly around the time the land was acquired by the US government. However, the house itself stood until at least 1939 (Freeman 1994b).

TU 2 was excavated in the depression feature identified by Scott (1999) as a possible well or cistern (Figure 4-16). This feature was noted during the 1977 survey (Gerstle et al. 1978), when more of the structures were still standing, suggesting that no structure associated with the feature was present at that time. For the purposes of this investigation, this previously described feature was designated Feature 2. Feature 2, uncovered within the unit, consisted of an area containing limestone and lime melt (Figure 4-17). It is likely that Feature 2 was mistaken for bedrock in the bottom of a ST excavated by Prewitt and Associates in the depression that terminated at 25 cmbs (9.8 in.) because it consists primarily of limestone (Scott 1999). The CAR scraped in the vicinity of the feature with the backhoe after completing excavation of the test unit to attempt to define the feature's boundaries and shape (Figure 4-18). The eastern boundary was located, but further excavation near the house was not attempted due to concern about possible damage to the existing foundation when positioning the backhoe. Feature 2 does appear to extend in the direction of the house, as well as north and south. The lime melt formed a thick layer in an oblong shape and spans at least 4.8 by 4.8 m (15.7 by 15.7 ft.) based on the extent uncovered by backhoe scraping. A sample was taken of the material; it is white (10YR 8/1), clayey and clumpy. The feature is unlikely to be a cistern, as originally posited based on the appearance of the depression at the surface. It somewhat resembles the description of a filled storm cellar identified at the W. Jarvis Henderson Site (41BL273; Carlson 1984). A 3D model of the feature exposed in TU 2 before scraping was created using Agisoft software, using the process described in Chapter 3.

Four hundred and eighty-five artifacts were recovered from TU 2 (Table 4-3). No ceramics were recovered. Three hundred and seventeen of the artifacts were glass fragments (69%). Additionally, a total 758.3 g (26.7 oz.) of metal was recovered, including a cast-iron mason's line and a hinge. Other metal artifacts included 11 fasteners; 121 nails, including wire and cut; four shotgun shells; unidentified scrap; a hinge; a mason's line; and ferrous wire (Figures 4-19 and 4-20). A total of 91.4 g (3.2 oz.) of construction material

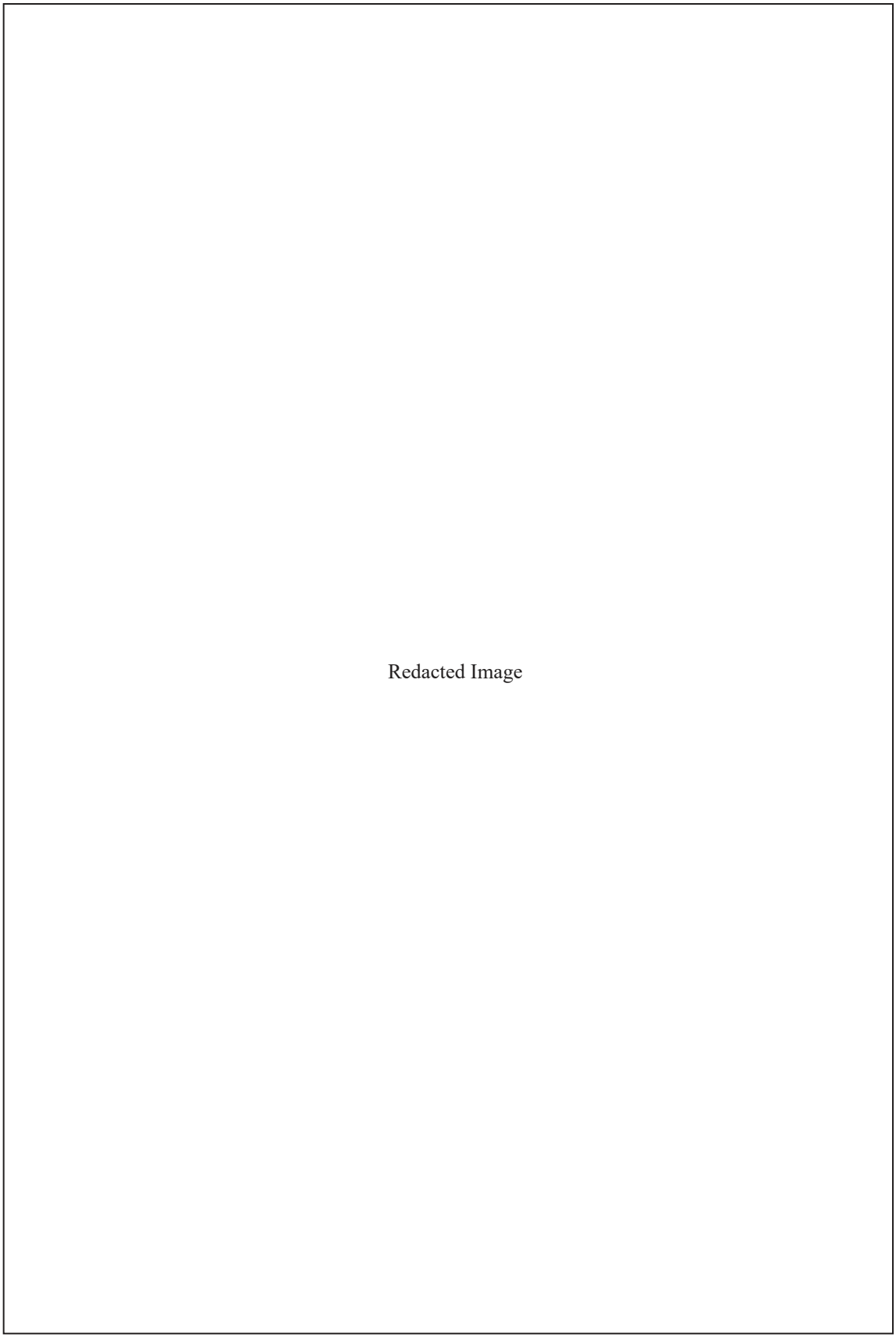

Figure 4-9. Wells recorded on Camp Bullis (adapted from Boyd et al. 1990). Site locations added.

Table 4-2. Material Recovered from TU 1 at 41BX432

Level	Ceramics (ct)	Glass (ct)	Personal (ct)	Metal (wt. in g)	Construction (wt. in g)	Organic (wt. in g)
1	1	6	0.0	0	0.0	0.0
2	4	14	0.0	58.4	1.7	0.2
3	1	11	1	535.2	0.0	3.7
4	1	12	0.0	64.3	2.1	76.0
5	3	4	0.0	119.2	163.9	20.8
6	3	17	1	231.8	1.9	101.6

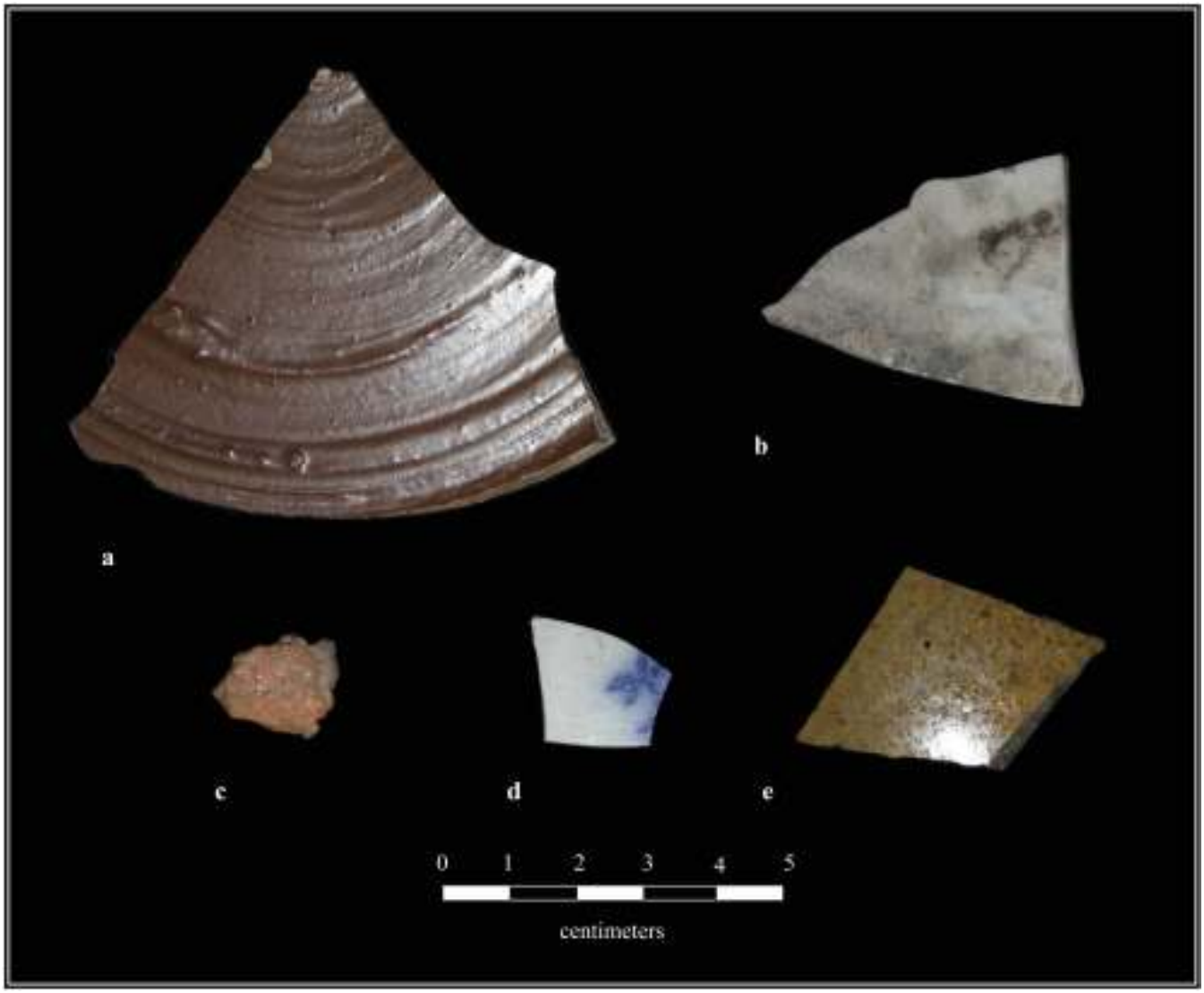

Figure 4-10. Sample of ceramics recovered from TU 1 at 41BX432.

was recovered, mostly concrete, and 4.54 g (0.16 oz.) of organic material was recovered, including bone and coal. Nineteen of the glass fragments recovered were container glass, consisting of clear and aqua glass. The majority of the glass recovered, 298 fragments (94%), was window glass (Figure 4-21). One personal item, a metal clothing fastener, was recovered from Level 3 (40-50 cmbd; 15.7-19.7 in.). The predominance of window glass and nails suggests that the feature was structural in nature, and potentially may represent a demolished, older portion of the house. It differs significantly from the household-oriented material recovered from TU 1. The 1939 photo of the house (Freeman 1994b)

Figure 4-11. Milk bottle fragments recovered from TU 1 at 41BX432.

Figure 4-12. Personal items recovered from TU 1 at 41BX432.

Figure 4-13. TU 1, surface, on 41BX432. Note loose limestone and depression (west of unit).

Figure 4-14. Section of pipe associated with Feature 1, 41BX432.

Figure 4-15. TU 1, Level 6, 41BX432. Note soil change and pipe opening.

Figure 4-16. TU 2 surface, 41BX432. Note depression.

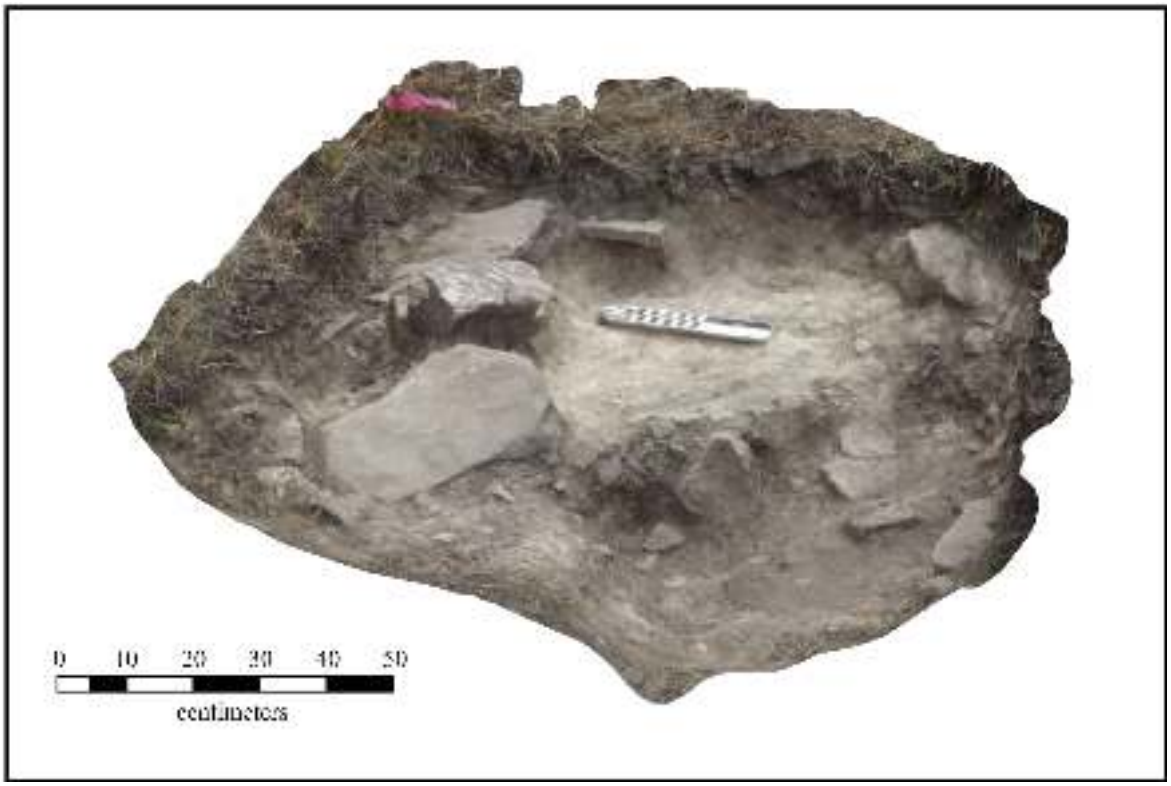

Figure 4-17. TU 2 termination, Feature 2, 41BX432. 3D model.

Figure 4-18. Feature 2, 41BX432, uncovered by backhoe.

Table 4-3. Summary of Cultural Material Recovered from TU 2 at 41BX432

Level	Ceramics (ct)	Glass (ct)	Personal (ct)	Metal (wt. in g)	Construction (wt. in g)	Organic (wt. in g)
1	0	84	0	320.2	49.9	0.5
2	0	123	0	227.3	0	0.6
3	0	110	1	210.8	41.5	3.5

Figure 4-19. Metal hinge recovered from Level 1 of TU 2 at 41BX432.

depicts a small limestone section near the back of the house, with a larger wood frame addition. The two chimneys also differ in construction. Stone houses were most commonly built in the area from the period of the Civil War to the 1880s. After the 1880s, frame houses became more common (Jordan 1966). This suggests that the small limestone portion in the photo may be the original house, built in 1867, described as humble by Henry Fink (Freeman 1994b), and the wood frame may be a later addition, perhaps under the ownership of the Oppenheimers. Feature 2 could be a demolished section of this old part of the house, a demolished outbuilding, or a porch or pathway demolished for the newer construction.

Summary

Excavation at 41BX432 documented several buried features with associated cultural material, including water features and potential early construction or outbuildings associated with the original layout of the ranch. Soils are shallow and the wider surrounding area where outbuildings were reported to be located has been disturbed by construction for training and borrow pits. However, the site has significance as the remains of an early Texas Hill Country ranch. The site is representative of a ranch from a significant period in local agricultural history (1880-1920). It is linked to the development of goat ranching, an industry unique to the Texas Hill Country, which peaked in this period and is associated with several significant ranchers from that industry (Dase et al. 2010). It is also associated with an important local ethnic group, German immigrant farmers (Dase et al. 2010). The site is also linked to locally significant historical figures. William Parrish, who likely constructed the house, was one of the earliest ranchers on the land now occupied by Camp Bullis as well as a pioneer in the Texas mohair industry (Freeman 1994b). Hoerle and Fink were also significant mohair industry pioneers (Freeman 1994b). Daniel and Anton Oppenheimer were German Jewish immigrants and local businessmen who continued the tradition of goat ranching at the site (Ornish 2020). Development in Bexar County has obliterated many such agricultural properties, making those that remain more significant (Dase et al. 2010). The location of 41BX432 on Camp Bullis, away from significant urban development, has preserved remains of the ranch structures, although the area's use for training, maintenance activities such as clearing, and other activities has impacted the site. When the site was originally recorded in 1977, no further work was recommended (Gerstle et al. 1978), but Prewitt and Associates (Scott 1999) recommended that the site was potentially eligible for listing in the NRHP under Criterion D because the house layout was largely intact, potentially providing information about ranch structure and lifeways during this time period. Additionally, the site is associated with early goat ranching activity that later became significant to the agricultural development of the area (Scott 1999). During his site revisit, Pagoulatos (2006) also recommended the historic component of the site as eligible for listing in the NRHP. The CAR's investigation has revealed that features associated with ranch layout are in fact intact below the surface. The CAR recommends that the site has significance under Criterion A due to its unique association with Angora goat ranching and the mohair industry on the Edwards Plateau, under Criterion

Figure 4-20. Mason's line recovered from Level 2 of TU 2 at 41BX432.

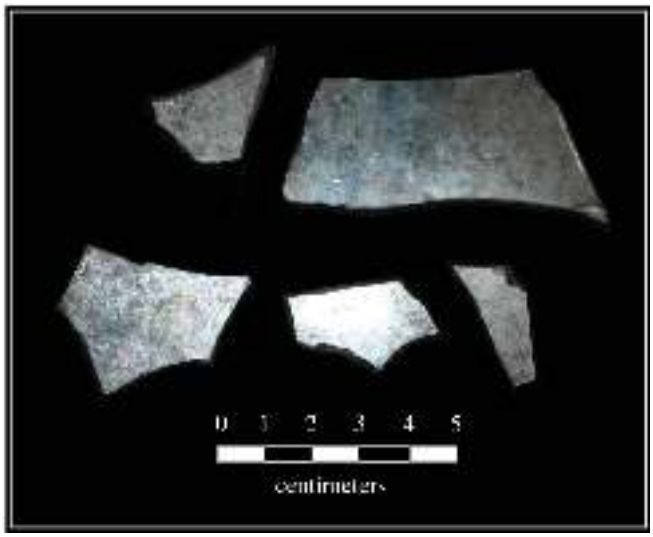

Figure 4-21. Sample of window glass recovered from TU 2 in 41BX432.

B due to its association with locally significant figures in that industry, and under Criterion D due to the potential research value concerning early ranching activities in the area. Adverse impacts to the site should be avoided.

41BX1013

The site consists of three historic wells, one hand-dug and stone-lined, and the other two drilled and steel-lined. Site 41BX1013 was recorded in 1994 by Prewitt and Associates during a pedestrian survey (Kibler and Gardner 1997). The site was recommended as eligible for listing in the NRHP under Criteria B and C, due to its association with John O. Meusebach as well its semi-dressed limestone block construction, a mode of construction associated with German immigrants in the Texas Hill Country (Kibler and Gardner 1997). Kibler and Gardner's discussion of site eligibility does not address the two drilled wells. The THC records the site's eligibility for listing in the NRHP as undetermined (THC 2020).

The hand-dug well is likely associated with the Meusebach Ranch, also known as Comanche Springs (Cox 1990). Meusebach's role in Texas history, as well as a brief history of the ranch, is discussed in Chapter 2 of this report. On the well map provided in Boyd et al. (1990), discussed previously, the hand-dug well is labeled the Comanche Spring 1 well (Figure 4-9). The two drilled wells, also depicted on the map, likely served Camp Funston (later renamed Camp Stanley; Boyd et al. 1990). The wells were recorded in 1994 by Prewitt and Associates and recommended for listing in the NRHP due to their association with the historically significant figure of John O. Meusebach (Kibler and Gardner 1997). The CAR's work at the site consisted of recordation of the well features and archival research.

While the site was not recorded until 1994, Prewitt and Associates' archival review of Camp Bullis (Boyd et al. 1990) includes a map of all water wells on the installation, compiled by the Camp Bullis Land Management Office. This map (Figure 4-9) depicts four wells in the area: the Comanche Spring 1 well (#30), noted as hand dug and stone-lined; two wells dated to 1918, the Comanche Mill well (#31), drilled by H.H. Dietz, blocked by debris, and the Camp Funston well (#32), which is also noted as potentially blocked; and CB Well #11 (#33), drilled by A. Johnson in 1940, noted as currently in use by the military serving Camp Stanley (Figure 4-9). This fourth well has not been identified in any archaeological survey of the area. The first drilled wells in the American south date to the late 1800s (Carlson 1943), and the earliest drilled wells on Camp Bullis with firm dates are the two 1918 wells described above (Boyd et al. 1990). As noted, the two drilled wells are likely related to the expanded use of the base during WWI (Fort Sam Houston Museum 1990). The CAR was able to relocate only two wells: the hand-dug well currently below a windmill (Figure 4-22) and one drilled well (Figure 4-23). Limestone blocks, including possible well caps, were recorded at the site.

The Comanche Spring 1 well is associated with the Meusebach Ranch, also known as the Comanche Spring Ranch (site 41BX420), located approximately 235 m (771 ft.) south of 41BX1013 across Salado Creek (Figure 4-24). The ranch, started by John O. Meusebach in 1847, was one of the earliest settlements in the area that became Camp Bullis, and because of Meusebach's prominent role in the German immigrant community, led the way for other German ranchers and farmers to settle in the area (Cox 1990; Freeman 1994b). Meusebach played a significant role in the German immigrant community in Texas, overseeing the establishment of a number of important settlements including Fredericksburg, Texas (Biesele 1987).

The stone-lined well is likely associated with the Comanche Spring, described in the deed record for the property (Gerstle et al. 1978) and for which the ranch (also known as Meusebach Ranch) was named. This suggests that the hand-dug well has an early construction date, potentially as early as 1847 (Freeman 1994b), and that the area has served as a water source for many years. The CAR was unable to view the well directly because it is currently covered with a protective casing and a windmill. Photos taken during previous investigations show that the well is lined with roughly cut limestone blocks, consistent with an early construction date. This mode of construction is considered distinctive to Texas Hill Country German immigrant settlements (Kibler and Gardner 1997). Additional photos provided by the JBSA-CRM show no damage to the well's limestone structure from the windmill, likely due to the protective casing. The original well was initially thought to be closer to the extant house structure (Gerstle et al. 1978), but since no other well has been located and the hand-dug

Figure 4-22. Hand dug well below windmill at 41BX1013.

Figure 4-23. Drilled well at 41BX1013.

Figure 4-24. Relationship between 41BX1013 and 41BX420.

well is of early construction, it is likely that the hand-dug well at 41BX1013 represents the Comanche Spring well. Freeman's (1994b) research indicates that the original house and the later, larger structure identified as the Comanche Spring ranch house (41BX420) were in fact two separate structures in different locations, rather than being built in the same location as posited previously (Gerstle et al. 1978)

Current Investigations at 41BX1013

Site 41BX1013 is located near the western boundary of Camp Bullis, in the Salado Creek floodplain northeast of Cowgill Road. Soils at the site consist of Tinn clays (Tc), and vegetation consists of Live Oak-Mesquite-Ashe Juniper Parks. Pedestrian survey located the wells approximately 40

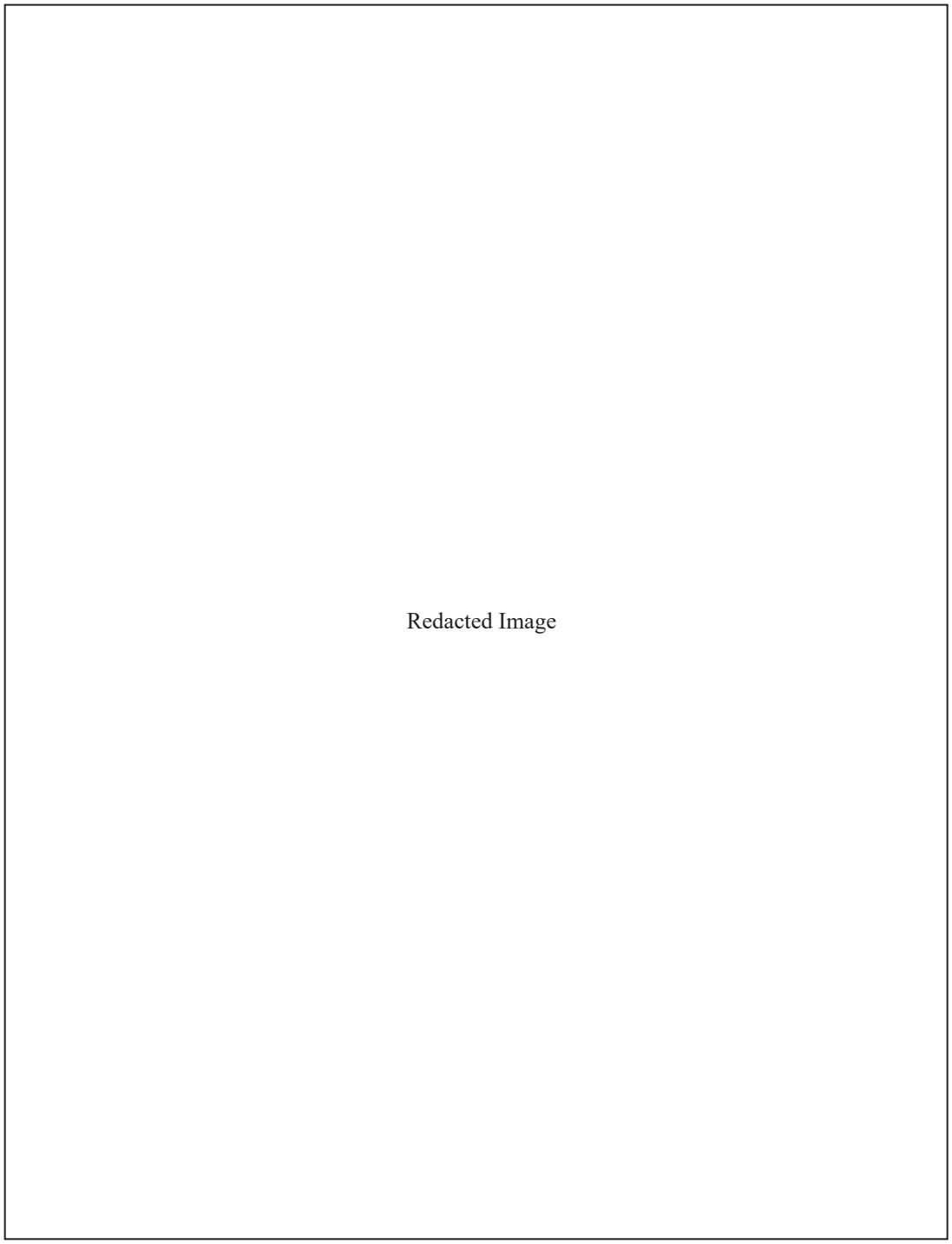

Figure 4-25. Site 41BX1013 on a topographic map, showing well locations, surface material recorded, and ST distribution.

m (131 ft.) south of the site center provided to the CAR by JBSA (Figure 4-25). Six STs were excavated around the wells to determine if any buried historical deposits were associated with the features (see Table 4-4).

Only ST 3 in Level 2 (10-20 cmbs [3.9-7.9 in.]) was positive. The artifacts recovered consisted of a scrap of unidentified ferrous metal and a clothing fastener. Three of the STs reached the terminal depth of 60 cmbs (23.6 in.). The others were terminated due to dense gravel deposits and a metal water pipe. This pipe likely connects to one of the wells, but this could not be determined for certain within the confines of a ST.

Summary

The results of shovel testing suggest that 41BX1013 does not contain archaeological deposits with significant research potential. The site was not previously recommended as eligible for listing in the NRHP due to research potential under Criterion D, but instead due to its age, integrity, and association with John O. Meusebach under Criterion B, as well as under Criterion C due their distinctive limestone construction which is associated with the German immigrant community in the Texas Hill Country (Kibler and Gardner 1997). This remains true. The hand-dug well is likely associated with the water source for which Meusebach's Comanche Springs ranch was located and named, and it may be one of the earliest intact structures from the ranch, due to its importance as a water source. As stated previously, earlier assessments as well as photographs provided by the JBSA-CRM demonstrate that the protective casing placed around the well has preserved its structure, although the CAR was not permitted to view the well during this investigation. An assessment of the eligibility of the drilled wells for the NRHP was not provided when the site was recorded (Kibler and Gardner 1997); however, they are included within the site description and the archival evidence indicates that they are historical in nature. The CAR was only able to relocate one of these wells. The 1918 date of the well (Boyd et al. 1990), as well as the fact that it appears to be one of the earliest drilled wells on the property, clearly associates its construction with the WWI expansion of Camp Bullis from 1912-1919 (Boyd et al. 1990; Freemen 1994a; Fort Sam Houston Museum 1990). However, these wells lack the significant characteristics and associations of the stone-lined well, and the CAR was only able to verify the presence of one of these wells. The CAR recommends that the early component of the site, consisting of the stone-lined well, is eligible for listing in the NRHP, and avoidance of impact to that portion of the site is recommended. The drilled wells remain a later historic component of the site but are not recommended as eligible for the NRHP.

41BX1277

Site 41BX1277 is a historic bunker likely constructed in the WPA era (Scott 1999). The site is located in the north-central area of the base, west of Malabang Trail on Herr Hill (Figure 4-26). The site was recorded during a pedestrian survey by Prewitt and Associates in 1998. It was recommended as eligible for listing in the NRHP within the Camp Bullis military historical context (Scott 1999). The THC concurred that the site is eligible for listing in the NRHP (THC 2020). The site was recommended for additional testing by the JBSA-CRM to reevaluate the previous eligibility recommendation. It consists of an octagonal, reinforced-concrete training bunker, partially buried (Figure 4-27). The site was recommended as eligible for listing in the NRHP within the Camp Bullis military historical context due to its association with the testing phase of the Triangular Division in 1939 (Scott 1999).

Current Investigations at 41BX1277

Soils are Brackett gravelly clay loams (BrD) and vegetation consists of Live Oak Ashe-Juniper Parks (NRCS 2020; TPWD 2020). The CAR initially planned to excavate STs around the bunker to identify potential buried deposits. However, pedestrian survey of the area revealed a significant lack of soil in the area, which was mostly exposed bedrock. Therefore, CAR staff focused on surveying and recording the current conditions of the site. The corners of the structure were recorded via GPS. The building and area are clearly still in use for training purposes. The interior of the structure as well as the ground outside contains a significant quantity of spent ammunition cartridge casings (Figure 4-28). Prior reports indicated that the door was previously blocked with barbed wire and that the structure

Table 4-4. Summary of STs Excavated at 41BX1013

ST	Cultural Material Present	Depth (cmbs)	Reason for Termination
1	N	30	Dense gravels
2	N	36	Metal pipe
3	Y	60	Complete
4	N	40	Dense gravels
5	N	60	Complete
6	N	60	Complete

potentially contained snakes. However, no barbed wire was present, and no evidence of snakes was observed, although the environment was ideal for snakes.

Summary

The bunker still appears to be in good condition, although the interior ceiling showed some flaking of the concrete, and it appears to be actively in use for training purposes. The bunker was previously assessed as being in good condition and retaining integrity. The site was recommended as eligible for listing in the NRHP under Criterion A, due to its association with the WPA activity on base as well as its possible utilization by the Triangular Division in August 1939 (Freeman 1994a; Scott 1999). Several improvements were made to the Camp Bullis training areas during the years leading up to WWII,

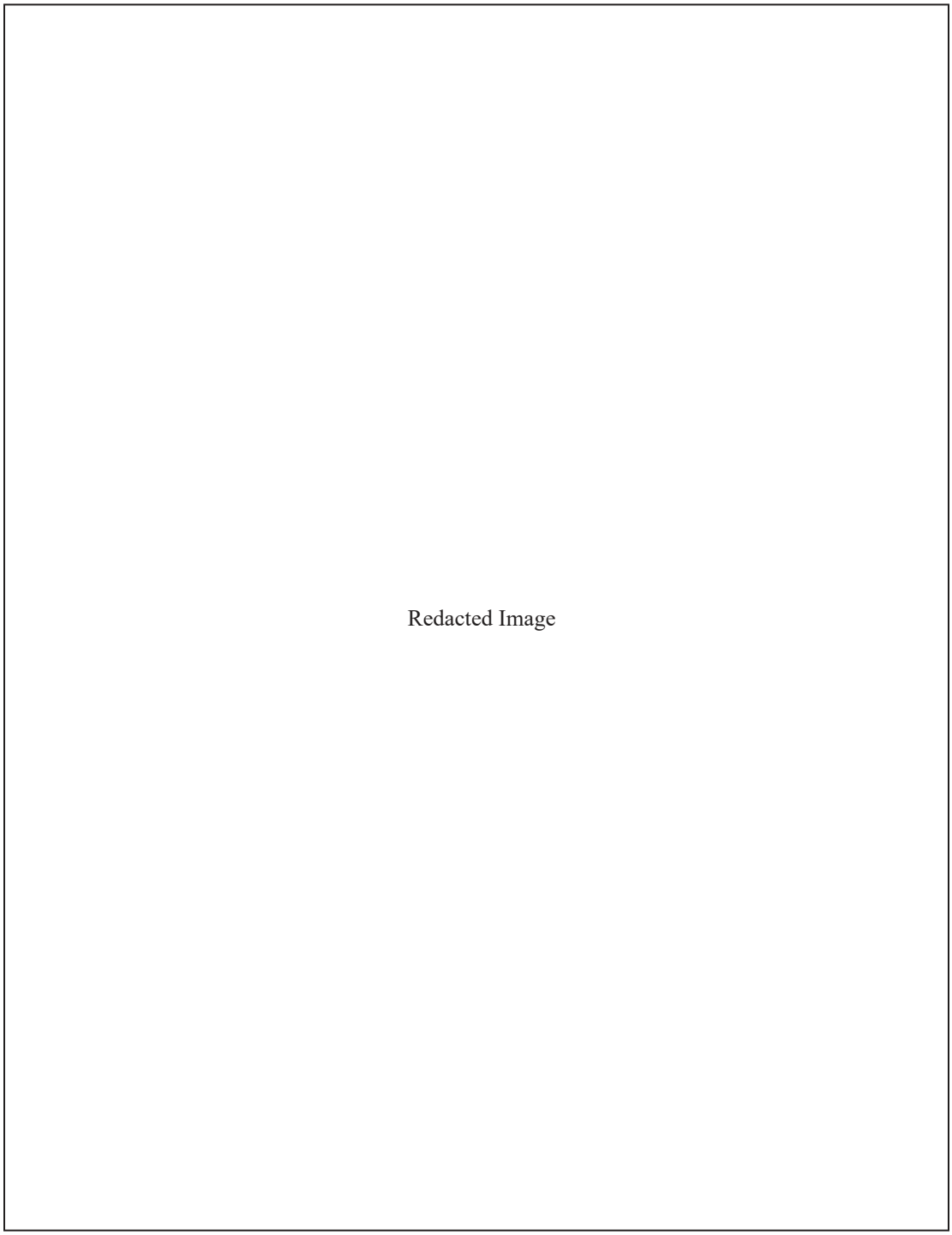

Figure 4-26. Site 41BX1277 on a topographic map.

Figure 4-27. Site 41BX1277 from the road (facing south). Bunker is visible in the center of the photo.

Figure 4-28. Interior of 41BX1277; photo is blurry due to poor lighting within bunker interior. Note pile of cartridge casings.

including work by the WPA (Fort Sam Houston Museum 1990; Freeman 1994a; Scott 1999). Work by the WPA and the Civilian Conservation Corps (CCC) at Camp Bullis during the 1930s is associated with the government's push to find work for significant numbers of unemployed individuals, as well as establishing permanent facilities since earlier construction phases had been considered temporary. Therefore, construction methods from this period tended to include sturdier materials such as cement and stone (Freeman 1994a). The "Triangular Division" Maneuvers tested at Camp Bullis from 1937 to 1939 were significant because they established a basic structure that would be used by the Army in both WWII and the Korean War (Fort Sam Houston Museum 1990; Freeman 1994a). These maneuvers would have occurred in the area of 41BX1277 as well as the nearby bunker site 41BX1276, which was previously found eligible for listing in the NRHP (Fort Sam Houston Museum 1990; Scott 1999). The CAR recommends that site 41BX1277 remains eligible for the listing in NRHP under Criterion A, and that impact to the site should be avoided.

41BX1322

Site 41BX1322 consists of a system of WWI training trenches exhibiting a distinctive zig-zag pattern. The site was recorded by Prewitt and Associates during a pedestrian survey in 1999 (Cestaro et al. 2000). At the time little erosion was noted. The site was recommended as eligible for listing in the NRHP under Criteria A and C based on its association with US involvement in WWI, and the zigzag pattern unique to this era (Cestaro et al. 2000). The THC concurred with the recommendation (THC 2020). The presence and use of such trenches on Camp Bullis during that period is well-established (Fort Sam Houston Museum 1990; Freeman 1994a). The construction of several improvements associated with troop training, often using methods intended as temporary, is associated with the build up to WWI at Camp Bullis (Freeman 1994a). Additionally, similar trenches were constructed and used for the filming of the movie "Wings" in 1926 (Fort Sam Houston Museum 1990; Freeman 1994a).

Current Investigations at 41BX1322

The site is located near the western edge of Camp Bullis, north of Cowgill Road and northwest of Cedar Hill (Figure 4-29). The site occurs in Krum clays (Kr), and vegetation at the site consists of Live Oak-Ashe-Mesquite Juniper Parks (NRCS 2020; TPWD 2020). The CAR initially did not plan to conduct any further fieldwork at the site, as this was not recommended based on previous finds (Cestaro et al. 2000). However, the JBSA-CRM requested that the CAR make a field visit to the site after he was unable to locate the site himself. The CAR, using a GPS unit loaded with the previously recorded location of the site, was also unable to locate the site at that location or within the vicinity.

Summary

The site was initially described as a small (50 x 50 m [164 by 164 ft.]) system of trenches cut into thin alluvial deposits at the base of Light Hill, 2.0-2.5 m (6.6-8.2 ft.) wide and 0.5-0.75 m (1.6-2.5 ft.) deep. Impacts due to bioturbation, clearing, and jeep trails are noted, although the zigzag layout and parapets are described as intact. Upon visiting the site area, CAR staff could not relocate the trenches. CAR staff ranged significantly outside the site boundaries in case the site had been misplotted, but no clear trench features could be located, confirming the JBSA-CRM's previous findings, or lack thereof. Vegetation in the area was extremely dense, and it appears that there is significant runoff in the area. The previous investigation noted wire, rusty cans, and shrapnel, all of which were noted on this visit. The two site photos, retrieved from the accession files at the CAR, show significantly less tree cover in the area (Figure 4-30). The feature itself appears to be somewhat built up on either side and is located in a clear grassy area. No similar feature could be located during this site visit. A shallow depression was identified, which showed evidence of significant erosion (Figure 4-31). The depression may be the remains of the trench system, or alternately is a shallow natural drainage. The depression appears to run in roughly the same direction as the described trench system. There is significant growth of vegetation in the area, particularly ashe-juniper, in contrast to the site photos from the previous visit 21 years prior. When growth is not impacted by animal browsing or cutting, ashe-juniper can reach heights of 1.5-2.3 m (4.9-7.5 ft.) in 20 years (Smeins and Fuhlendorf 1997). If this depression is the remains of the trench system, it appears that the trenches have been filled in or damaged to the point of being unrecognizable. The plotted location and similar ground conditions (scattered trash and presence of jeep trails) imply that this is the correct location, but the site is now too eroded to retain recognizable characteristics. Due to the evidence that the site is no longer intact, the CAR recommends that the site is not eligible for listing in the NRHP.

41BX1344

Site 41BX1344 is a rockshelter and associated lithic scatter across Meusebach Creek. Debitage, snail shells and a Frio dart point were recovered from a ST at the rockshelter mouth. The site was recorded by Prewitt and Associates during a pedestrian survey in 1999 (Cestaro et al. 2000). The shelter measures 6.0 m by 3.5 m (19.7 ft. by 11.5 ft.), with a ceiling height of 0.65 to 1.1 m (2.1 to 3.6 ft.). The rockshelter portion of the site was recommended as potentially eligible for listing in the NRHP pending testing to determine if dateable deposits were present in or around the rockshelter (Cestaro et al. 2000). The THC concurs that site is eligible for listing in the NRHP (THC 2020).

Current Investigations at 41BX1344

The site is located in the north-central area of Camp Bullis, straddling Meusebach Creek (Figure 4-32). The rockshelter is located south of the creek and west of Sewell Road, slightly southeast of where it was previously recorded (Figure 4-33). Soils are Krum clays, and the vegetation was Live Oak-Ashe Juniper Parks (NRCS 2020; TPWD 2020). The CAR excavated six STs within and around the rockshelter, of which two were positive (Table 4-5). The two positive STs, STs 2 and 3, were located near the rockshelter mouth. ST 2 contained burned chert in Level 2 (10-20 cmbs [3.9-7.9

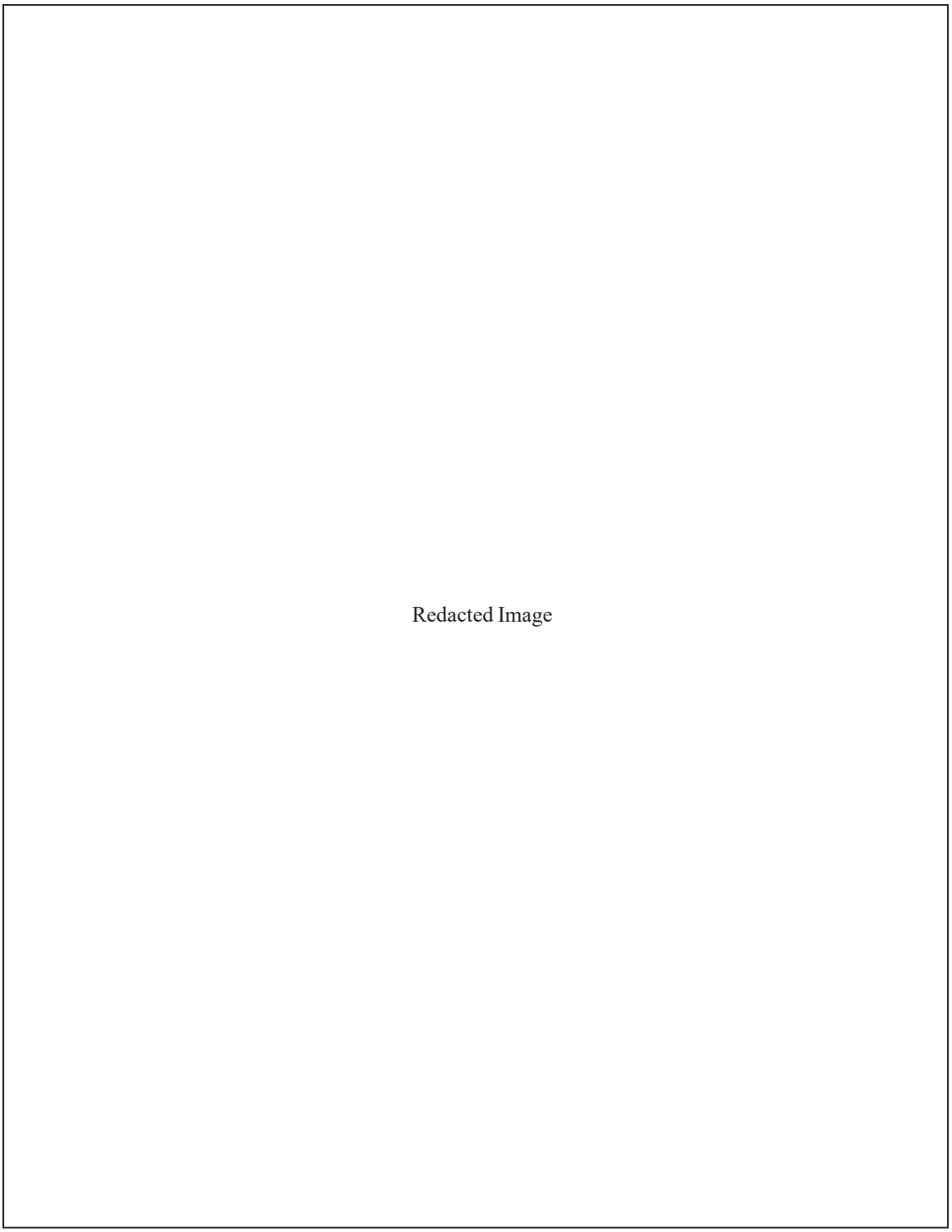

Figure 4-29. Previously recorded location of site 41BX1322 on a topographic map.

Figure 4-30. Site photo of 41BX1322 from 1999, facing east. Taken from Cestaro et al. 2000.

Figure 4-31. Depression at 41BX1322, facing south.

Figure 4-32. Site 41BX1344 on a topographic map. ST 4 location within rockshelter, unable to be recorded with GPS.

in.]) and ST 3 contained an edge-modified flake in Level 1 (0-10 cmbs [0-3.9 in.]). The rockshelter ceiling was very low, but one ST (4) was located within the rockshelter in an area large enough for a staff member to excavate by trowel. This ST was negative and terminated at 5 cmbs (2.0 in.) when bedrock was encountered. The cave appears to be in use by animals as a den, as indicated by animal feces and porcupine quills.

Summary

Soil deposits were extremely shallow in and near the rockshelter, ranging from 5-30 cmbs (2.0-11.8 in.), and buried cultural material was minimal. Only two artifacts were produced, both from shallow contexts. No diagnostic material or charcoal was recovered. The majority of the cultural material associated with the rockshelter appears to be eroding out down the slope below, as pictured in Figure 4-34. The lack of intact buried deposits associated with the rockshelter indicates that the site lacks significant research potential and is not eligible for listing in the NRHP.

41BX1445

Site 41BX1445 is an earthen stock tank with associated water features and evidence of multiple construction periods. The site is located on the west side of Camp Bullis (Figure 4-35). The tank appears on a 1925 US Geologic Survey (USGS) map, but the limestone retaining walls suggest that it was originally constructed as early as the nineteenth century. The site was recorded during a pedestrian survey by Prewitt and Associates in 2001 (Wilder et al. 2003). Archival research found that the site is associated with a ranch previously owned by locally significant stockmen, including William Gerfers, Henry B. Shiner, Ira G. Yates, and Bessie Yates Hudson. The site was found to be eligible for listing in the NRHP under Criterion A due to its intact features and association with early ranching activities in the Texas Hill Country (Wilder et al. 2003). The THC concurs that the site is eligible for listing in the NRHP (THC 2020). The JBSA-CRM recommended additional testing of the site to reevaluate the previous eligibility recommendation.

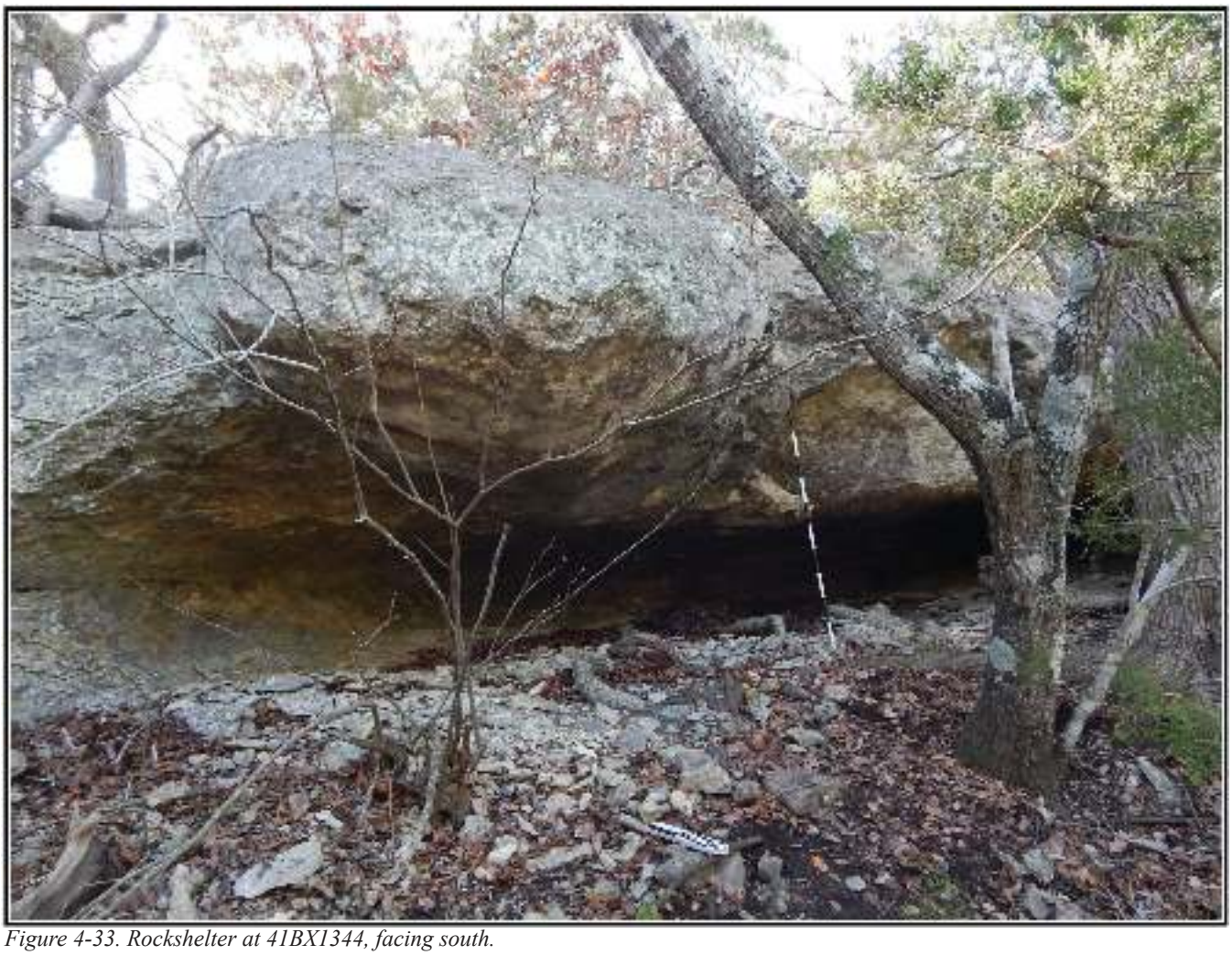

Figure 4-33. Rockshelter at 41BX1344, facing south.

Table 4-5. Summary of STs Excavated at 41BX1344

ST	Cultural Material Present	Depth (cmbs)	Reason for Termination
1	N	5	Bedrock
2	Y	16	Bedrock
3	Y	10	Bedrock
4	N	5	Bedrock
5	N	15	Bedrock
6	N	30	Bedrock

The tank's earthen, partially stone-lined construction suggests that it was originally built during the earlier ranching period, and the concrete trough was added later (Moore et al. 2013). The tank is at least 75 years old based on its presence on a 1925 US Army Corps of Engineers map and is depicted on the USGS Camp Bullis quadrangle as "German Tank" (Wilder et al. 2003). The land on which the tanks sits was originally part of the Lewis Ranch, but became a part of the Panther Springs Ranch (41BX820), owned by William Gerfers, by 1880. Gerfers was a German immigrant who came to the area from New Braunfels. He ran a sheep ranch on land that became Camp Bullis, beginning in 1874. Sheep ranching experienced a boom in Texas from 1850 to 1880 (Freeman 1994b). In the 1880s and 1890s, a number of ranchers in the area now occupied by Camp Bullis struggled due to drought, but Gerfers was one of those who managed to maintain his ranch (Freeman 1994b). After his death in 1899, Gerfers' heirs divested themselves of the ranch. It changed hands multiple times before the land

Figure 4-34. Burned rock feature eroding out of slope below rock shelter, 41BX1344.

Figure 4-35. Site 41BX1445 on a topographic map.

was obtained by the US Government in 1941, but the property remained agricultural in nature (Wilder et al. 2003.)

Current Investigations at 41BX1445

Site 41BX1445 is located in the eastern-central portion of the base, just west of Sewell Road. Soils at the site are Krum clays and the vegetation is Live Oak-Ashe Juniper Parks (NRCS 2020; TPWD 2020). Six STs were excavated to determine if associated buried cultural deposits were present (Table 4-6). None of these were positive. Depth of soils ranged from 12 to 60 cmbs (4.7-23.6 in.), with five STs terminating early due to limestone or limestone bedrock (Figure 4-36). ST results indicate that no buried cultural materials are associated with the site.

Summary

The tank that dominates this site is mostly of earthen construction, with evidence of stone lining in some areas. It was partially surrounded by a cedar post and barbed wire fence. A

Table 4-6. Summary of STs Excavated at 41BX1445

ST	Cultural Material Present	Depth (cmbs)	Reason for Termination
1	N	31	Limestone
2	N	15	Limestone
3	N	60	Complete
4	N	20	Limestone
5	N	12	Limestone
6	N	23	Bedrock

Figure 4-36. ST 2 termination at 41BX1445; note limestone.

cement trough for runoff was added to the tank at some point (Figure 4-37). An unnamed drainage of Meusebach Creek appears to run directly into this channel from the north. The earthen and stone-lined construction (Figure 4-38) suggests an earlier construction date, potentially 1870s (Moore et al. 2013), although the cement addition likely dates to the late nineteenth to early twentieth centuries (Moore et al. 2013). The variety of materials and improvements appears to reflect that the site remained in use for a long period of time, possibly from 1874 to 1941, the period during which the Panther Springs Ranch (41BX820) was in operation (Boyd et al. 1990; Freeman 1994a; Wilder et al. 2003). Site 41BX820 has been previously recommended as eligible for listing in the NRHP due to the site's integrity and potential for yielding valuable information regarding early ranching in Bexar County (Boyd et al. 1990). Site 41BX1445 was previously recommended as eligible for listing in the NRHP under Criterion A, due to its association with early ranching activities in Central Texas and the Hill Country, as well as its use by locally significant ranchers such as William Gerfers (Wilder et al. 2003). The site is a part of the wider agricultural setting of Panther Springs Ranch. The earthen structure of the tank remains intact. The site retains unique features and modifications that reflect the long history of the ranch, such as the stone lining, associated with 1870s stock tanks in Central Texas (Moore et al. 2013) as well as the cement channel, likely dating to the late nineteenth to early twentieth century (Moore et al. 2013). The area was known to have been in use as a ranch from 1874 to 1941, and this variety in improvements reflects the long use period of site 41BX1445. The structure of the tank shows none of the damage from maintenance and construction seen at other historic sites such as 41BX432. The site represents a substantial modification to the landscape of the base that warrants representation on topographic maps. This modification is a direct result of the ranching history of the area. Site 41BX1445 is recommended as eligible for listing in the NRHP. It is associated with early ranching activities in Central Texas and the Hill Country. Additionally, the site has potential to provide data about ranching activities on Panther Springs Ranch that are not available at the ranch headquarters (41BX820) due to the role of 41BX1445 as a feature of the agricultural work zone. Adverse impacts to the site should be avoided.

Figure 4-37. Concrete trough at the north end of 41BX1445.

Figure 4-38. Earthen stock tank at 41BX1445.

41BX1211

Site 41BX1211 was first formally recorded during the Camp Bullis Karst Survey in 1996 (Figure 4-39; THC 2020). The site is described on the site form as a rock wall located along the west side of Cibolo Creek, about 0.6

Figure 4-39. Location of site 41BX1211, including rock wall sections recorded during this survey. Sections numbered to facilitate discussion.

m (2.0 ft.) high and oriented north-south. The site form notes that the wall is associated with a nearby unrecorded farmstead, which was later included in site 41BX1211. For the purposes of this discussion, the site designation 41BX1211 includes the system of stone fencing located on Camp Bullis as a whole, including the original section that was recorded. The decision to continue using the original trinomial (41BX1211) for the stone fences across the base was made following consultation with the JBSA-CRM. The fence alignments recorded are assigned numbered sections in Figure 4-39 for ease of discussion. The original section recorded, as well as the associated farmstead, remains part of the site.

The farmstead, the Scheele farm, was recorded by Prewitt and Associates in 1999 to 2000 during a pedestrian survey (Cestaro et al. 2001). The site consists of the remains of several buildings, animal pens, a cellar, a water trough, two cisterns, and trash deposits. Artifacts observed on the surface included ceramic, glass, porcelain doll parts, metal, and construction material. Archival research documented the site's development as a farmstead owned by Fritz Scheele around the turn of the century. The Scheeles operated a farm and a ranch, as well as an orchard and a garden near the house. They also had a contract to supply the government with wood. The farm was condemned around 1940. The site is recommended as eligible for listing in the NRHP under Criterion A as an example of a Hill Country German stock farm. The THC concurred with this recommendation (THC 2020). The rock wall is not discussed in this recommendation.

Rock fences are a well-known feature in agricultural areas of the Texas Hill Country (Knott 2004). These features are commonly described as "German fences," as they are associated with the agricultural activities of German immigrants to the area. However, the method of construction likely arrived with Anglo-American settlers to the area from the upland South. Rock fences became common in agricultural spaces after fencing laws were established in Texas in 1840. However, with the introduction of the use of barbed wire in the 1870s, the use of rock fences became uncommon by 1880 due to the additional money and labor involved. The fences were used to enclose cemeteries, farmland, and animals (Knott 2004).

The fences found on Camp Bullis bear a strong resemblance to the fences found in other parts of the United States and Great Britain (Knott 2004). The most common construction type observed, where enough of the fence was standing to make an observation, was double walled. No coping or decorative additions were observed, although many of the fences were in such poor condition that the preservation of such features would be unlikely. However, this is consistent with Knott's observation that Texas Hill Country fences are generally simpler in construction than those found in other parts of the United States. Knott notes that in Blanco County, single-walled fences commonly denoted property boundaries, while double-walled fences were more commonly used to protect crops or enclose pastures. At Camp Bullis, the type of stone used appeared to be dependent on the limestone available in the immediate area where the fence was constructed. Some sections of fence were primarily constructed of honeycomb-type limestone, while others consisted of primarily of blocky or tabular limestone. In the specific case of Rock Wall Section 2 located near Lewis Creek (Figure 4-39), the limestone used to construct the wall bears a strong resemblance to the tabular limestone outcroppings located just below the fence along Lewis Valley Road. The intact corners that could be located appeared to rely heavily on the boulder corner construction method described by Knott. However, it is possible that this method is simply sturdier, as the other corners were found to be collapsed.

Knott (2004:110) found that in Blanco and Comal County, at least 75% of the existing rock fences likely had been lost to development and stone mining. Additionally, these types of features are threatened in a similar manner throughout the United States, increasing the unique value of Camp Bullis' stone fences. Knott argues that the Texas Hill Country's stone fences are a significant part of the region's cultural landscape due to their roots in the history and agricultural traditions of the area.

The existence of the stone fences, and a map of their known locations, is discussed in Cox's archival review of Camp Bullis (Boyd et al. 1990; Figure 4-40). Cox notes that the fences are associated with several ranching and farming sites located in the area in the early to mid-1800s. The existence of the rock walls crisscrossing the base was noted on subsequent surveys by Prewitt and Associates. Damage to the walls at that time was noted as well (Cestaro et al. 2000; Kibler and Gardner 1997). All rock walls identified by Prewitt and Associates were initially noted in archival review, but were field checked during pedestrian survey at the time they were recorded.

Current Investigations at 41BX1211

The CAR attempted to locate sections of stone fencing using LiDAR imagery but was unsuccessful. After having field-checked several areas, it is apparent that the lack of visibility of the stone fences in LiDAR data is likely due to how little of the walls remain standing. Some alignments were visible in the tree lines on aerial images of the base, primarily in the eastern half. The CAR identified other potential wall sections by examining Prewitt and Associate's (Cestaro et

Figure 4-40. Rock fence extent previously recorded (from Boyd et al. 1990).

al. 2000; Kibler and Gardner 1997) previous recordings of wall locations as well as data provided by the JBSA-CRM. Areas previously identified as containing rock wall alignments were revisited and sections of the alignment recorded by GPS and photographs, as well as notes on the wall's current condition.

The section of wall initially recorded as 41BX1211 near the Scheele farm (THC 2020; Figure 4-39) could not be relocated, although the remains of the farm are still extant. Evidence of mechanical clearing and limestone debris suggests the wall may have been destroyed fairly recently (Figure 4-41). A section of wall reported near the base's eastern edge (THC 2020) was also investigated and was found to be in similar condition (Figure 4-42). No definitive alignments could be located near the base's eastern boundary. Indications of similar damage to the stone walls were uncovered throughout the base. Conditions of the walls ranged from completely absent, to foundation remnants, to rubble alignments, to partially intact sections, to small areas of standing wall. The rock walls appear to have been impacted by natural processes, clearing, development of the base, and possible stone mining.

In addition to the numbered sections discussed here, certain portions of the wall were recorded in previous surveys, but were unable to be relocated by the CAR during the current investigation. These sections therefore did not receive a unique identifier. These portions include a section of wall located along Salado Creek in the southern portion of the base that was reported in Boyd et al. (1990), Freeman (1994b), Kibler and Gardner (1997), and Cestaro et al. (2000). The CAR was also unable to relocate this section. Another wall crossing Lewis Valley Creek was verified to be present in 1997 and again in 2000 but was unable to be relocated during this survey. This area has undergone some development and clearing for training spaces which may have resulted in the removal of the wall. Additionally, a corral extending from the wall associated with the Lewis Ranch was reported by Freemen in 1994 (Freeman 1994b), and its presence was verified in 2000 (Cestaro et al. 2000; see Figure 4-40). This

Figure 4-41. Push pile of cut limestone and shredded vegetation in vicinity of stone wall section recorded near Scheele homestead, 41BX1211, Camp Bullis.

corral feature is located within the modern impact area and the CAR was unable to gain access to it. It may still be standing.

The CAR also revisited wall sections that the JBSA-CRM provided as a recorded GIS shapefile, which broadly matched the data available in Boyd et al. (1990), Kibler and Gardner (1997), and Cestaro et al. (2000). The walls recorded by the CAR were divided into five sections (Figure 4-39) to provide a more accurate description of current conditions.

Section 1 runs east to west between Middleton and Lewis Valley Road. The western portion of the wall, near Middleton Road, is primarily wall rubble and foundation remnants only, with some short, partially stacked (0.6-0.9 m [2-3 ft. high]) sections spanning approximately 5 m (16.4 ft.; Figure 4-43). The path of the wall is visible in the tree line in this area, even in the places where the wall is almost completely destroyed. The eastern end of Section 1, where it meets Section 2 near Lewis Creek Road, includes some of the most intact wall segments encountered on Camp Bullis, with intact corners (Figure 4-44) and walls stacked approximately 1.2-1.5 m (4-5 ft.) high (Figure 4-45).

The far southern portion of Section 2, where it meets Section 1, is mostly intact, including corners and extant walls (Figure 4-46). However, in the central and northern areas west of Lewis Valley Road, the wall is primarily represented by foundation remnants, rubble, and tree lines clearly associated with the wall's original trajectory, but with very little wall stone remaining (Figure 4-47).

Section 3 extends east to west between Sections 2 and 4, north of 41BX1277. This portion of the wall is identifiable primarily by foundation remnants (Figure 4-48) within tree lines shaped by the original path of the wall on the eastern side. The western portion of the wall includes more sections which still contain stacked stone, partially disrupted by a stock pond. The corner where Section 3 meets Section 4 is mostly present on the far eastern edge of 41BX1211.

Section 4 runs south from the corner where it meets Section 3. This section still mostly has stones stacked to heights of two or three feet, with some rubble sections (Figure 4-49). The southern portion of Section 4 extends into the Impact

Figure 4-42. Stone wall remnant near eastern boundary of site 41BX1211, Camp Bullis, semi-circular feature.

Figure 4-43. Partially intact segment of Rock Wall Section 1, 41BX1211. Note double-walled construction.

Zone and was not evaluated or recorded, as CAR staff were not permitted access to the area. North of the area where the wall crosses Sewell Road, some curved sections of the wall were identified, which may represent corrals or other ranching-related features (Figure 4-50).

Section 5 extends roughly east-west from Section 4. The far eastern portion of the wall, where the corner would have been, was washed out by drainages running through the area (Figure 4-51). Just west of the drainages the possible remains of a corral were identified (Figure 4-52). A small north-south section of wall just west of that feature still contains some stacked stone. This section of the wall still primarily contains stacked stone about 0.6-0.9 m (2-3 ft.) in height, except in areas where it has been damaged by runoff. On either side of Sewell Road, the wall alignment is represented primarily by rubble areas, and in some places is reinforced by a barbed wire and cedar post fence. The western section includes small areas of stacked stone and stone rubble alignments.

Summary

In total, more than 11 km (6.8 mi.) of rock fence alignment were documented as site 41BX1211, in varying degrees of integrity. Preservation of this length of rock fences is unusual, particularly in areas with Bexar County's degree of urbanization. The double-walled construction exhibited in Camp Bullis' fences is reflective of the area's use for ranchland.

Figure 4-44. Intact rock wall corner in Rock Wall Section 1, 41BX1211.

Figure 4-45. Intact portion of Rock Wall Section 1, 41BX1211.

Figure 4-46. Corner Area where Rock Wall Sections 1 and 2 meet, 41BX1211.

Figure 4-47. Rubble portion of Rock Wall Section 2, 41BX1211.

These types of fences were often used to separate animals from more delicate areas such as cropland, while simpler, single-walled construction more commonly designated property boundaries (Dase et al. 2010; Knott 2004). This suggests that the Camp Bullis fences had a primarily functional role, rather than simply denoting property boundaries. This is also borne out from the location of the fences. The sections of fence which remain standing are concentrated on Nathaniel Lewis's former ranch (Figure 4-53). While Sections 3 and 5 roughly separate the Lewis property from Joseph Landa's, and later Parrish's goat ranch, Sections 1, 2, and 4 serve to divide up Lewis's ranch (Boyd et al. 1990). The locations of these fences may offer information about how different parts of the ranch were used. It is known that Meusebach used his portion of the Salado Creek Valley located at the eastern boundary of Lewis's property for farming rather than ranching (Boyd et al. 1990); perhaps Sections 1, 2 and 4 separated cattle pasture from cropland.

Additionally, Nathaniel Lewis was somewhat unusual in Bexar County in that he owned a large number of enslaved peoples (a total of 84 in 1857). This means that he owned nearly 9% of the enslaved peoples in the county out of a total of 979 recorded in Bexar County at that time (Boyd et al. 1990:65). He did not personally reside at the ranch, which may have been run entirely by an overseer and enslaved labor (Boyd et al. 1990). It is likely that the walls were constructed during his tenure because the use of barbed wire as an alternative

Figure 4-48. Rock Wall Section 3 foundation remnants near Malabang Trail, 41BX1211.

Figure 4-49. Rubble alignment within tree line near Sewell Road; Rock Wall Section 5, 41BX1211.

Figure 4-50. Remains of semi-circular feature in Rock Wall Section 4, 41BX1211.

Figure 4-51. Rock Wall Section 5 damaged by drainage, 41BX1211.

Figure 4-52. Remains of possible corral feature in Rock Wall Section 5, 41BX1211.

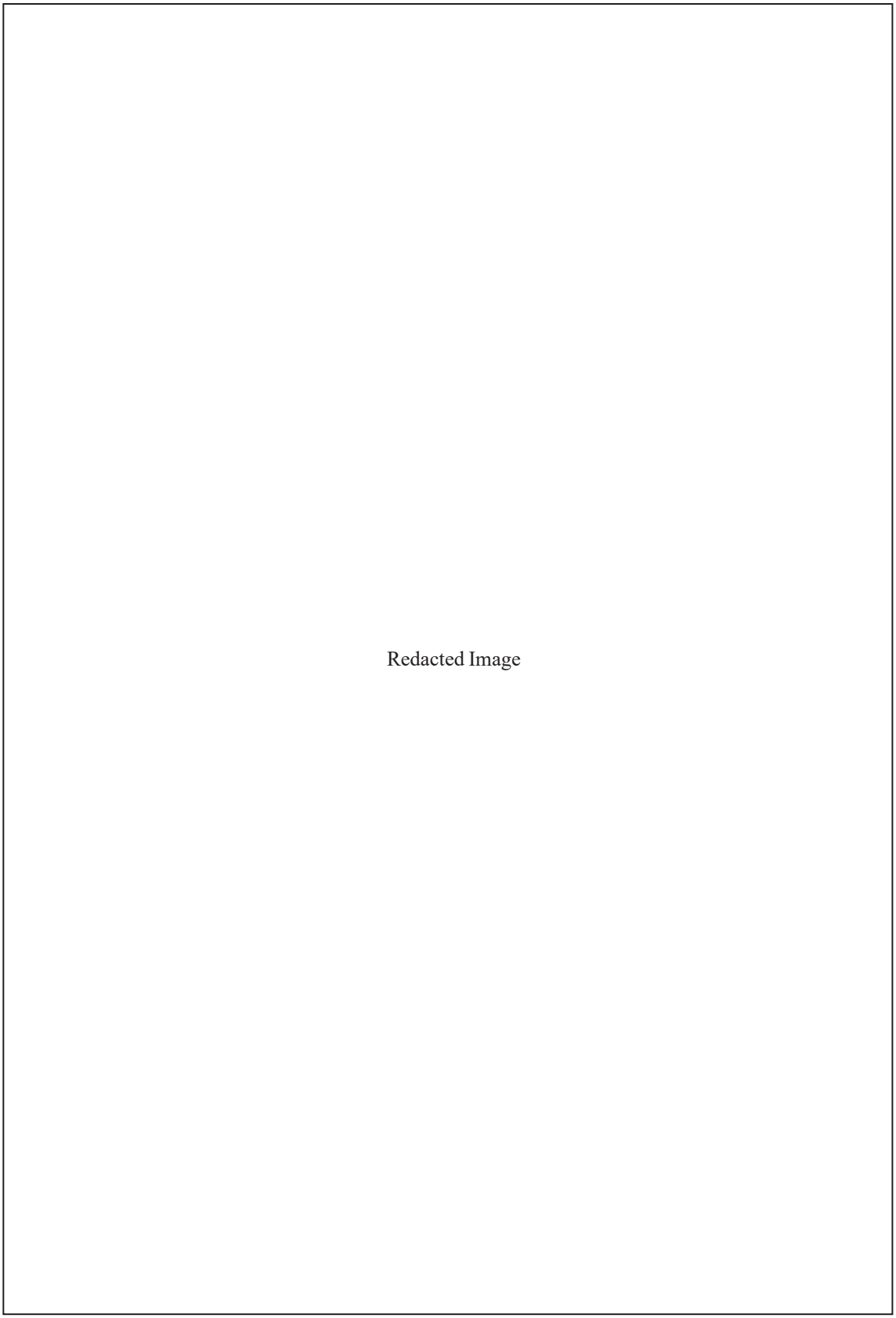

Figure 4-53. Recorded rock wall superimposed on map of earliest landowners in the area (adapted from Boyd et al. 1990); note partial correlation with property boundaries.

became more common in the period after his death (Knott 2004). This suggests that, despite this type of fencing often being characterized as "German," (Knott 2004), the walls recorded as 41BX1211 may have been constructed primarily using enslaved labor (Boyd et al. 1990). This would have been unusual for the region as an area dominated by German immigrants who relied primarily on family labor (Freeman 1994b; Jordan 1966) and challenges the characterization of rock fences as solely constructed by German immigrants.

The stone fences recorded as 41BX1211 have the potential to offer broad-scale information on land use at Camp Bullis. The remains of the ranches that used to dominate the landscape are often recorded archaeologically in a piecemeal fashion and evaluated accordingly, as can be seen in the separation of various features of the Panther Springs Ranch into separate sites (see 41BX820 and 41BX1445). The rock fences span nearly the entire base and offer a much wider perspective on land use in the area. Nathaniel Lewis's ranch was one of the first to be developed in the area, giving an early perspective on Hill Country ranching. Additionally, Lewis's extensive use of enslaved labor makes his ranch rare for the area and challenges the idea that such fences are primarily German in construction (see Knott 2004). The fence sections that are still present on the base, recorded here as site 41BX1211, should be considered eligible for listing in the NRHP under Criterion A due to the site's association with Texas Hill Country ranching traditions (Dase et al. 2010; Freeman 1994b,) as well as under Criterion D, due to the potential for the fences to contribute information significant to local history about land use, construction techniques, and labor during this period (Boyd et al. 1990; Dase et al. 2010; Freeman 1994b; Knott 2004,). Negative impacts to portions of the wall still present, even if they are not 100% intact, should be avoided, as information about fence locations and construction techniques can still be gathered from partially intact walls. If portions of rock fence that were not recorded here are encountered, particularly in areas CAR staff was not permitted access to during this investigation, their location should be documented using GPS and their current condition should be recorded and photographed. If conditions change to allow survey of areas restricted during this investigation, specifically the Impact Zone, survey of those areas for additional sections of fence should be carried out.

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Chapter 5: Results of Investigations at Lackland AFB

Nine sites were revisited for geoarchaeological evaluation on Lackland AFB, all prehistoric in nature. One site, 41BX1107, was located on the golf course on the main base. The other eight sites (41BX1069, 41BX1092, 41BX1093, 41BX1121, 41BX1122, 41BX1125, 41BX1127, 41BX1130) were located within Chapman Training Annex. Six of the sites are located within the SDZs of the firing ranges, and the other two (41BX1092 and 41BX1093) are just north of the boundary, but only accessible by traversing roads passing through the SDZs. Fifteen BHTs were excavated at seven of these sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, and 41BX1130). Two excavation blocks, consisting of two TUs each, also were excavated at two sites (41BX1125 and 41BX1127). After excavation was complete, the BHT or TU profiles were evaluated by a geoarchaeologist from TCI (see Appendix C).

Seven 50 cm by 50 cm (19.7 in. by 19.7 in.) units associated with BHTs were excavated when buried deposits were encountered at 41BX1069, 41BX1093, 41BX1107, 41BX1121 and 41BX1122. The CAR was unable to gain backhoe access to sites 41BX1125 and 41BX1127. Therefore, instead of BHTs, two blocks of two 1 m by 1 m (3.3 ft. by 3.3 ft.) units were excavated at each site. As noted in Chapter 3, excavations in units were done in 10 cm (3.9 in.) levels, with levels numbered from surface down to a terminal depth. For discussion and presentation of these units, the CAR will focus on the level numbers and reference metric measurements.

Note that sites 41BX1102 and 41BX1103 were originally scheduled to be revisited. However, as discussed in the Previous Archaeology section, a literature review determined that these sites had already been found eligible for listing in the NRHP, and the THC had concurred with these findings (see Houk and Nickels 1997; Nickels et al. 1997). No fieldwork was conducted at either site during this investigation.

41BX1069

Site 41BX1069 is a prehistoric site recorded during a pedestrian survey by the CAR in 1994 (Nickels et al. 1997). The site is described as dense surface scatter of chipped stone and burned rock, located on a high terrace of the Medio Creek (Figure 5-1) and adjacent floodplain. A Pedernales projectile point fragment was recovered, a form that likely dates from 2500-3500 BP (Turner et al. 2011). A ST encountered buried cultural material at 20 cmbs (7.9 in.). The site was impacted by a road located in the northwestern portion of the site and erosion of a gully in the southern portion. Site 41BX1069 spans the lower Medio Creek floodplain and adjacent uplands. The second terrace was found likely too old to contain buried sites, but likely to contain surface sites dating to all time periods. However, the first terrace and floodplain were found to likely contain buried Holocene deposits after a geoarchaeological assessment (Nordt 1997). The site was recommended eligible for listing in the NRHP within a district context due to high research potential (Nickels et al. 1997). The 1995 CAR survey recommended that 23 prehistoric sites recorded adjacent to Medio Creek were potentially eligible for listing in the NRHP as part of two separate districts, the Upper and Lower Medio Creek districts, on the basis of high research potential (Criterion D; Nickels et al. 1997). All the Medio Creek sites discussed in this report would have been included in the Lower Medio Creek District. While the spatial extent of the proposed districts is detailed, the rationale for their proposal is not explicitly stated but appears to be based on the geological potential for deeply buried, stratified deposits in the area as well as a dearth of sites in similar context recorded south of the Edwards Plateau (Nickels et al. 1997). There is no evidence that the proposed districts were ever formalized and this framework has not been used for subsequent recommendations, including the recommendations offered in this report. However, the existence of the previous recommendation is included here to provide a thorough background of past investigations.

In 2003, Geo-Marine conducted shovel testing of the site (Huhnke 2006). Nine STs were excavated, six of which were terminated at or above 30 cmbs (11.8 in.). The majority were excavated in the floodplain immediately adjacent to Medio Creek. STs were not excavated in the upper area due to bedrock exposure. None of the tests were positive for cultural material. The site was found to be not eligible for listing in the NRHP due to poor geological context. However, the potential for buried deposits was found to be undetermined (Huhnke 2006).

Both Nickels (1997) and Huhnke (2006) note that the western and northern surface of the site have been disturbed by road construction and maintenance. Huhnke (2006) notes the presence of old bridge pilings in Medio Creek. In the discussion of oral history of the area, it is observed that Medio Creek was dammed somewhere nearby in the 1940s, but that the dam was destroyed in a flood in 1976 (Nickels et al. 1997). Whether the remains noted by Huhnke are in fact part of this dam, or whether it was slightly farther north, the damming of the creek in the area likely impacted 41BX1069, as well as nearby site 41BX1127.

Figure 5-1. Medio Creek along the eastern boundary of 41BX1069 (facing north).

Current Investigations at 41BX1069

Three BHTs were planned at 41BX1069 due to the site size. However, the backhoe was unable to gain access to the southern portion of the site due to the deep gullies surrounding this area. It appears that this part of the site is now only accessible from Medio Creek. Overall, erosion continues to be the most significant impact to the site. The gully noted by Huhnke (2006) as "nearly at the road" in 2003 is now beginning to erode the road itself, completely dissecting the site. The CAR excavated BHT 1 and 2 and two 50 by 50 cm (19.7 by 19.7 in.) TUs 3 and 4 within the site (Figure 5-2). Excavations recovered 195 pieces of debitage, 831.5 g (29.3 oz.) of burned rock, and 35 lithic tools and cores from the site.

BHTs

BHT 1 was located in the northern portion of the site just east of the patrol road (Figure 5-2). The trench spanned 5.6 m (18.4 ft.) and was 75 cm (29.5 in.) across. It was oriented east-west, perpendicular to the creek. Excavation of the trench was halted at 140 cm (55.1 in.) to allow staff to examine the trench and excavate a TU. Flakes, burned rock, and expedient tools were observed from 45-90 cmbs (17.7-35.4 in.) in the profile, and more prehistoric material was observed in the backdirt. Four layers were observed in the soil profile (Figure 5-3). Layer 1 extended from 0-45 cmbs (0-17.7 in.) and consisted of a black (10YR 2/1) clumpy clay with rootlets. Layer 2 extended from 45-100 cmbs (17.7-39.4 in.) and consisted of blocky black (10YR 2/1) clay and gravel deposits. Layer 3 extended from 100-135 cmbs (39.4-53.1 in.) and consisted of hard, blocky black (10YR 2/1) clays. Layer 4 extended from 135-140 cmbs (53.1-55.1 in.) and consisted of light yellowish-brown (10YR 6/4) hard, blocky clay. After completion of the TU, excavation continued to a depth of 2 mbs (6.6 ft.; Figure 5-4). No cultural material was observed in the backdirt below 140 cmbs (55.1 in.).

BHT 2 was located in the central portion of 41BX1069, just north of another large gully dissecting the site. The trench was 4.9 m (16.1 ft.) long and 80 cm (31.5 in.) wide. It was oriented east-west, perpendicular to the creek. Excavation

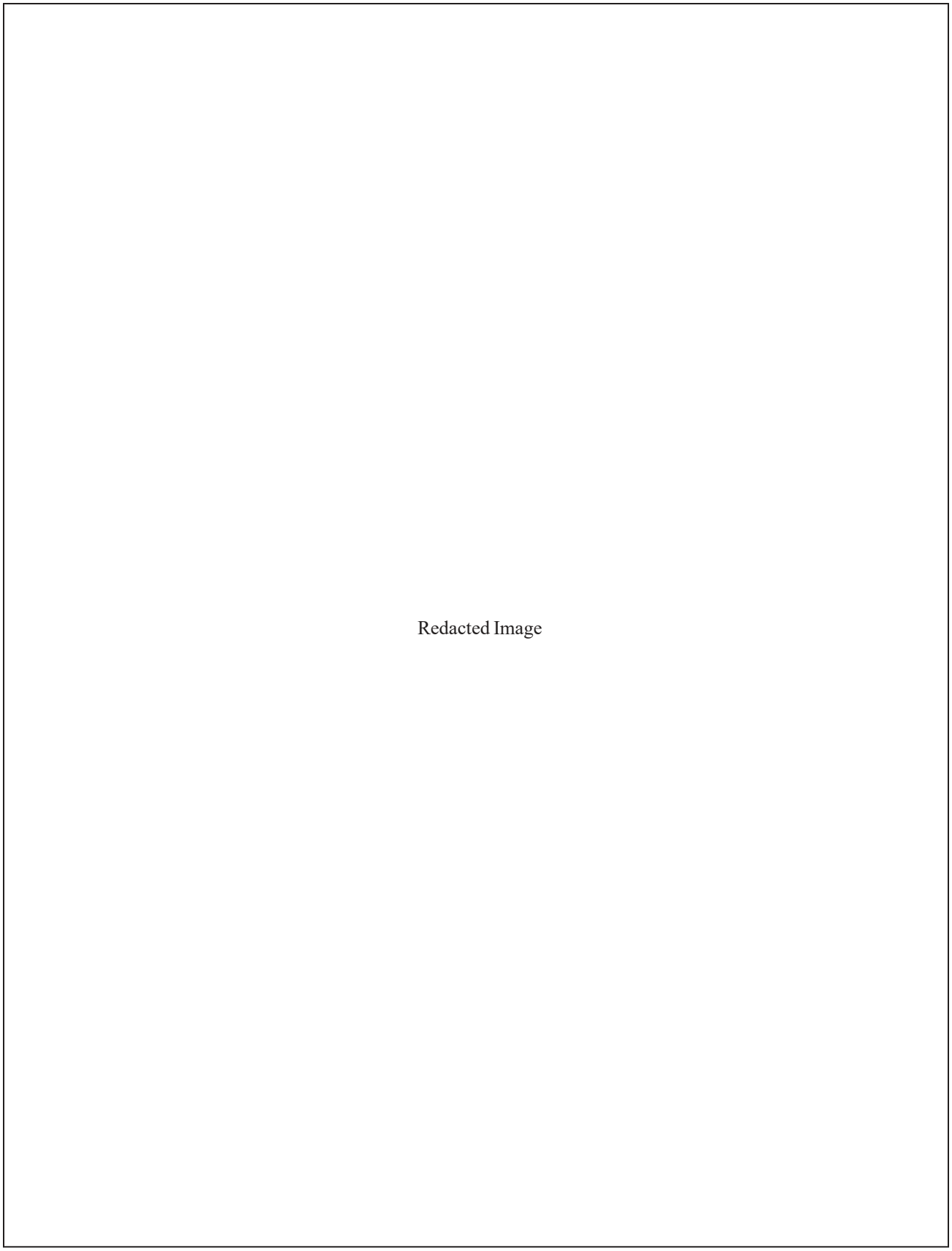

Figure 5-2. Map of 41BX1069 with BHT and TU locations.

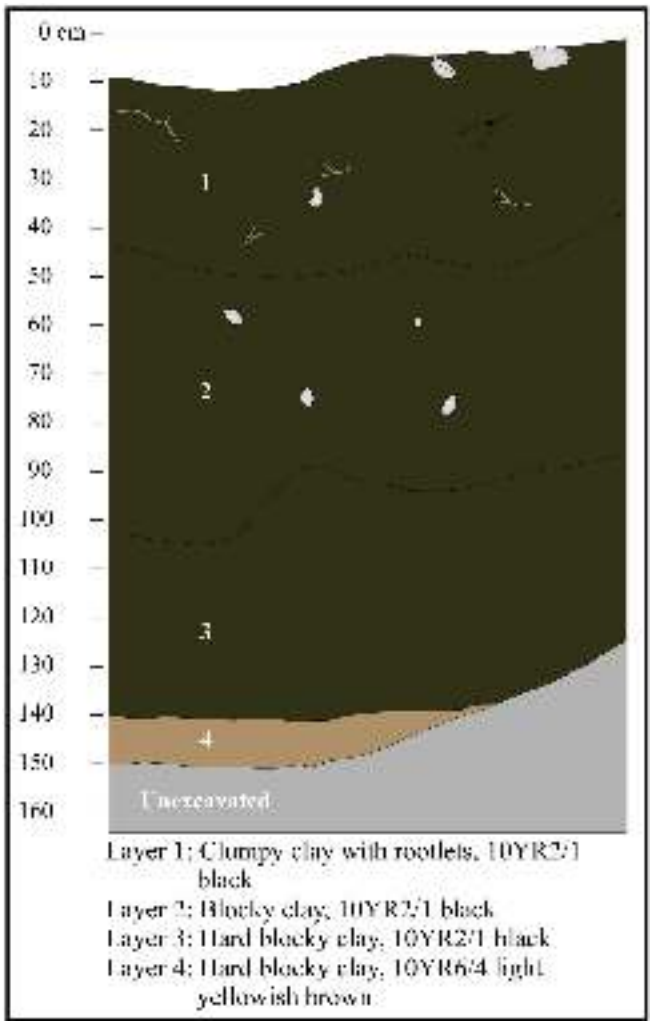

Figure 5-3. Site 41BX1069, BHT 1 south wall profile at 150 cmbs (59 in.).

was halted at 140 cmbs (55.1 in.) to examine the trench profiles and excavate a TU. A sparse amount of debitage and FCR was observed in the backdirt, but no cultural material was observed in the profiles. Three layers were recorded in the soil profile (Figure 5-5). Layer 1 extended from 0-40 cmbs (0-15.7 in.) and consisted of clumpy, black (10YR 2/1) clay which contained a substantial number of roots. Layer 2 extended from 40-109 cmbs (15.7-42.9 in.) and consisted of black (10YR 2/1) blocky clay with gravels and some carbonates. Layer 3 extended from 109-140 cmbs (42.9-55.1 in.) and consisted of black (10YR 2/1), very hard blocky clay with carbonates. After completion of a TU, backhoe excavation continued to a depth of 2.05 mbs (6.7 ft.). Lighter clays similar to those uncovered in BHT 1 were uncovered at 150 cmbs (59.1 in.). No cultural material was observed in the backdirt below 140 cmbs (55.1 in.).

Geoarchaeological Assessment

TCI's geoarchaeological assessment of 41BX1069 (Appendix C) concluded that deposits at the site were likely to be surficial and shallowly buried, and that deeply buried, stratified archaeological deposits were not likely. This was based on evidence from the soil profiles observed in the backhoe trenches, which indicated colluvial origin of the site matrix, as well as the site's position on an actively eroding, relict terrace.

TUs

TU 3 was located north of and adjacent to BHT 1. It was excavated to a depth of 100 cmbs (39.4 in.). Cultural material was recovered from all levels (Table 5-1). To plot both chipped stone counts and debitage weights on the same graph, the CAR used data in Table 5-1 to scale each total to a value of 100 and created Figure 5-6. The maximum total for chipped stone from the test unit was 32 items (debitage, tools, and cores) in Level 3. This was assigned a value of 100, and other chipped stone totals were scaled to that value. For example, Level 1, with 14 items, was assigned a value of 43.75 [(14/32)*100). A similar procedure was followed for burned rock weights (g), with the heaviest total, in this case 123.69 g (4.36 oz.), assigned 100, and lesser weights scaled accordingly. This procedure, which will be flowed in subsequent charts, allowed both data types to be directly compared. As shown in Figure 5-6, both data types peak in Level 3 (30-40 cmbd; 11.8-15.7 in.), with a secondary lower peak in Levels 6 and 7. One potentially historic artifact, a bullet, was recovered from Level 1 (0-10 cmbd; 0-3.9 in.). Fifteen lithic tools and cores were recovered, including a possible barbed dart point fragment (untyped) from Level 2 (20-30 cmbd; 7.9-11.8 in.) shown in Figure 5-7. Six bifaces and biface fragments were recovered from Levels 1 (6-20 cmbd; 2.4-7.9 in.), 3 (30-40 cmbd; 11.8-15.7 in.), 6 (60-70 cmbd; 23.6-27.6 in.), 7 (70-80 cmbd; 27.6-31.5 in.), and 9 (90-100 cmbd; 35.4-39.4 in.). Most are somewhat rough in appearance, and five of six retain some cortex. Figure 5-8 shows two examples. Eight edge-modified flakes, including one possible perforator, were recovered from Levels 3 (30-40 cmbd; 11.8-15.7 in.), 4 (40-50 cmbd; 15.7-19.7 in.), 5 (50-60 cmbd; 19.7-23.6 in.), 6 (60-70 cmbd; 23.6-27.6 in.), 8 (80-90 cmbd; 31.5-35.4 in.), and 9 (90-100 cmbd; 35.4-39.4 in.). In general, informal and expedient tool types dominate the assemblage. Some snail shells were noted in the upper levels (Levels 1-3, 0-40 cmbd; 0-15.7 in.). Excavation was terminated at 110 cmbd (43.3 in.).

TU 4 was located north of and adjacent to BHT 2. Excavated to a depth of 100 cmbs (39.4 in.; Figure 5-9), cultural material was recovered from all levels (Table 5-2). No historic material or snail shells were noted. As shown in Figure 5-10, chipped stone counts peaked in Level 2 (20-30 cmbd; 7.9-11.8 in.), 6 (60-70 cmbd; 23.6-27.6 in.) and 8 (80-90 cmbd; 31.5-35.4 in.), while burned rock weight peaked in Levels 2 (20-30 cmbd; 7.9-

Figure 5-4. Site 41BX1069, BHT 1 profile at 2 mbs (6.6 ft.). Note continuation of yellowish-brown clay at base.

11.8 in.) and 8 (80-90 cmbd; 31.5-35.4 in.). The pattern shown in Figure 5-10 suggests at least two, and possibly three, peaks in artifacts. Twenty lithic cores and tools were recovered from the unit. Two cores, shown in Figure 5-11, were recovered from Levels 1 (9-20 cmbd; 3.5-7.9 in.) and 2 (20-30 cmbd; 7.9-11.8 in.). One distal/medial biface fragment was recovered from Level 3 (30-40 cmbd; 11.8-15.7 in.). Expedient tools dominated this assemblage as 17 edge-modified flakes were recovered from TU 4. Excavation was terminated at 110 cmbd (43.3 in.).

MSS Patterns

As reviewed by Dearing (1999; see also Crowther 2003), MSS measures the degree to which a given sample can be magnetized and is responding to the concentration and grain size of ferromagnetic and ferrimagnetic minerals such as magnetite, maghemite, and other iron oxides. Anthropogenic activities, such as the deposition of organic remains and heating sediment through thermal features, as well as pedogenic activities that result in soil development, can both increase the amount of these minerals, and produce higher MSS values (Dearing 1999). The longer the surface is stable, the more opportunity that surface has to accumulate organic debris, increasing the MSS signature. Conversely, a profile produced under rapidly aggrading conditions should have lower values as any given surface has less time for inputs. While erosion, redeposition, and bioturbation can all complicate interpretation, shifts in the MSS values within a profile, especially in conjunction with higher artifact density, can help identify past stable surfaces (Kemp et al. 2018; Mauldin and Smith 2015). A profile indicating a stable surface of archaeological interest usually exhibits peaks in values, with associated peaks in cultural material. In some cases, artifacts peak approximately 10 cm (3.9 in.) above the MSS peak, a discrepancy that likely results because of leaching of minerals down the profile.

At site 41BX1069, MSS samples were taken from each level of the two excavated units and, as discussed in Chapter 3, were processed at the CAR. Figures 5-12 and 5-13 present the results for TUs 3 and 4, respectively. These two figures, like all MSS plots in this chapter, use the same X-axis scale for ease of comparison. Values for the X-Axis are in $10^{-8}m^3kg^{-1}$ (see

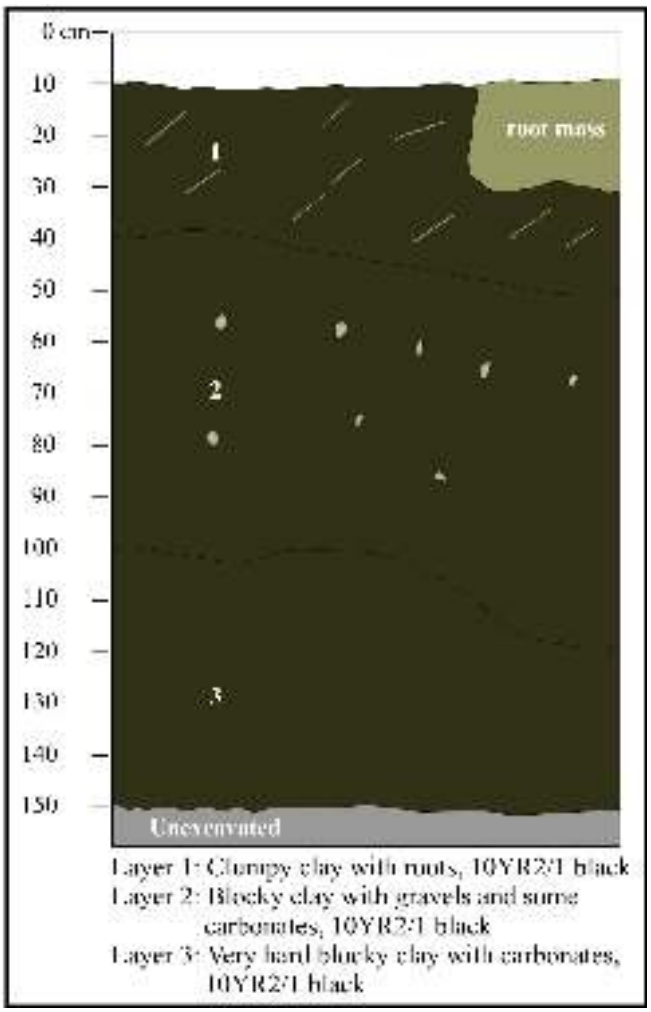

Figure 5-5. Site 41BX1069, BHT 2 south wall profile.

Dearing 1999; Mauldin and Smith 2015), though the principal interest here is on changes in those values along the profile rather than absolute values (see Kemp et al. 2018). Reference to the figures suggests that both profiles exhibit broadly similar MSS patterns despite their separation by about 85 m (278.9 ft.; see Figure 5-2). This suggests a relatively uniform pattern of soil aggradation across the site. Figure 5-12 (TU 3) exhibits low values at 100 cmbs (39.4 in.), showing only small fluctuations until an increase between 35 and 25 cmbs (13.8 and 9.8 in.). Those higher values are maintained to the modern surface. TU 4 (Figure 5-13) shows low values from 100 to 75 cmbs (39.4 to 29.5 in.), with a small, gradual shift towards higher values from 75 to 25 cmbs (29.5 to 9.8 in.). Between 25 and 15 cmbs (9.8 and 5.9 in.), values increase rapidly.

Both figures also identify levels with artifact peaks using patterns in Figures 5-6 and 5-10. There is a rough correspondence between MSS values and artifact peaks in TU 3, suggesting some level of integrity. The upper peak in artifacts in TU 4 also corresponds to higher MSS values. However, the two lower peaks in MSS values in that test unit are not associated with peaks in artifacts, suggesting that the context of these lower deposits is potentially disturbed.

Summary

No organic material or temporally diagnostic artifacts were recovered from 41BX1069 during this investigation, and no intact cultural features were encountered. Temporally diagnostic artifacts were previously recovered from the surface of the site (Nickels et al. 1997). Excavations indicate that at least two distinct concentrations of material are present, suggesting the possibility of two components. In both TU 3 and TU 4, an upper peak in chipped stone and burned rock are supported by higher MSS signatures, although the lower deposits, especially in TU 4, do not correlate with higher susceptibility values. The geoarchaeological evaluation discussed previously found that the site had low potential for deeply buried deposits, due to primarily colluvial deposition at the site that can transport artifacts. However, only a small number of lithic artifacts at 41BX1069 were noted as battered or rolled. Consistent positive TU levels to a depth

Table 5-1. Summary of Material Recovered from TU 3, 41BX1069

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Historic (ct)
1	12	77.3	2	1
2	11	88.7	1	0
3	30	123.7	2	0
4	12	27.7	2	0
5	7	17.2	1	0
6	15	19.3	3	0
7	17	43.0	1	0
8	8	8.1	1	0
9	9	11.3	2	0
10	8	4.4	0	0

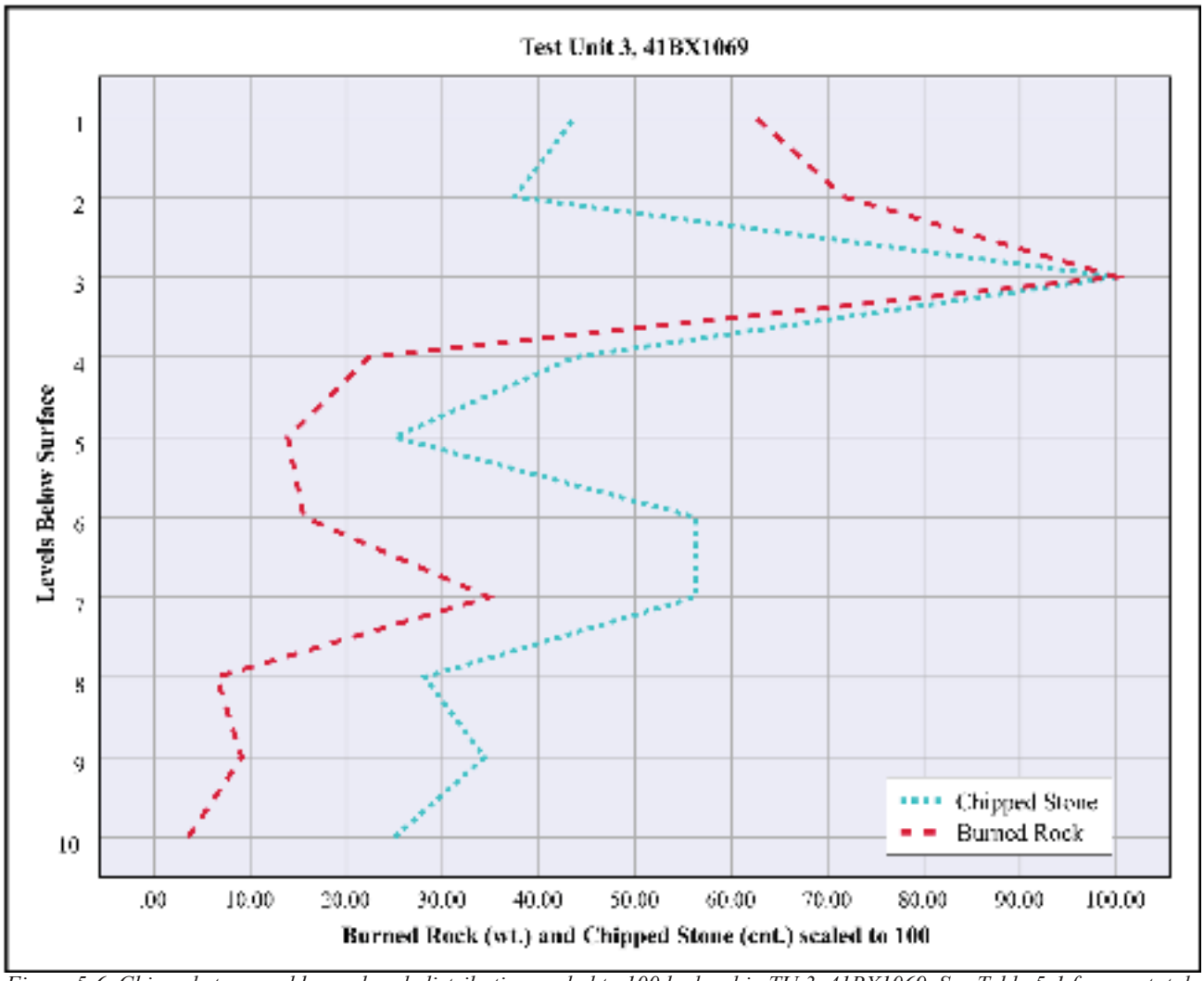

Figure 5-6. Chipped stone and burned rock distribution scaled to 100 by level in TU 3, 41BX1069. See Table 5-1 for raw totals.

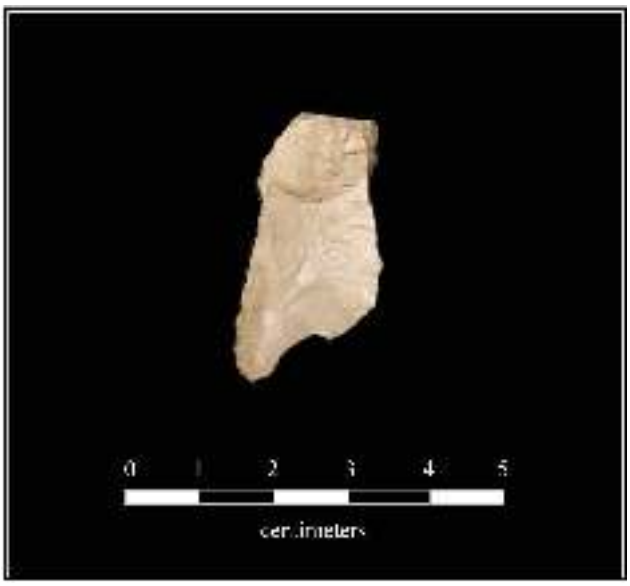

Figure 5-7. Untyped dart point fragment recovered from TU 3, Level 2 at 41BX1069.

of 100 cmbs (39.4 in.) indicate the possibility of deeper material. During the initial survey, the site was evaluated as having high research value due to dense surface deposits and the potential for buried material. That investigation focused primarily on the documentation of surface material (Nickels et al 1997). Geo-Marine's 2003 revisit categorized the deposits at the site above 50 cmbs (19.7 in.) as lacking integrity, but recommended backhoe trenching for a final recommendation of the site's potential (Huhnke 2006). However, the 2003 investigation did not focus testing on the terrace deposits investigated during the current project, and two thirds of excavated STs terminated at 30 cmbs (11.8 in.) or above. The CAR's results suggest the possibility that some of the deposits in the upland areas are stable, though other portions of the site have been significantly affected by erosion. Due to the sparse material, lack of features, limited chronological potential, variable integrity of the deposits suggested in both MSS samples and geoarchaeological work, and evidence of erosion, 41BX1069 is recommended as not eligible for listing in the NRHP.

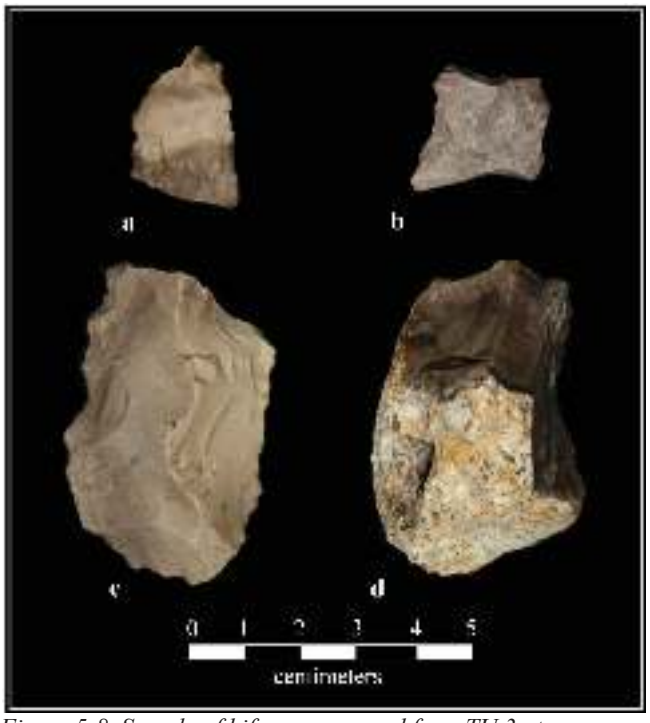

Figure 5-8. Sample of bifaces recovered from TU 3 at 41BX1069: a.) biface fragment from TU 4 Level 3; b.) biface fragment from TU 3 Level 9; c.) biface from TU 3 Level 7; d.) biface from TU 3 Level 3.

41BX1092

Site 41BX1092 is a prehistoric site recorded by the CAR during a pedestrian survey in 1994 (Nickels et al. 1997). Chipped stone artifacts and FCR were recorded scattered on the surface. A ST resulted in recovery of artifacts from 20 to 50 cmbs (7.9 to 19.7 in.). The site was reported as being impacted by road and fence construction and is located on the first terrace of Medio Creek, which was found likely to contain buried Holocene deposits per a geoarchaeological assessment (Nordt 1997). The site was recommended as having moderate research potential and as being eligible for listing in the NRHP in a district context (Nickels et al. 1997).

The site was revisited by Geo-Marine in 2003 and shovel testing was carried out (Huhnke 2006). The surface material previously described was not observed. Two of the five STs were positive, one in Level 2 (10-20 cmbs [3.9-7.9 in.]) and the other in Level 3 (20-30 cmbs [7.9-11.8 in.]). Recovered artifacts consisted of three flakes and one core. Two of the STs reached 50 cmbs (19.7 in.); the others were terminated at 40 cmbs (15.7 in.) or shallower. The upper 50 cm (19.7 in.) were found not eligible for the NRHP, but the potential for deeper deposits was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a

Figure 5-9. Site 41BX1069, TU 4 north wall profile. Note hard, blocky clays.

Table 5-2. Summary of Cultural Material Recovered from TU 4, 41BX1069

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Historic (ct)
1	4	65.8	4	0
2	7	108.9	2	0
3	1	4.9	2	0
4	2	14.6	1	0
5	8	9.06	2	0
6	13	0	1	0
7	8	53.8	2	0
8	11	72.1	1	0
9	7	55.8	4	0
10	5	25.9	1	0

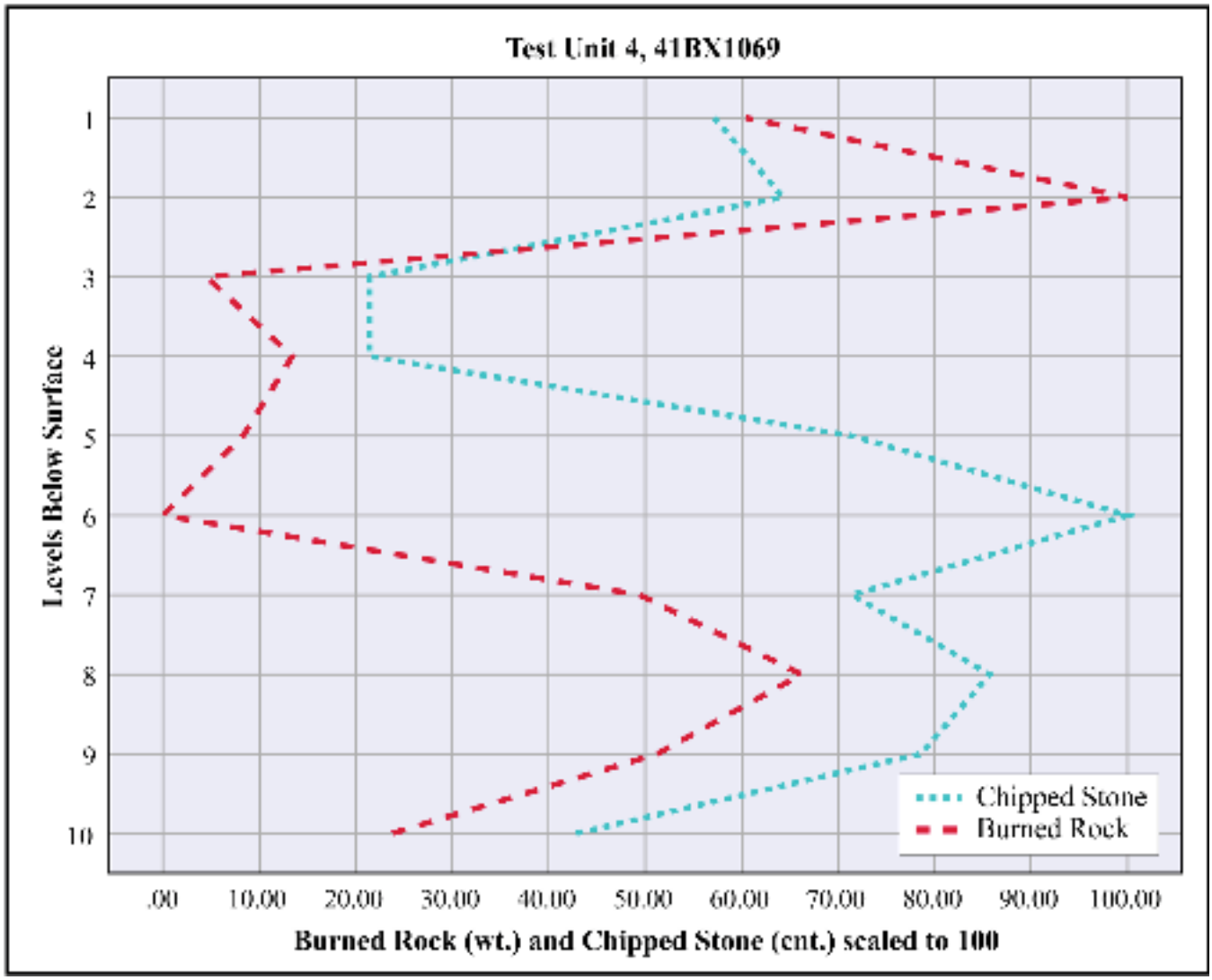

Figure 5-10. Chipped stone and burned rock distribution scaled to 100 by level in TU 4, 41BX1069. See Table 5-2 for raw totals.

Figure 5-11. Cores recovered from 41BX1069: a.) TU 4, Level 2; and b.) TU 4, Level 1.

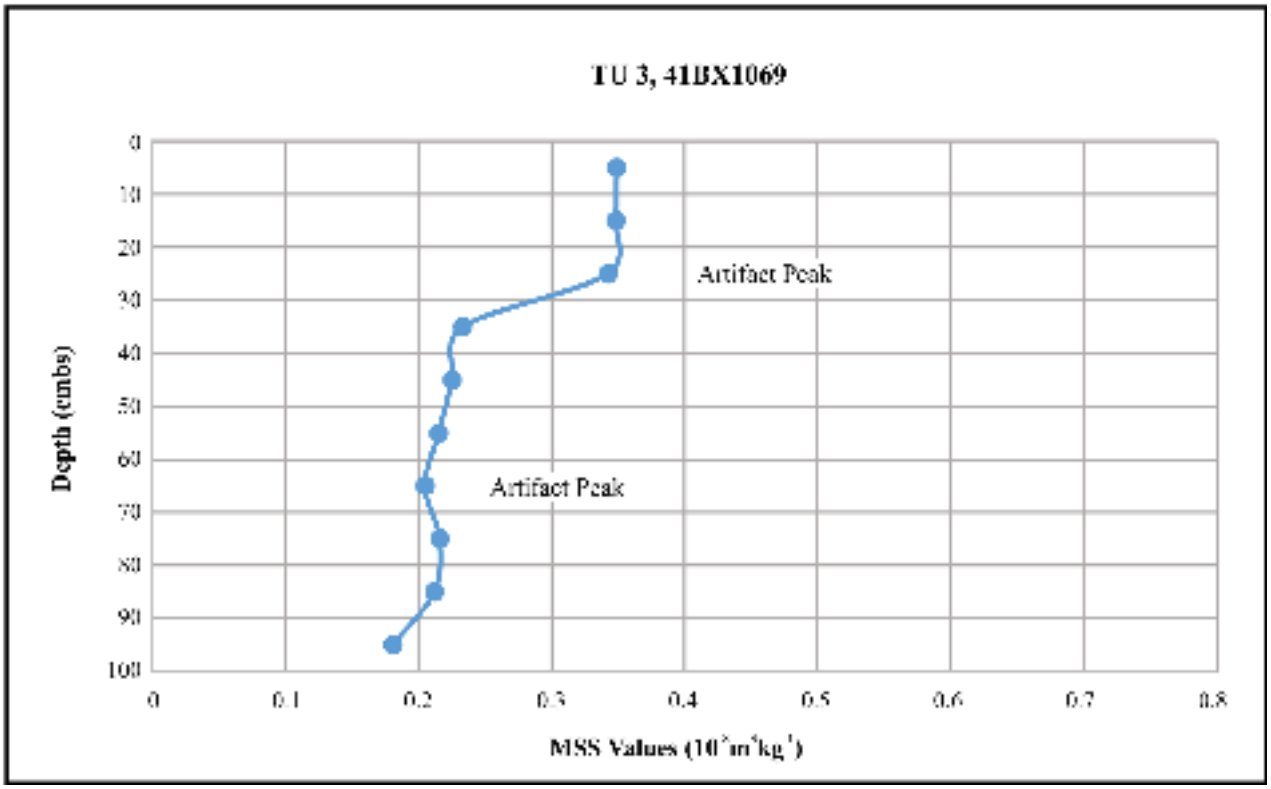

Figure 5-12. Distribution of MSS values by depth in TU 3, 41BX1069. Artifact data from Figure 5-6.

final recommendation of archaeological potential (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020).

Current Investigations at 41BX1092

The site is primarily centered on a patrol road, and a scatter of lithic materials was observed on the surface centered on an active ant mound (Figure 5-14). The site is located west of Medio Creek in the central portion of Chapman Training Annex. Both Nickels (1997) and Huhnke (2006) note that the site was impacted by road and fence construction, as well as telephone poles, and Huhnke observed that the fence recorded by Nickels had been torn down and the construction debris left behind. During the current project, when CAR archaeologists and the JBSA-CRM relocated the site, the telephone poles were found to have suffered a similar fate, with debris left behind. All of these activities have likely impacted the site.

BHTs

Two BHTs (BHTs 3 and 4) were excavated at the site by the CAR. BHT 3 was located in the northwest portion of the site, west of the road. BHT 4 was located in the southeast portion of the site, east of the road (Figure 5-15).

A single piece of debitage was observed in the backdirt of one of the trenches (BHT 3) from the first 60 cm (23.6 in.), but no cultural material was observed in either trench profile. A scatter of lithic material was observed on the surface in both areas. Based on the lack of evidence of buried materials, no units were excavated at either trench.

BHT 3 was 4.6 m (14.1 ft.) in length and 89 cm (35.0 in.) wide. The trench was oriented east-west, perpendicular to the creek. There was some evidence of disturbance. A dump containing concrete and barbed wire was located at the southeast corner of the trench from 0-40 cmbs (0-15.7 in.). A single piece of debitage was recovered from the backdirt. Excavation was halted at 140 cmbs (55.1 in.) to allow staff to examine the trench profiles. Three layers were recorded in the profile (Figure 5-16). Layer 1 extended form 0-63 cmbs (0-24.8 in.) and consisted of dark (10YR 4/1) loose, blocky silty clay. It contained cobbles and roots. Layer 2 extended from 63-102 cmbs (24.8-40.2 in.) and consisted of brown (10YR 5/3) silty clay with 80% gravels, ranging from pea- to golf ball-sized. It contained cobbles and showed evidence of size sorting. Layer 3 extended from 102-140 cmbs (40.2-55.1 in.) and consisted of very pale brown (10YR 7/4) compact sandy clay with calcium carbonates. After no cultural material was observed in the trench walls, with the exception of the construction dump, excavation continued to 2 mbs (6.6 ft.). No cultural material was observed in backdirt from this deeper excavation.

BHT 4 was 3.8 m (12.5 ft.) in length and 75 cm (29.5 in.) wide. The trench was oriented east-west, perpendicular to the creek. No cultural material was observed in the trench profile or in the backdirt. Excavation was halted at 130 cmbs (51.2 in.) to examine the trench profiles. Three layers were identified in the soil profile (Figure 5-17). Layer 1 extended from 0-30 cmbs (0-11.8 in.) and consisted of very dark gray (10YR 3/1) loose clay loam with roots. Layer 2 extended from 30-115 cmbs (11.8-45.3 in.) and consisted of dark grayish-brown (10YR 4/2) dense, clumpy clay/sand with roots and carbonates. Layer 3 extended from 115-130 cmbs (45.3-51.2 in.) and consisted of yellowish-brown (10YR 5/4) very dense clay with carbonates. After the trench was documented, excavation continued to a depth of 2 mbs (6.6 ft.) (Figure 5-18). No cultural material was observed from 1.3 to 2 mbs (4.3-6.6 ft.).

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C) found that 41BX1092 had greater potential for intact, buried deposits based on its location within the landscape. However, the gravel bed encountered in BHT 3 was indicative of a relict stream channel which would have disrupted deposits in the area.

Summary

The lack of buried material and evidence of disturbances at 41BX1092 suggest that the deposits here are primarily restricted to the surface and do not offer significant research value. When the site was initially recorded, it was recommended as having moderate research potential on the basis of potential for buried deposits. This initial survey primarily focused on recording surface material (Nickels et al. 1997). No temporally diagnostic artifacts or organic materials were previously recovered at the site (Huhnke 2006; Nickels et al. 1997), and none were documented during this investigation. Geo-Marine's 2003 (Huhnke 2006) revisit categorized the site as not eligible to a depth of 50 cmbs (19.7 in.), but recommended backhoe trenching to investigate the potential for deeply buried deposits. Trenching suggests that buried deposits at the site are not present, and that below-ground disturbances have taken place. The geoarchaeological evaluation of the site (Appendix C) suggests that, due to the site's position on the landscape, the northern portion of the site displayed an intact profile and may have potential for deeply buried deposits. However, Terracon's findings are based entirely on geological evaluation, rather than any indication of buried cultural material. Excavation of two BHTs to a depth of 2 mbs (6.6 ft.) within the 889 m^2 site (9,569 ft^2) did

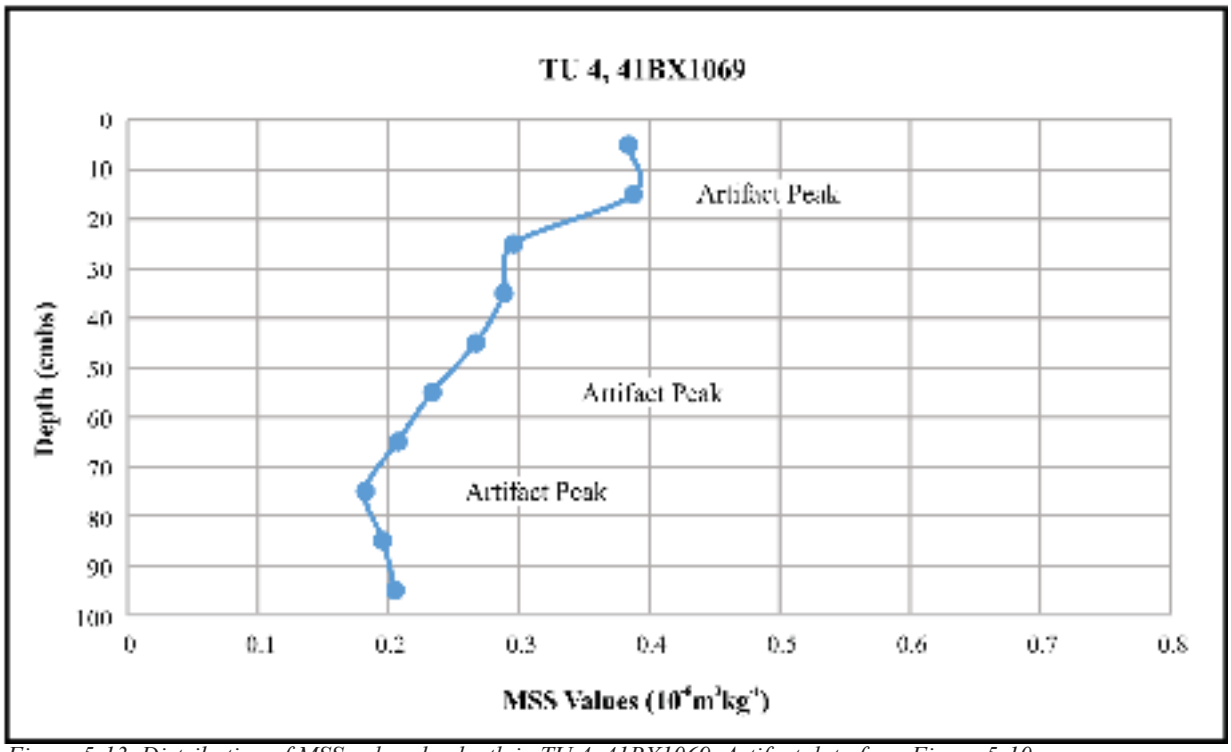

Figure 5-13. Distribution of MSS values by depth in TU 4, 41BX1069. Artifact data from Figure 5-10.

Figure 5-14. Material scattered on the surface at 41BX1092.

Figure 5-15. Site 41BX1092 on a topographic map, with BHT locations.

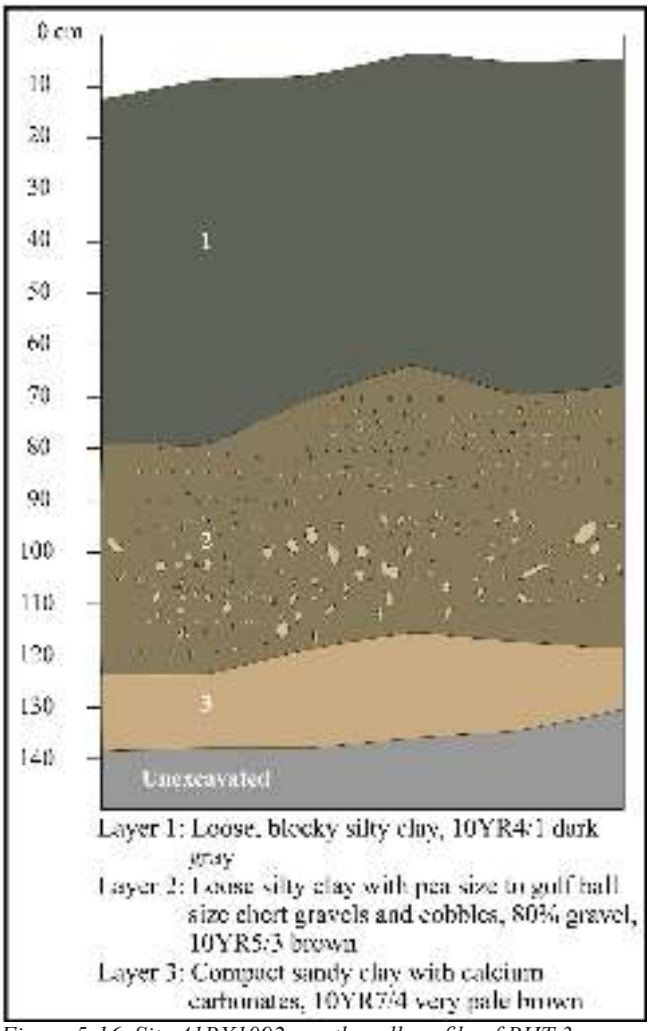

Figure 5-16. Site 41BX1092, north wall profile of BHT 3.

not uncover any evidence of cultural material buried within the deeper deposits. All cultural material observed was at the surface or, in the case of the single piece of debitage, near the top of excavations during backhoe trenching. Additional excavations within such a small area are unlikely to yield dramatically different results, and the current archaeological investigation did not locate any evidence of buried cultural deposits that could offer valuable research data. Based on lack of evidence of buried cultural deposits at the site, 41BX1092 is found to have low research potential, and is recommended as not eligible for listing in the NRHP.

41BX1093

Site 41BX1093 is a prehistoric site which was recorded during a pedestrian survey by the CAR (Nickels et al. 1997). Dense quantities of chipped stone and burned rock were recorded on the surface. A ST suggested the possibility of two subsurface strata, one occurring at 20 cmbs (7.9 in.), and the other from 30 to 60 cmbs (11.8-23.6 in.). The site spans the floodplain and lower terrace of Medio Creek. Both of these contexts were found likely to contain buried Holocene deposits by a geoarchaeological assessment (Nordt 1997). The site was recommended as having high research potential and was recommended for listing in the NRHP in a district context (Nickels et al. 1997).

Geo-Marine revisited the site in 2003 and conducted shovel testing (Huhnke 2006). Nine STs were excavated at the site. Only one ST, placed on the second terrace, was positive. It contained 37 artifacts, including debitage, a biface fragment, snail shells, and a core. Approximately 50% of the artifacts were recovered from Level 1 (0-10 cmbs [0-3.9 in.]). The ST reached a depth of 60 cmbs (23.6 in.). This ST was located closest to the patrol road. The other STs, excavated adjacent to the creek, were negative. The site was recommended as not eligible for listing in the NRHP due to poor geological context, suggested by the decreasing density of the artifacts with depth in the single positive ST (Huhnke 2006). Geo-Marine recommended testing for deeply buried deposits to make a

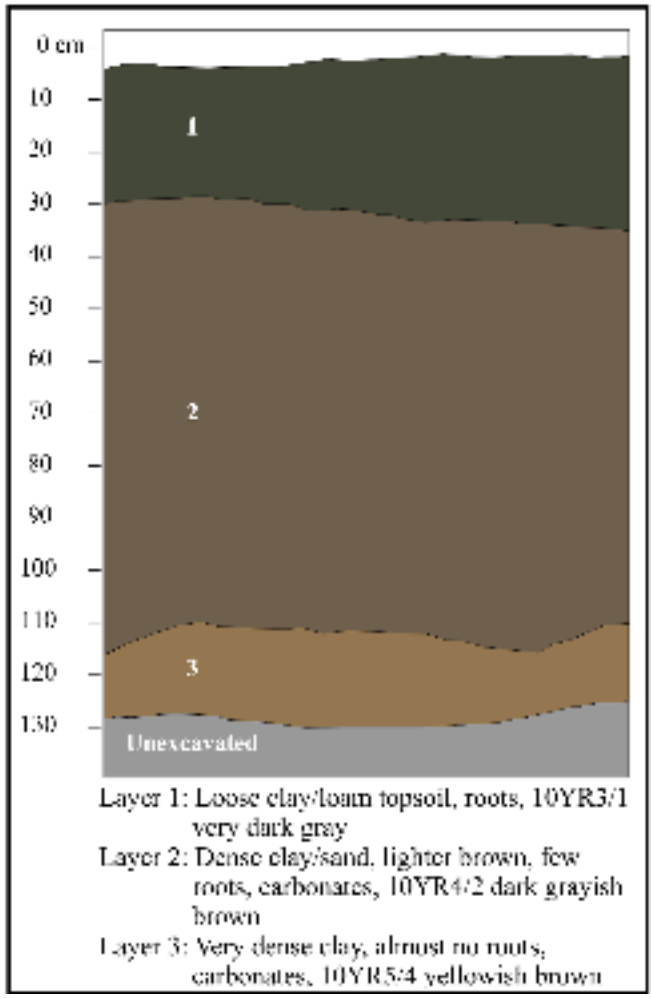

Figure 5-17. Site 41BX1092, south wall profile of BHT 4.

final recommendation of archaeological potential (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020). Nickels (1997) does not note any potential impacts to the site. Huhnke (2006) notes potential impacts from road maintenance and dumping, as well as erosion and flooding by the creek and the presence of a sewer line in the area.

Current Investigations at 41BX1093

The CAR excavated BHTs 7 and 8 and TU 5 within the site. A burned rock feature was documented within BHT 8 and TU 5. The site is located along a defunct patrol road southwest of Medio Creek, on a terrace above the creek, in the central portion of Chapman Training Annex (Figure 5-19). A significant quantity of chipped stone material and burned rock was observed on the surface and eroding out of the slope leading down to the creek (Figure 5-20). In total, 452 pieces of debitage, 23,952.8 g (844.9 oz.) of burned rock, and 20 lithic tools and cores were recovered while testing the site.

BHTs

BHT 7 was located in the southern portion of the site near the edge of the terrace. The trench was 5.4 m (17.7 ft.) long and 90 cm (35.4 in.) wide. Excavation was halted at 140 cmbs (55.1 in.) to allow archaeologists to examine and record the trench profiles. The trench was oriented east-west, roughly perpendicular to the creek. A quantity of debitage was observed in the backdirt, as well as within the trench profile. Five layers were recorded in the trench profile (Figure 5-21). Layer 1 extended from 0-15 cmbs (0-5.9 in.) and consisted of loose black (10YR 2/1) silty clay. Layer 2 extended from 15-49 cmbs (5.9-19.3 in.) and consisted of very dark gray (10YR 3/1) blocky silty clay. The delineation between Layers 1 and 2 was gradual. Layer 3 extended from 49-85 cmbs (19.3-33.6 in.) and consisted of brown (10YR 5/3) blocky silty clay with calcium carbonates, snail shell and pea-sized gravel. Layer 4 extended from 85-135 cmbs (33.6-53.1 in.) and consisted of loose yellowish-brown (10YR 5/4) silty clay with 85% pea- to fist-sized gravels. Layer 5 extended from 135-140 cmbs (53.1-55.1 in.) and consisted of very pale brown (10YR 7/4) compact sandy clay. After

Figure 5-18. Site 41BX1092, BHT 4 at 2 mbs (6.6 ft.).

Figure 5-19. Site 41BX1093 on a topographic map, including BHTs and TUs.

Figure 5-20. Material eroding out of slope along east edge of 41BX1093 (facing west).

the trench profiles were examined and recorded, excavation continued to a depth of 2 mbs (6.6 ft.) (Figure 5-22). No cultural material was observed below 125 cmbs (49.2 in.).

BHT 8 was located in the northern portion of the site near the edge of the terrace. The trench was 4.6 m (15.1 ft.) long and 80 cm (31.5 in.) wide. Excavation was halted at 145 cmbs (57.1 in.) to allow archaeologists to examine and record the trench profiles. Four layers were identified in the trench profile (Figure 5-23). Layer 1 extended from 0-20 cmbs (0-7.9 in.) and consisted of black (10YR 2/1), loose silty clay. Layer 2 extended from 20-45 cmbs (7.9-17.7 in.) and consisted of black (10YR 2/1) clumpy silty clay with dense roots. Layer 3 extended from 45-77 cmbs (17.7-30.3 in.) and consisted of blocky, very dark gray (10YR 3/1) silty clay with roots and carbonates. BHT 8 contained debitage, a core, and a burned rock feature (Feature 1). The soil matrix within Feature 1 was similar to the surrounding Layer 3 soil. Layer 4 extended from 77-145 cmbs (30.3-57.1 in.) and consisted of brown (10YR 4/3) silty clay with 80% dense, pebble- to fist-sized gravels. Lithic cores, debitage, and charcoal were recovered from the backdirt and trench profile.

Geoarchaeological Assessment

TCI's geoarchaeological assessment of 41BX1093 (Appendix C) found that the site was unlikely to contain deeply buried and stratified cultural resources based on the quantity of material exposed at the surface, and shallow soil profiles exposed in backhoe trenches.

TUs

TU 5 was placed north of and adjacent to BHT 8, directly above the feature (Table 5-3). Excavation was terminated at 80 cmbd when the test unit reached the dense gravel layer observed in the profile. No cultural material appeared in the trench profile within or below this layer. No modern or historic material was observed. A small peak in both debitage and burned rock was observed in Level 3 (30-40 cmbd; 11.8-15.7 in.). Feature 1 was documented from 49-60

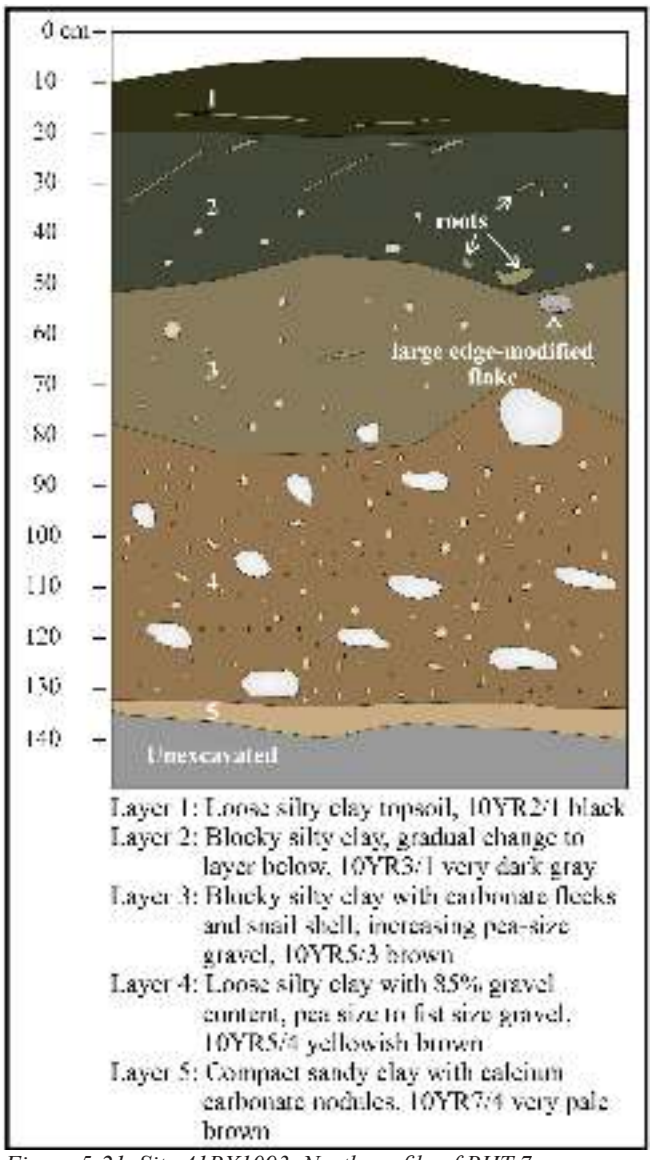

Figure 5-21. Site 41BX1093, North profile of BHT 7.

cmbd (19.3-23.6 in.), which included the bottom of Level 4 and the entirety of Level 5 (Figure 5-24). It continued into the northeastern corner of the trench, towards the creek (Figure 5-25). Feature 2 was defined as a small concentration of burned rock and chipped stone located directly below Feature 1 in Level 6, from 59-68 cmbd (23.2-26.8 in.; Figure 5-26). Matrix samples were taken from both features.

Data from Table 5-3 was used to create Figure 5-27. The figure shows a significant peak in chipped stone in Levels 5 (50-60 cmbd; 19.7-23.6 in.) and 6 (60-70 cmbd; 23.6-27.6 in.).

Note that the quantities depicted in Table 5-3 and associated figures include only the chipped stone and burned rock recovered from screening in the field. Soil samples from the features were collected and picked in the lab, which recovered microdebitage and small burned rock fragments. When materials recovered in the lab from these samples are included in the counts, 149 pieces of debitage in total were recovered from Level 5 and 147 pieces from Level 6. Burned rock quantities including material picked from the matrix samples are 22,502.4 g (793.7 oz.) from Level 5 and 1,101.3 g (38.8 oz.) from Level 6. Materials recovered from samples in the lab were excluded from the examination of distribution of cultural materials between levels depicted in Figure 5-27 so that the data across levels would be comparable due to similar methodologies. Including both field and lab recovery, 22,502.4 g (793.7 oz.) of burned rock, primarily fist-sized or larger limestone cobbles, was recovered from Feature 1, and 374.3 g (13.2 oz.) of burned rock was recovered from Feature 2.

Eighteen lithic tools and cores were recovered from the unit, none of which were definitively temporally diagnostic. Ten biface fragments were recovered, including three distal fragments, one medial fragment, and a small, burned uniface that may have been the stem of an arrow point recovered from Feature 1 (Figure 5-28). Generally, with a few exceptions, the biface fragments recovered from 41BX1093 are small, finely worked fragments. Five edge-modified flakes were recovered from the unit, in Levels 3, 5, 6, and 7 (Figure 5-29). One edge-modified flake was recovered from Feature 2. One burned core was recovered from Feature 2 (Figure 5-30). Two burned possible groundstone fragments, likely handstones, were recovered from Level 6, one of which was recovered from Feature 2 (Figure 5-31). The fragments were similar limestone material but did not refit.

Features

Small quantities of charcoal were recovered in the lab from matrix samples taken from Features 1 and 2. Additionally, point-provenienced charcoal samples were recovered in the field where possible. Two samples, one from Feature 1 and another from Feature 2, were submitted for radiocarbon dating. A third sample was attempted from the Feature 1 matrix but did not survive processing. The successful sample from Feature 1 was recovered from a matrix sample taken from near the top of the feature at 51 cmbd (20.1 in.), in the western half of the unit. This sample (D-AMS039947) returned a radiocarbon date of 1064 ± 22 radiocarbon years before present (RCYBP). Using Oxcal version 4.4.2 (Bronk Ramsey 2020), the date calibrates from 1053 to 925 calBP (95.4 % probability), with a median date of 956 calBP. The most likely age range, at 81.3% probability, is between 996 and 925 calBP. This places Feature 1 within the Late Prehistoric period. The second sample, recovered from Feature 2, was a point-provenienced sample recovered from the eastern edge of the feature at 67 cmbd, at the bottom of the feature. This sample (D-AMS039948) returned a date of

Figure 5-22. Site 41BX1093, BHT 7 at 2 mbs (6.6 ft.).

3258 ± 28 RCYBP. Using Oxcal, the date calibrates from 3561 to 3398 calBP at 95.4 % probability, and the median date is 3468 calBP. The most likely age range, at 65.5% probability, is between 3515 and 3440 calBP. This places Feature 2 in the early portion of the Late Archaic period.

Feature 1 is the documented section of a larger burned rock feature which extends north and east into the trench wall. These types of features are common in Central Texas and are most often interpreted as facilities for cooking plant resources (Ellis 1997). The feature contained primarily large limestone cobbles, which showed evidence of burning. The edge of the feature, exposed during the test unit excavation, appears roughly circular in shape, and the section exposed in the test unit and trench profile suggests that the feature is approximately 1.5 m (4.9 ft.) across, although to be certain it would be necessary to expose more of the feature profile and delineate the edges clearly. Two layers of rocks were identified during excavation, and the feature appears flat in profile. These characteristics suggest that it is likely the remnants of an earth oven (Black and Thoms 2014; Ellis 1997). Feature 2, was defined as directly below Feature 1. It may be a remnant of a small, burned rock hearth feature that was present before Feature 1 was constructed, as the re-use of earth oven facilities is well-documented (Black and Thoms 2014). If that is the case, then Feature 2 may reflect the earliest use of what was to become Feature 1. Note, however, that composition of Feature 2 is significantly different than Feature 1. Feature 1 was constructed primarily of limestone cobbles, and spanned the entirety of the unit, continuing into the trench profile. Feature 2 was a small (20 cm by 14 cm [7.9 in by 5.5 in.]) concentration containing burned lithic tools and burned chert cobbles.

Burned rock features are common at prehistoric sites in Central Texas (Black et al. 1997). Radiocarbon dates on these features suggests that while their use began in the Paleoindian period (Black and Thoms 2014; Thoms 2009), their use proliferated in the Late Prehistoric (Black et al. 1997; Dozier 2019; Mauldin and Nickels 2003). While hot rock technology can be used to process a wide variety of resources (Ellis 1997), botanical remains indicate that these features were most commonly used to process geophytes such as camas bulbs or wild onions, which often require long cooking periods to be rendered edible (Acuna 2006; see also Custer 2017; Ellis 1997; Neubauer 2018). Freeman's (2007) review of burned rock midden distribution found that the distribution within Texas of these larger thermal features correlates with effective temperatures of 15.75°C (60.35°F) or cooler. This temperature is referred to as the "storage threshold" among hunter-gatherers. At temperatures this low, availability of certain resources can fluctuate seasonally, and inhabitants generally must adopt techniques such as storage to compensate. Burned rock features may offer a response to such seasonal resource fluctuations. Lackland AFB lies within a zone with an effective temperature of 15.75°C (60.35°F) or cooler, indicating that prehistoric inhabitants

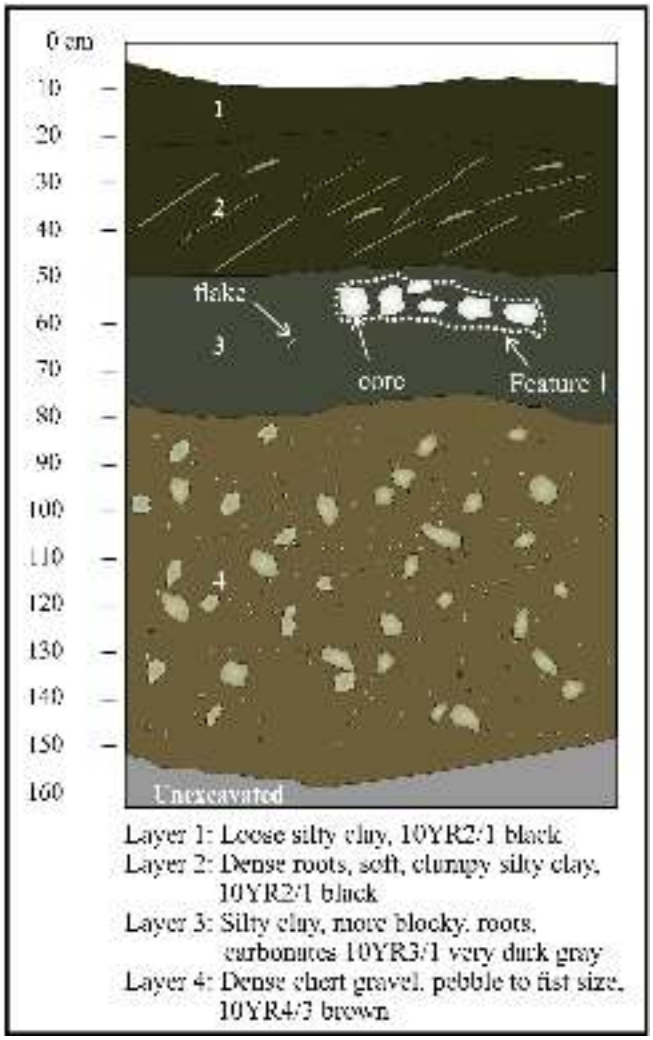

Figure 5-23. Site 41BX1093, North wall profile of BHT 8.

Table 5-3. Summary of Materials Recovered from TU 5
(Matrix Samples Excluded)

Level	Feature	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Organic (wt. in g)	Historic (ct)
1		0	0	0	0	0
2		29	59.2	0	0	0
3		41	72.1	3	0	0
4		32	29.7	1	0	0
5	1	51	22,479.1	4	0.8*	0
6	2	93	1,071.9	6	1.3 *	0
7		40	161.1	4	0	0

*Sample submitted for radiocarbon dating

Figure 5-24. Site 41BX1093 Feature 1, end of Level 4.

Figure 5-25. Site 41BX1093, Feature 1 exposed in TU 5 and northeast corner of BHT 8.

Figure 5-26. Site 41BX1093, Feature 2, exposed in TU 5, bottom of Level 6.

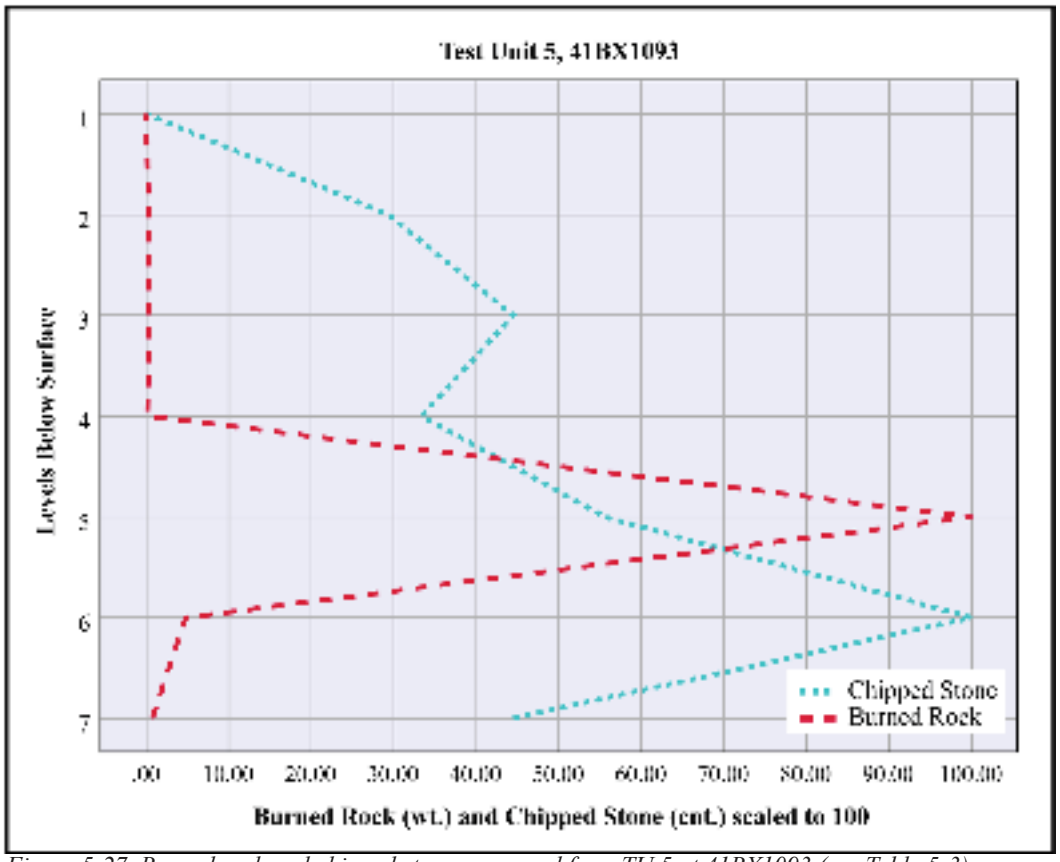

Figure 5-27. Burned rock and chipped stone recovered from TU 5 at 41BX1093 (see Table 5-3).

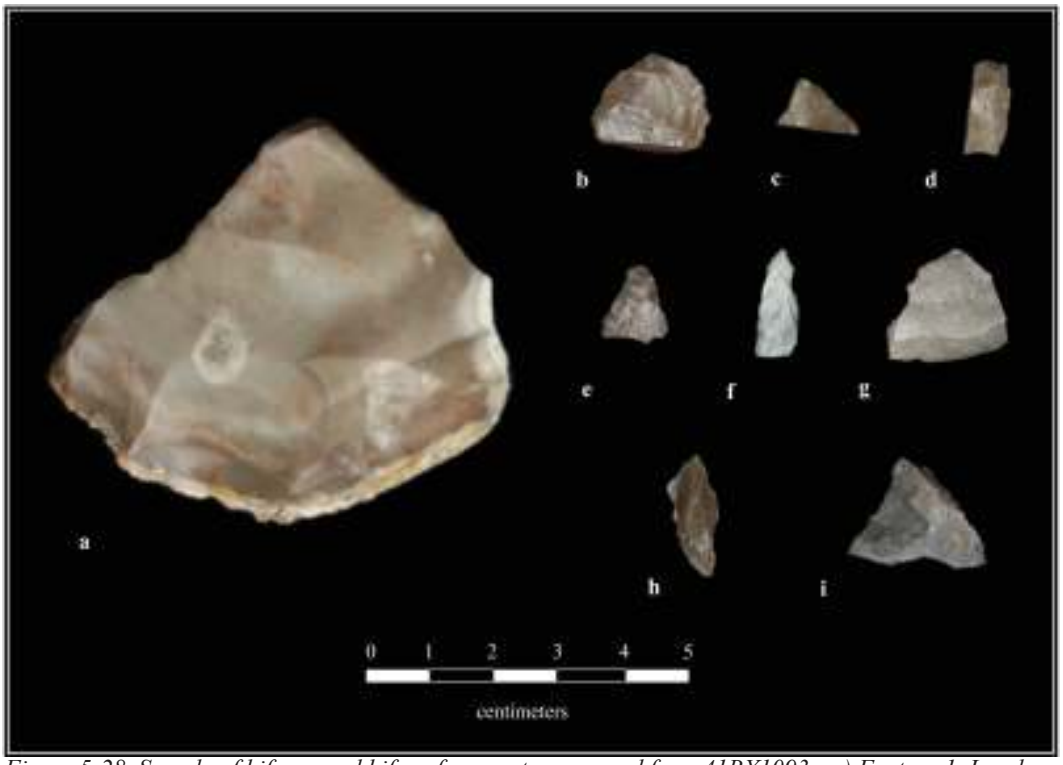

Figure 5-28. Sample of bifaces and biface fragments recovered from 41BX1093: a.) Feature 1, Level 5; b.) Level 4; c, d.) Level 3, two fragments; e.) Level 6; f.) uniface (possible burned Perdiz stem) Level 5; g, h, i.) Level 7, three fragments.

Figure 5-29. Edge-modified flakes recovered from 41BX1093: a.) Level 7; b.) Level 3; c.) Level 6; d.) Feature 2, Level 6; e.) Level 5.

may have experienced seasonal resources stresses. Dering's (1999) experimental work found that the processing of succulents using earth ovens provides a relatively low caloric return rate at high cost in both labor and local plant resources, and similarly argues that they served as a resource primarily during periods of seasonal stress. Johnson and Hard (2008) argue that they may represent a form of resource intensification in response to increased population density, particularly in the Late Prehistoric. Dozier argues that the increase in the use of burned rock features in the Late Prehistoric is not likely connected to a change in resource selection, based on macrobotanical and faunal analysis of the remains of the resources processed within features, as well as isotopic data recovered from cemetery sites (Dozier 2019). Instead she suggests that greater numbers of people are likely being fed, although Dozier connects this to feasting activity rather than population increases. It appears likely that Feature 1 served as an oven, potentially for plant resources. The fact that the top of this feature dates to the Late Prehistoric suggests that activities at the site were a part of the broader changes associated with this period that led to the increased use of burned rock features. The earlier date of the underlying Feature 2 indicates that this area at 41BX1093 was potentially reused over several thousand years, a pattern not uncommon in burned rock ovens (see Black and Thoms 2014).

MSS Patterns

MSS samples were taken from the northern profile of TU 5. Overall, values at 41BX1093 are the highest of any site tested, suggesting significant organic deposition. High values would be consistent with the repeated use of the area for cooking. The pattern exhibited in the profile is unusual in that the artifact peaks are below the MSS peaks (Figure 5-32). A dip in values appears in the profile from 65-35 cmbs (25.6-13.8 in.), the

Figure 5-30. Burned core recovered from 41BX1093 (Feature 2, Level 6).

levels containing the burned rock feature. Values then peak from 35-25 cmbs (13.8-9.8 in.), before showing a gradual decrease towards the surface. This suggests a buried surface from 25-35 cmbs (9.8-13.8 in.), and there is a small peak in debitage that occurs from 20-30 cmbs (7.9-11.8 in.; Level 3). The dip in values associated with the burned rock feature is highly unusual, as the burned soil and organic deposits associated with thermal features are likely to increase MSS values (Dearing 1999; Kemp et al. 2018; Mauldin and Smith 2015). This may be related to the fact that the column was taken from the northern test unit profile, near the edge of the extent of the feature. Another possible explanation is that the feature was constructed on a rapidly aggrading surface that stabilized at 25-35 cmbs (9.8-13.8 in.). It is also possible that the dense clustering and multiple layers of rocks presented unique preservation conditions. Ultimately, the reason for the unusual MSS results is not clear. However, the presence of Feature 1 and Feature 2 is an indication of the integrity of the deposits at 41BX1093.

Summary

Site 41BX1093 contains intact features with material suitable for absolute dating which has returned dates spanning the Late Archaic to the Late Prehistoric, as well as significant quantities of artifacts. Temporally diagnostic lithic artifacts have not been previously recorded at the site (Huhnke 2006; Nickels et al. 1997) and were not definitively observed during this investigation. The hypothesis presented in the initial survey, that a second component including burned rock features may be present from 30-60 cmbs (11.8-23.6 in.) (Nickels et al. 1997), was determined to be accurate. Geo-Marine primarily focused their testing on the flood plain, but the single ST that was excavated on the terrace revealed

Figure 5-31. Groundstone fragments recovered from 41BX1093 (Level 6).

cultural material in five out of six levels until dense cobbles were encountered. While Geo-Marine suggested, based on the results of their positive STs, that the artifacts recovered from lower levels were the result of displacement through bioturbation, this investigation establishes the presence of a buried, intact deposit with features at the site, with an associated increase in material in the levels containing the feature. The geoarchaeological evaluation of this site suggests that intact components below the gravel bed on which Feature 1 sits are unlikely, suggesting a lack of more deeply buried deposits. However, this investigation, as well as previous results of subsurface investigations, establishes that significant buried deposits as well as intact features are present on the terrace portion of 41BX1093 above the gravels. Organic preservation is good. The CAR suggests that these deposits have potential to contribute to current research in prehistoric Texas archaeology, including data concerning shifts in subsistence practices during the Late Archaic and Late Prehistoric periods. The site is recommended as eligible for listing in the NRHP under Criterion D.

41BX1107

Site 41BX1107 is a prehistoric site located south of Leon Creek on Gateway Hills Golf Course on Lackland AFB. The site is in the rough west of Hole 4, about 131 m (429.8 ft.) south of Leon Creek. The site was recorded by the CAR during a pedestrian survey in 1994 (Nickels et al. 1997). The site was described as a dense surface scatter consisting of chipped stone and burned rock, including an untyped projectile point fragment. A ST encountered artifacts up to 50 cmbs (19.7 in.). The site is located on an alluvial terrace above Leon Creek. While the Leon Creek Valley chronology is not well understood, this context was found likely to contain buried Holocene deposits during a geoarchaeological assessment (Nordt 1997). The site was assessed as having high research potential and was recommended for listing in the NRHP (Nickels et al. 1997).

The site was revisited by Geo-Marine in 2003 (Huhnke 2006). Eight STs were excavated during testing, six of which were positive in the upper 30 cmbs (11.8 in.). Four of the STs were terminated at 20 cmbs (7.9 in.) or shallower, and three were terminated at 40 cmbs (15.7 in.). One ST reached 50 cmbs (19.7 in.), but no artifacts were recovered from that level. A total of 32 artifacts–consisting of debitage, a core, and a utilized flake–were recovered. Evidence of disturbance by golf course activities was recorded by both Huhnke (2006) and Nickels (1997). Huhnke (2006) recommended that the site was not eligible to 50 cmbs (19.7 in.), but the potential for deeper deposits was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of archaeological potential (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020).

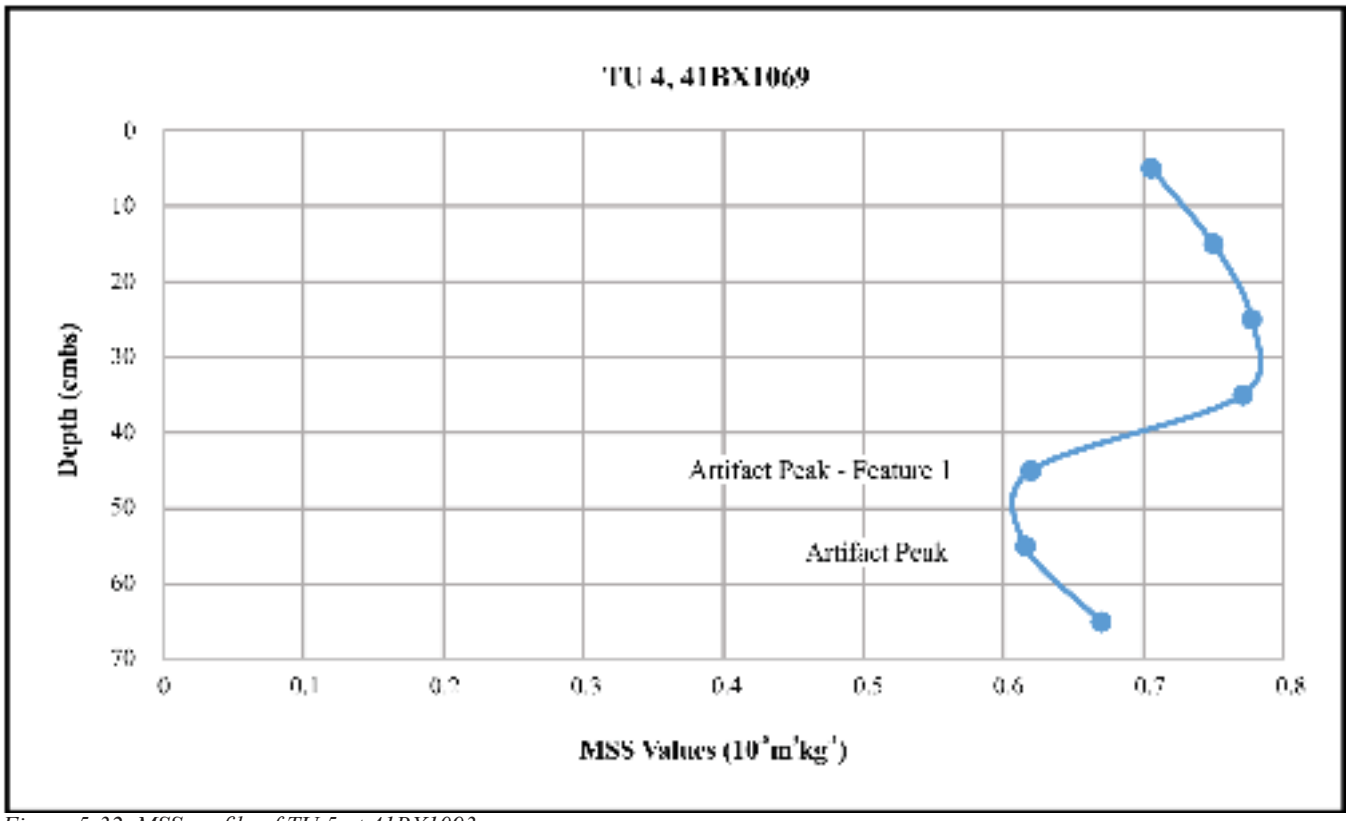

Figure 5-32. MSS profile of TU 5 at 41BX1093.

Current Investigations at 41BX1107

The CAR excavated BHTs 5 and 6 and TUs 1 and 2 within the site (Figure 5-33). The site is located in an urban ecoregion (TPWD 2020) in Sunev clay loam (VcC) soils (NRCS 2020). In total, 49 pieces of debitage, 3,460 g (122 oz.) of burned rock, and five lithic tools and cores were recovered from excavations at the site.

BHTs

BHT 5 was 5 m (16.4 ft.) long and 63 cm (24.8 in.) wide, oriented northwest, roughly perpendicular to Leon Creek. Excavation was halted at 129 cmbs (50.1 in.) so that archaeologists could examine the trench. An edge-modified flake, debitage, and 28.8 g (1.02 oz.) of burned rock were recovered from the backdirt. Three layers were identified in the soil profile (Figure 5-34), with artifacts noted in the profile at the bottom of Layer 1 and the top of Layer 2. Layer 1 extends from 0-25 cmbs (0-9.8 in.) and consists of very dark grayish-brown (10YR 3/2) blocky clay with sandy inclusions and some pebble-sized gravel. Layer 2 extends from 25-70 cmbs (9.8-27.6 in.) and consists of light yellowish-brown (10YR 6/4) blocky, compact sandy clay with calcium carbonates. Layer 3 extends from 70-140 cmbs (27.6-55.1 in.) and consists of compact yellow (10YR 7/6) sand with calcium carbonates. After completion of TU 1, excavation continued to a depth of 2 m (6.6 ft.) (Figure 5-35). These deeper soils were hard, sandy, and contained significant carbonates, continuing the soils observed in Layer 3. No cultural material was noted in the backdirt excavated from 129 cmbs to 200 cmbs (50.8 in. to 78.7 in.).

BHT 6 was 4.3 m (14.1 ft.) and 70 cm (27.6 in.) wide, oriented 340 degrees northwest. Excavation was halted at 143 cmbs (56.3 in.) to allow archaeologists to examine the trench. One biface, 12 pieces of debitage, 3,226 g (113.8 oz.) of burned rock, and one core were recovered from the backdirt. The significant amount of burned rock recovered from the backdirt suggests that a feature may have been present near the surface. However, excavation was paused multiple times to examine the trench for a potentially intact feature, and no specific concentration could be identified in the excavation or in the profile of the trench. Three layers were identified within the profile (Figure 5-36), with debitage and burned rock observed in Layers 1 and 2. Layer 1 extended from 0-20 cmbs (0-7.9 in.). It consisted of dark yellowish-brown (10YR 3/4) clumpy sandy clay with rootlets. Layer 2 extended from 20- 82 cmbs (7.9-32.3 in.). It consisted of light yellowish-brown (10YR 6/4) clumpy, sandy soil with calcium carbonates. Layer 3 extended from 82-130 cmbs (32.3-51.2 in.). It consisted of compact yellow (10YR 7/6) sandy clay with carbonates. After completion of TU 2, excavation continued to a depth of 2 m (6.6 ft.), revealing soils similar to Layer 3. No cultural material was recovered from the backdirt of the deeper excavation.

Geo-Marine archaeologists noted an unusual soil profile in some of their STs, consisting of a thick layer of yellowish coarse sandy clay overlaying black, blocky clay. This soil profile was not encountered in the CAR's BHTs. The yellowish coarse sandy clay described by Geo-Marine as possible fill extended to a depth of 2 mbs (6.6 ft.) in the CAR's BHTs and appears to represent the natural soils. Venus series soils can be sandy and lighter in color than is usual for Texas clays, although the typical color description is not as yellow as the soil observed here (NRCS 2020).

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C) found evidence of a disturbed zone near the surface above a stable soil layer. Due to the site's location on a slope, TCI found that there was a low probability of buried and stratified cultural resources within the site.

TUs

TU 1 was excavated to explore the deposits encountered in BHT 5. It was located adjacent to the east profile of the trench. The test unit was excavated to a depth of 130 cmbd (51.2 in.) and terminated after two sterile levels (Levels 11 and 12). Cultural deposits were sparse (Table 5-4); the highest debitage count was five pieces in Level 2 (20-30 cmbd; 7.9-11.8 in.), and burned rock was only present in Level 3 (30-40 cmbd; 11.8-15.7 in.). An edge-modified perforator was recovered from Level 10 (100-110 cmbd; 39.4-43.3 in.), the only lithic tool recovered from the TU. Levels 1 (4-20 cmbd; 1.6-7.9 in.), 5 (50-60 cmbd; 19.7-23.6 in.), 7 (70-80 cmbd; 27.6-31.5 in.), 9 (90-100 cmbd; 35.4-39.4 in.), 11 (100-110 cmbd; 39.4-43.3 in.) and 12 (110-120 cmbd; 43.3-47.2 in.) contained no artifacts.

TU 2 was excavated to explore deposits encountered in BHT 6 (Table 5-5). It was located adjacent to the eastern trench edge and measured 50 by 50 cm (19.7 by 19.7 in.). The test unit was terminated at 90 cmbd (35.4 in.) after Levels 7 (70-80 cmbd; 27.6-31.5 in.) and 8 (80-90 cmbd; 31.5-35.4 in.) were sterile. As shown in Figure 5-37, both debitage count (n=8) and burned rock weight (48.8 g, 1.72 oz.) peaked in Level 2 (20-30 cmbd; 7.9-11.8 in.). One edge-modified flake with significant patination was recovered from Level 4; this was the only lithic tool recovered from TU 2 (Figure 5-38).

MSS Patterns

MSS samples were taken from profiles of both units. The patterning shown in each test unit is broadly similar. Overall MSS values were low. MSS values from the profile of

Figure 5-33. Site 41BX1107 on a topographic map, with BHT and TU locations.

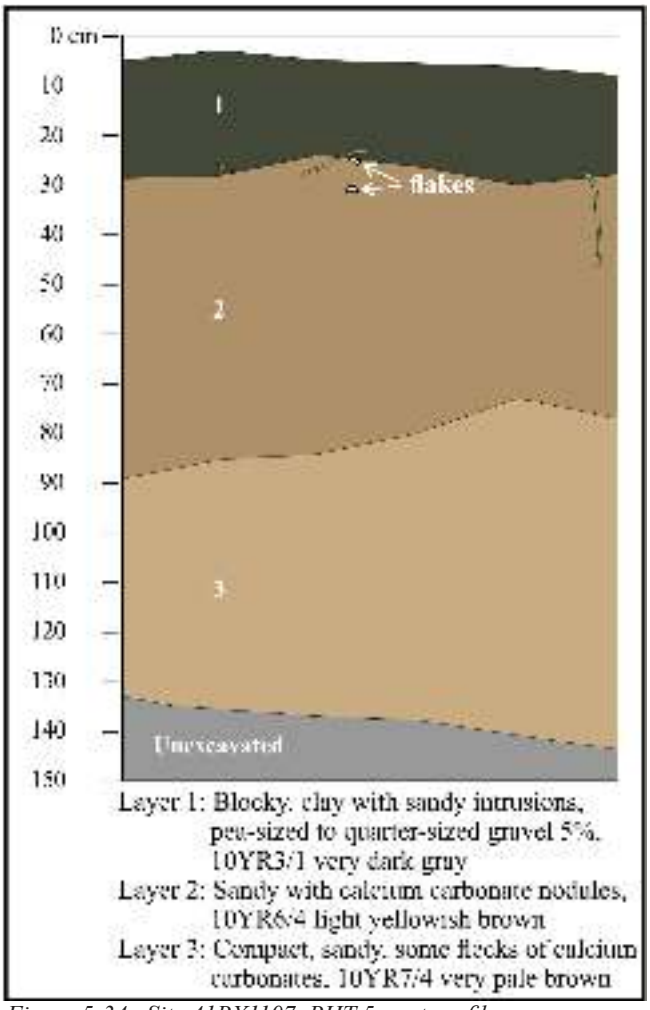

Figure 5-34. Site 41BX1107, BHT 5 west profile.

TU 1 exhibit only minor fluctuations from 125-35 cmbs (49.2-13.8 in.), with an increase in values from 35 cmbs (13.8 in.) to the surface (Figure 5-39). This suggests little overall surface stability through time, with some organic accumulation near the current surface. MSS values from the profile of TU 2 show little fluctuation, even near the surface, suggesting a lack of surface stability and soil accumulation in the area (Figure 5-40).

Summary

Backhoe trenching and TUs at 41BX1107 uncovered deposits that reach a maximum depth of 100 cmbs (39.4 in.), although material was extremely sparse and concentrated in upper levels. There appears to be a consistent peak in material at about 10-20 cmbs (3.9-7.9 in.) across the site, with a gradual decrease in material before reaching sterile deposits. No organics, temporally diagnostic artifacts, or intact features had been documented at the site (Huhnke 2006; Nickels et al. 1997), and none were encountered during the current work. Few lithic tools were recovered. When the site was initially recorded, it was recommended as having a high research potential due to dense surface material, as well as potentially buried materials. Additionally, it was noted that the site was one of the few remaining intact along this segment of Leon Creek. That initial evaluation focused on surface documentation (Nickels et al. 1997). Geo-Marine shovel testing found that artifact quantity decreased with depth, although half of their STs terminated at 20 cmbs (7.9 in.) or shallower, leaving deeper deposits unexplored. Geo-Marine recommended that the first 50 cmbs (19.7 in.) were not eligible for listing in the NRHP, but that backhoe trenching be conducted to test for the potential of deeply buried deposits (Huhnke 2006). While the CAR encountered sparse materials that reached significant depth, the majority of material was concentrated in the upper 30 cm (11.8 in.) of deposits. MSS profiles suggest a lack of integrity. The geoarchaeological evaluation (Appendix C) also suggests a low probability of intact, buried cultural resources. The results of these investigations indicate that 41BX1107 has low research potential and the CAR recommends that the site be considered not eligible for listing in the NRHP.

41BX1121

Site 41BX1121 is a prehistoric site recorded by the CAR in 1994 during pedestrian survey (Nickels et al. 1997). Chipped stone, including a Pedernales dart point, a substantial quantity of burned rock and a possible groundstone fragment were recorded on the surface. The Pedernales dart point suggests a Late Archaic component (Turner et al. 2011). A ST documented cultural material to 60 cmbs (23.6 in.). The site is located on the first terrace of Medio Creek. This context was found likely to contain buried Holocene deposits during a geoarchaeological assessment (Nordt 1997). The site includes a historic component, consisting of a collapsed stone structure, which was recommended as not eligible for listing in the NRHP. The prehistoric component of the site was found to have high research potential and recommended for listing in the NRHP in a district context (Nickels et al. 1997).

Geo-Marine revisited the site in 2003 (Huhnke 2006). Six STs and a 50 by 50 cm (19.7 by 19.7 in.) TU were excavated. Three STs and the TU were positive for cultural material, primarily within the first 10 cmbs (3.9 in.). The deepest material recovered was from 30 cmbs (11.8 in.). The STs each extended to 40 cmbs (15.7 in.) and the TU to 20 cmbs (7.9 in.). Artifacts recovered included debitage, one biface, and one core. The site was recommended as not eligible for listing in the NRHP due to poor geological context to 50 cmbs (19.7 in.). Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of

Figure 5-35. Site 41BX1107, BHT 5 at 2 mbs (6.6 ft.).

archaeological potential (Huhnke 2006). The THC states that the site is not eligible for the NRHP (THC 2020).

Current Investigations at 41BX1121

The CAR excavated BHTs 9 and 10 and 50 by 50 cm (19.7 by 19. 7 in.) TU 6 within 41BX1121 (Figure 5-41). The BHTs were located slightly southeast of the site boundary due to lack of backhoe accessibility to the lower floodplain of Medio Creek. The site is located north of a patrol road in the southeast portion of Chapman Training Annex. In total, 41 pieces of debitage, 253.1 g (8.9 oz.) of burned rock, and five lithic tools and cores were recovered from the current excavations at the site.

BHTs

BHT 9 was 6.2 m (20.3 ft.) long and 65 cm (25.6 in.) wide. It was excavated on the east side of the site, oriented roughly perpendicular to Medio Creek. Excavation was halted at 145 cmbs (57.1 in.) to allow archaeologists to examine the trench. FCR and chipped stone was observed on the surface, but no cultural material was observed in the trench profile walls. Burned limestone, a core, three pieces of debitage, and an edge-modified flake were recovered from the backdirt. Four layers were recorded in the soil profile (Figure 5-42). Layer 1 extended from 0-38 cmbs (0-15.0 in.) and consisted of loose, dark gray (10YR 4/1) clumpy silty clay with fine gravels and rootlets. Layer 2 extended from 38-63 cmbs (15.0-24.8 in.) and consisted of hard, dark grayish-brown (10YR 4/2) blocky silty clay with no gravels and a small amount of calcium carbonates. Layer 3 extended from 63-107 cmbs (24.8-42.1 in.) and consisted of very pale brown (10YR 7/4) hard blocky sandy clay with no gravels and significant amounts of calcium carbonates. Layer 4 extended from 107-140 cmbs (42.1-55.1 in.) and consisted of very hard, brownish-yellow (10YR 6/6) blocky sandy clay with lots of calcium carbonates. After the trench was recorded, excavation continued to a depth of 2 mbs (6.6 ft.), revealing soils similar to Layer 4. No cultural material was observed in the backdirt of the continued excavation.

BHT 10 was 4.4 m (14.4 ft.) long and 63 cm (24. 8 in.) wide. The trench was excavated on the west side of the site, oriented 320 degrees, roughly perpendicular to Medio Creek. A significant quantity of chipped stone and FCR was observed on the surface. Charcoal, an edge-modified flake,

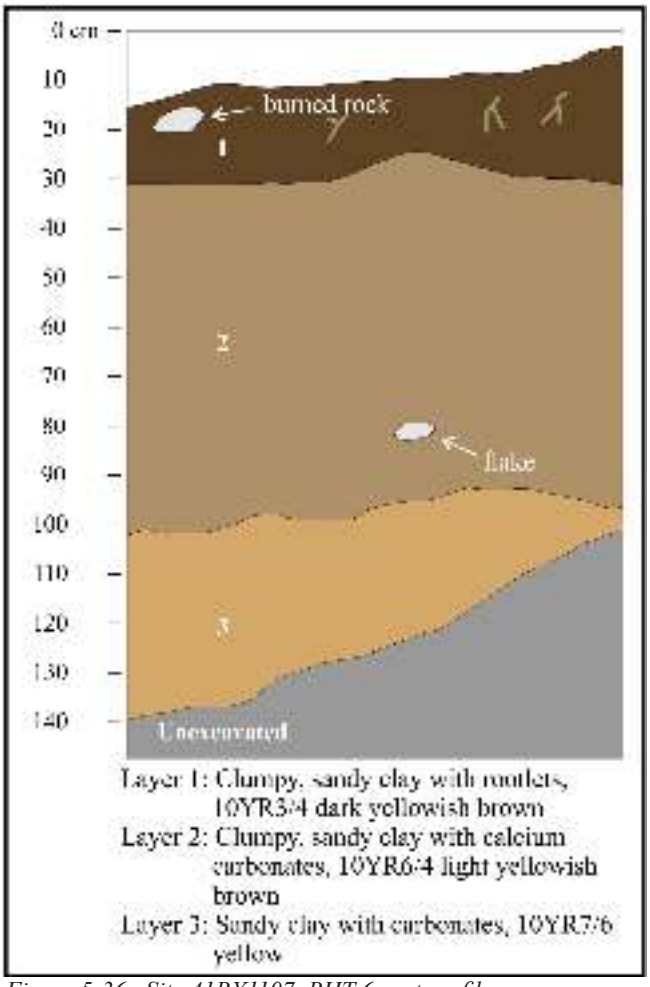

Figure 5-36. Site 41BX1107, BHT 6 east profile.

and debitage were observed in the backdirt. Debitage was noted in the trench profile at 40 cmbs (15.7 in.), as well as evidence of a root burn. Three layers were recorded in the trench profile (Figure 5-43). Layer 1 extended from 0-55 cmbs (0-21.7 in.) and consisted of very dark brown silty loam (10YR 3/2). Layer 2 extended from 55-103 cmbs (21.7-40.6 in.). This layer consisted of brown silty clay (10YR 4/3). Layer 3 consisted of very pale brown sandy clay (10YR 7/3) extending from 103-144 cmbs (40.6-56.7 in.). After the trench was documented, excavation continued to a depth of 2 mbs (6.6 ft.), revealing soils similar to those of Layer 3 (Figure 5-44).

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C) found that the site had low potential for deeply buried and stratified cultural resources. This conclusion was based on the shallow soil profile documented at the site as well as its position in the landscape.

TUs

A single 50 by 50 cm (19.7 in. by 19.7 in.) test unit was excavated at the site. TU 6 was excavated to explore the cultural deposits observed in BHT 10 (Table 5-6). The test unit was terminated after two sterile levels were encountered (Levels 7 and 8) at 90 cmbd (35.4 in.). No cultural material was observed below this depth in the trench profile. Debitage and FCR were encountered in Levels 1 through 6 in sparse quantities. Both debitage counts (n=22) and burned rock weight (129.3 g, 4.6 oz.) peaked in Level 1 (0-10 cmbd; 0-3.9 in.), and then exhibited a steady downward trajectory (Figure 5-45). Figure 5-46 shows a biface fragment and an edge-modified flake recovered from Level 3 (30-40 cmbd; 11.8-15.7 in.). These are the only lithic tools or cores

Table 5-4. Summary of Cultural Material Recovered from TU 1, 41BX1107

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Organic (wt. in g)	Historic (ct)
1	0	0	0	0	0
2	5	0	0	0	0
3	4	8.5	0	0	0
4	1	0	0	0	0
5	0	0	0	0	0
6	2	0	0	0	0
7	0	0	0	0	0
8	1	0	0	0	0
9	0	0	0	0	0
10	1	0	1	0	0
11	0	0	0	0	0
12	0	0	0	0	0

Table 5-5. Summary of cultural material recovered from TU 2, 41BX1107

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Organic (wt. in g)	Historic (ct)
1	2	0.7	0	0	0
2	8	48.8	0	0	0
3	4	42.9	0	0	0
4	2	0	1	0	0
5	0	7.9	0	0	0
6	1	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0

recovered from the unit, though several cores were recovered from the trenching work (see Figure 5-46).

MSS Patterns

MSS samples were taken from the profile of TU 6. Overall, MSS values trend in Figure 5-47 shows a gradual upward shift from 75 cmbs (29.5 in.) to the surface, with a small bump at 55 cmbs (21.6 in.). This suggests an overall lack of surface stability.

Summary

A considerable quantity of lithic material is evident on the surface of the site, although no diagnostic artifacts were

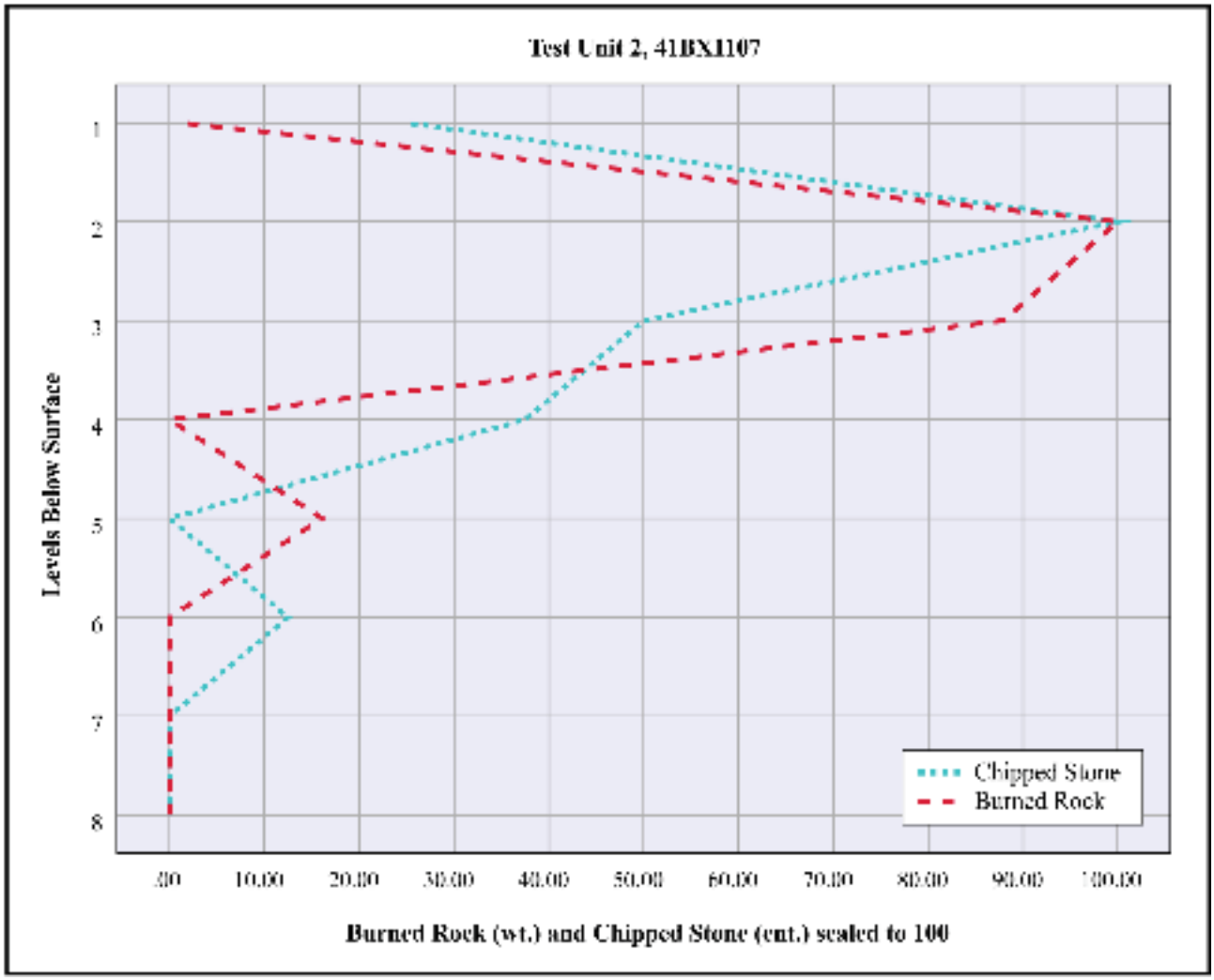

Figure 5-37. Summary of chipped stone and burned rock recovered from TU 2 at 41BX1107. See Table 5-5.

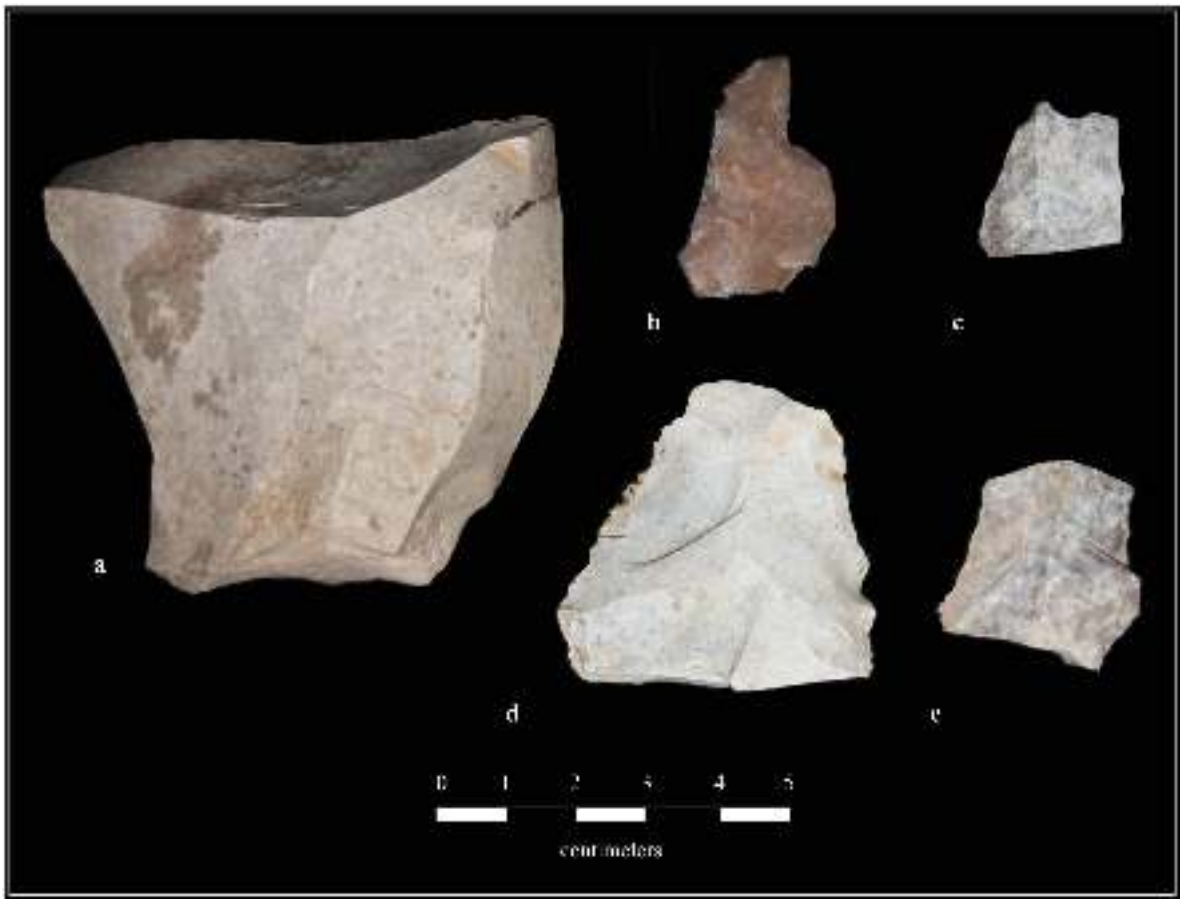

Figure 5-38. Lithic tools and cores recovered from 41BX1107: a.) Biface from BHT 6 backdirt; b.) perforator from TU 1 Level 10; c.) biface frag from BHT 6 backdirt; d.) edge-modified flake from BHT 5 backdirt; e.) edge-modified flake from TU 2, Level 4.

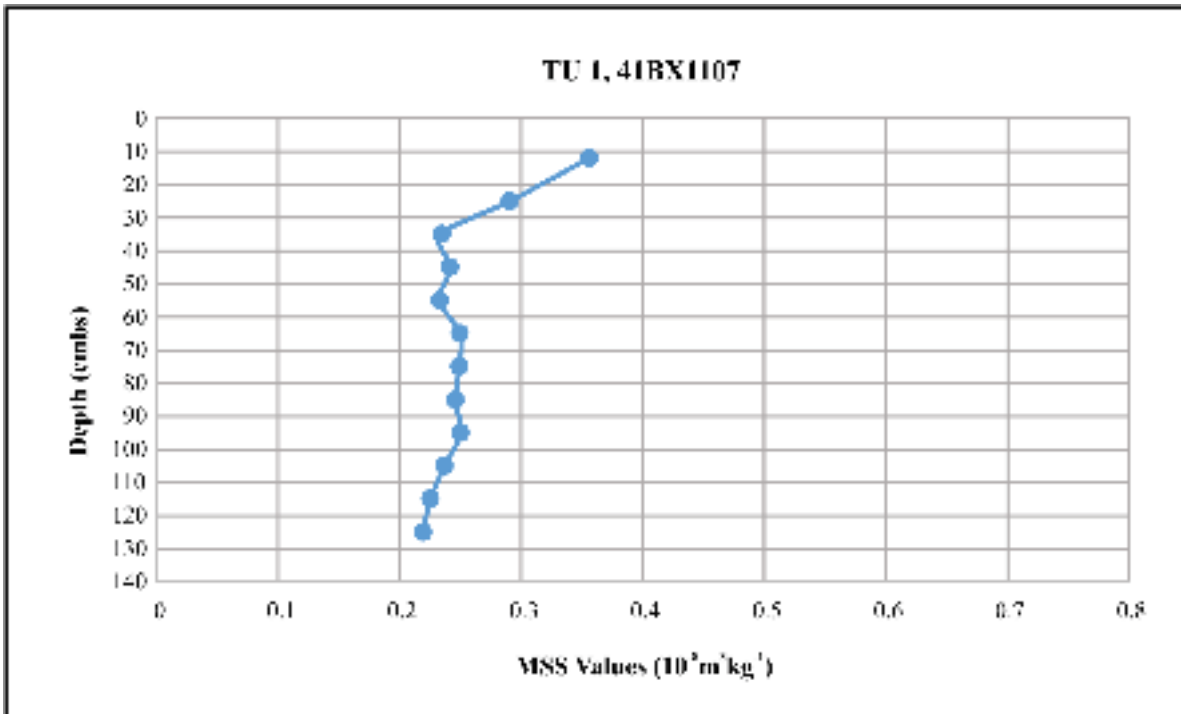

Figure 5-39. MSS profile for TU 1 at 41BX1107.

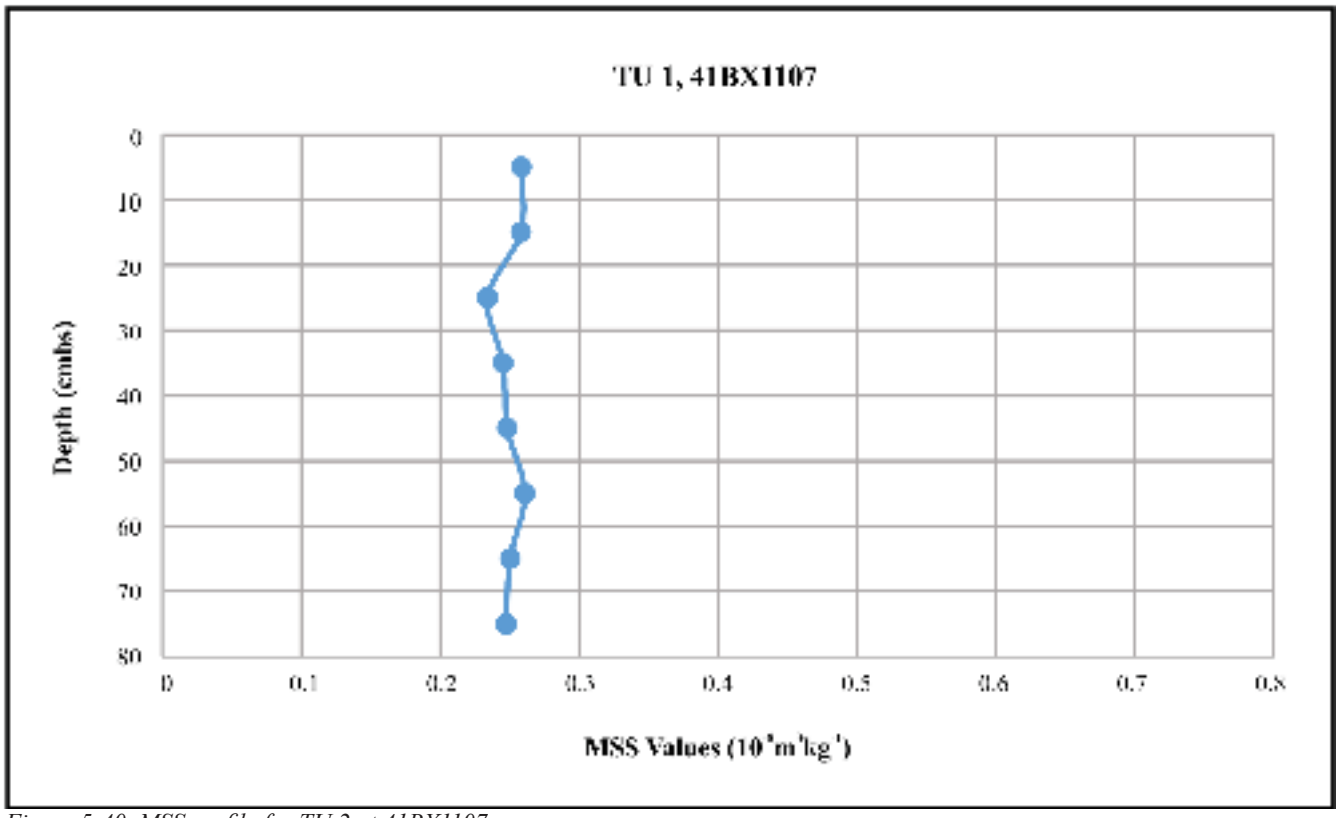

Figure 5-40. MSS profile for TU 2 at 41BX1107.

noted (Figures 5-48). When the site was recorded, it was evaluated as having high research potential based on the quantity of surface material and potential of intact buried deposits. That survey focused primarily on surface documentation (Nickels et al. 1997). Geo-Marine's testing recovered cultural material only in the first 30 cmbs (11.8 in.). The deepest excavation reached 40 cmbs (15.7 in.). The site was recommended as not having significant research potential in the first 50 cmbs (19.7 in.), but backhoe trenching was recommended due to the potential for deeply buried deposits (Huhnke 2006).

The CAR's backhoe trenching and TU excavation at 41BX1121 suggests that deposits are primarily concentrated at or near the site surface, with a unimodal distribution. Sparse buried materials (2.7 g [0.1 oz.] of burned rock in Level 6) reached a maximum depth of 60 cmbs (23.6 in.) before two culturally sterile levels were encountered. No features or temporally diagnostic lithic artifacts were recovered during this investigation, although a small amount of charcoal was present. Previous investigations suggest that surface deposits date to the Late Archaic (Nickels et al. 1997). MSS values suggest a lack of integrity of the buried deposits. The geoarchaeological evaluation (Appendix C) also suggests low potential for deeply buried and stratified intact deposits. The sparse buried materials and lack of site integrity indicate that the site has low research potential. The CAR recommends that the site be considered not eligible for listing in the NRHP.

41BX1122

Site 41BX1122 is a prehistoric site recorded by the CAR in 1994 (Nickels et al. 1997). Significant quantities of FCR and chipped stone were observed on the surface, including an Edwards arrow point dating to the Late Prehistoric (Turner et al. 2011). A ST recorded cultural material at a depth of 50 cmbs (19.7 in.). The site is on the first terrace of Medio Creek that geoarchaeologist Nordt (1997) suggested was likely to contain buried Holocene deposits. The site was evaluated as having high research potential and recommended for listing in the NRHP in a district context (Nickels et al. 1997).

Geo-Marine revisited the site in 2003 (Huhnke 2006). Five STs were excavated during testing. All five were positive for cultural material, primarily in the upper 20 cm (7.9 in.). Artifacts recovered included a biface fragment and debitage. One ST terminated at 30 cmbs (11.8 in), two at 50 cmbs (19.7 in.), and two at 60 cmbs (23.6 in.). The site was recommended as having low research potential due to lack of features, lack of stratified deposits and lack of diagnostic material. However, the potential for deeply buried deposits

Figure 5-41. Site 41BX1121 on a topographic map, with BHT and TU locations.

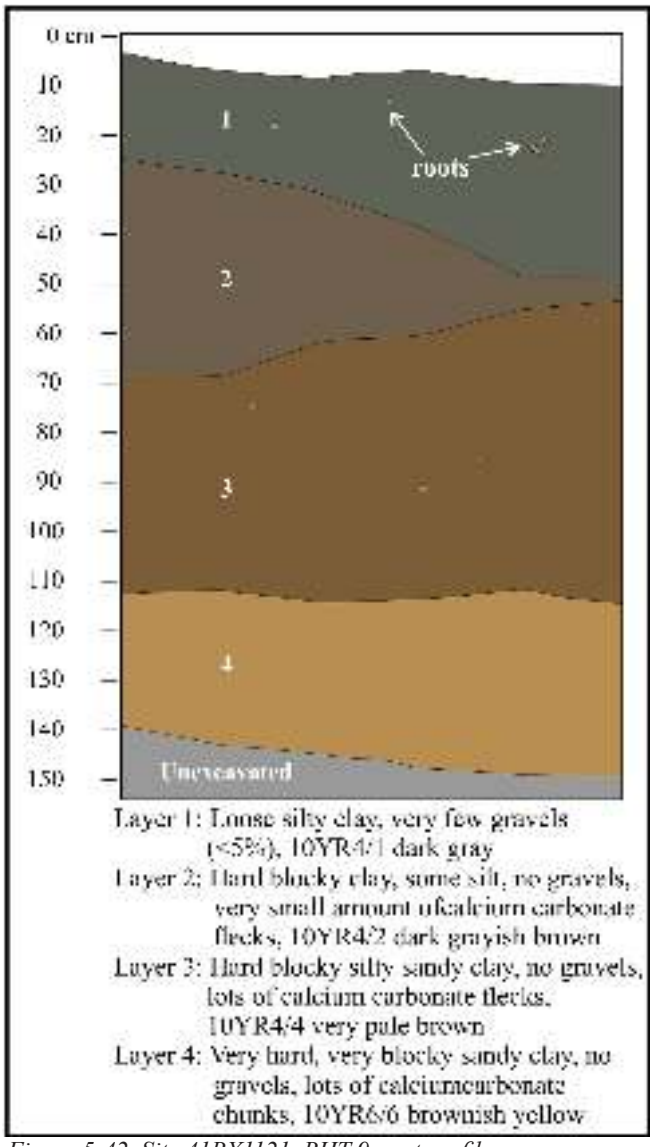

Figure 5-42. Site 41BX1121, BHT 9 west profile.

was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of archaeological potential (Huhnke 2006). The THC states the NRHP eligibility status of the site is undetermined (THC 2020).

Current Investigations at 41BX1122

The CAR excavated BHTs 11 and 12 within the site and 50 by 50 cm (19.7 by 19.7 in.) TU 7 off of BHT 12 (Figure 5-49). The test unit was positioned over a burned clay and charcoal feature observed in the profile of that trench. Forty-three pieces of debitage, 439.4 g (15.5 oz.) of burned rock, and 11 lithic tools and cores were recovered from excavations at the site.

BHTs

BHT 11 was located in the eastern half of the site. It ran roughly north-south, perpendicular to Medio Creek. The trench was 5 m (16.4 ft.) in length and 1 m (3.3 ft.) in width. Excavation was halted at 144 cmbs (56.7 in.) to allow archaeologists to examine and record the trench profiles. Two cores, one of which was burned, were recovered from the trench backdirt. A significant amount of chipped stone material was observed on the surface, but only one stream-rolled fragment of burned chert was observed in the trench profile. The trench contained three soil layers (Figure 5-50). The first layer extended from 0-46 cmbs (0-18.1 in.) and consisted of very dark gray (10YR 3/1) silty clay, which contained small gravels. Layer 2 extended from 45-120 cmbs (18.1-47.2 in.) and consisted of pale brown (10YR 6/3) blocky clay silt, with golf-ball sized chert gravels. Layer 3 extended from 120-144 cmbs (47.2-56.7 in.) and consisted of yellow (10YR 7/6) blocky clay sand, with baseball-sized chert gravels and calcium carbonates. After it was recorded, excavation continued to a depth of 2 mbs (6.6 ft.). An increase in carbonates and cobbles was noted, with similar soils to Layer 3. No cultural material was observed in the backdirt below 144 cmbs (56.7 in.).

BHT 12 was located in the western half of the site and ran roughly north-south, perpendicular to Medio Creek. A significant amount of chert cobbles and chipped stone was

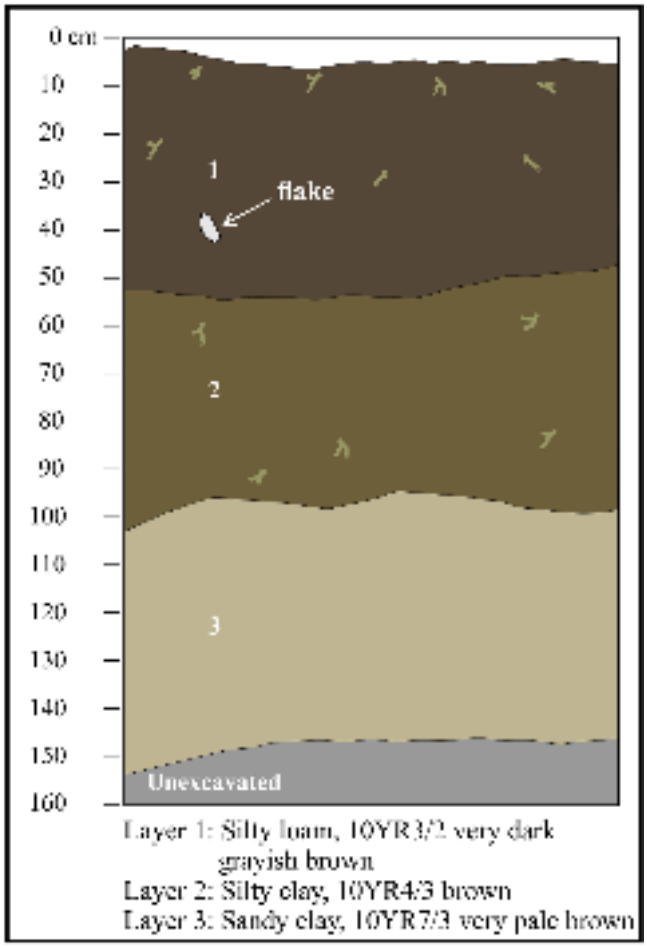

Figure 5-43. Site 41BX1121, BHT 10 west profile.

Figure 5-44. Site 41BX1121, BHT 10 at 2 mb (6.6 ft.), note TU 6 and MSS sample column.

observed on the surface in this area. BHT 12 was 4.1 m (13.5 ft.) in length and 90 cm (35.4 in.) wide. Excavation was halted at 130 cmbs (51.2 in.) to allow archaeologists to enter the trench to record and examine the profiles. A possible burned clay feature was observed in the western profile. Three stratigraphic layers were recorded (Figure 5-51). Layer 1 consisted of black (10YR 2/1) silty loam extending from 0-25 cmbs (0-9.8 in.). Layer 2, from 25-50 cmbs (9.8-19.7 in.), contained the possible feature. The layer consisted of loose, very dark gray silty clay loam (10YR 3/1). Layer 3 consisted of hard, dark gray silty clay (10YR 4/1) down to roughly 130 cmbs (51.2 in.). Burned rock, a core, and debitage were recovered from the backdirt. After recording, excavation continued to 2 mbs (6.6 ft.; Figure 5-52). At 145 cmbs (57.1

Table 5-6. Summary of Cultural Material Recovered from TU 6, 41BX1121

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	Organic (wt. in g)	Historic (ct)
1	22	129.3	0	0	0
2	7	31.2	0	0	0
3	4	11.4	2	0	0
4	2	3.1	0	0	0
5	1	9.7	0	0	0
6	0	2.7	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0

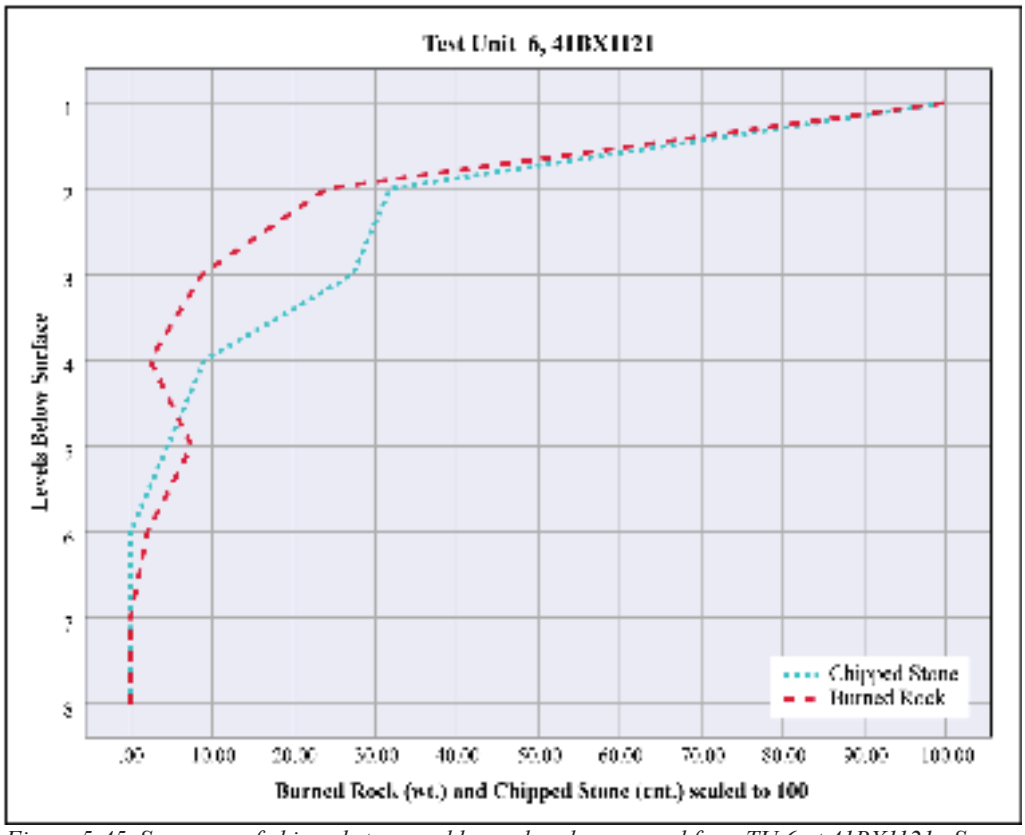

Figure 5-45. Summary of chipped stone and burned rock recovered from TU 6 at 41BX1121. See Table 5-6.

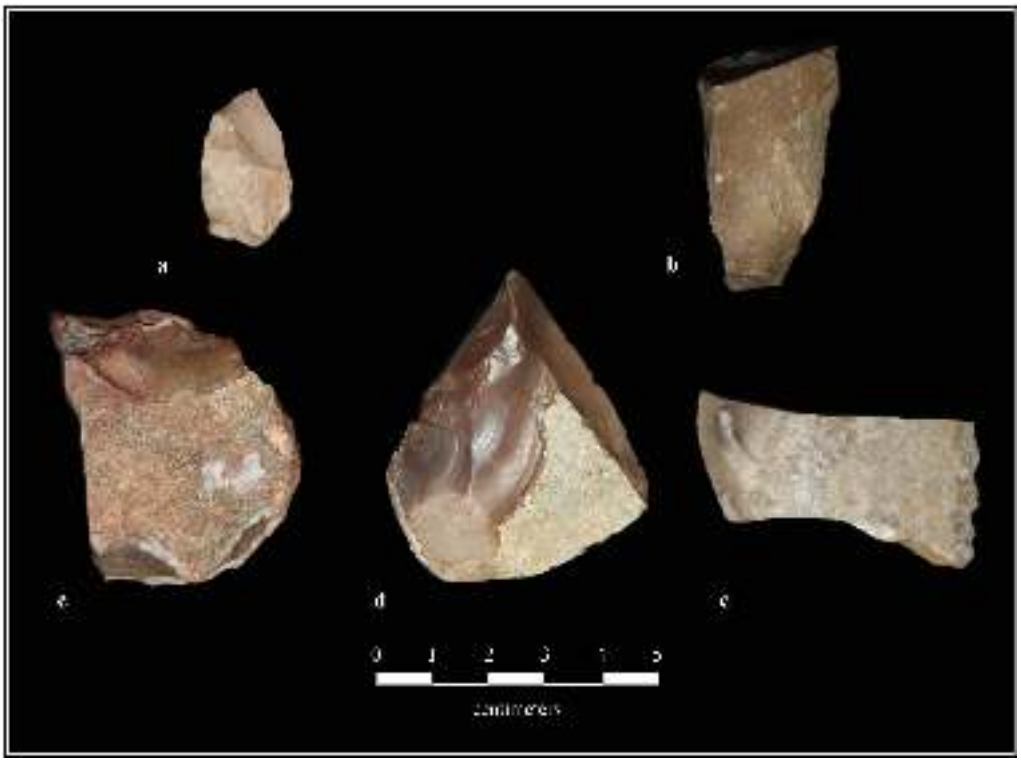

Figure 5-46. Lithic tools and cores recovered from 41BX1121: a.) Biface fragment from Level 3; b.) edge-modified flake from Level 3; c.) core from BHT 9 backdirt; d.) edge-modified flake from BHT 9 backdirt; e.) edge-modified flake from BHT 10 backdirt.

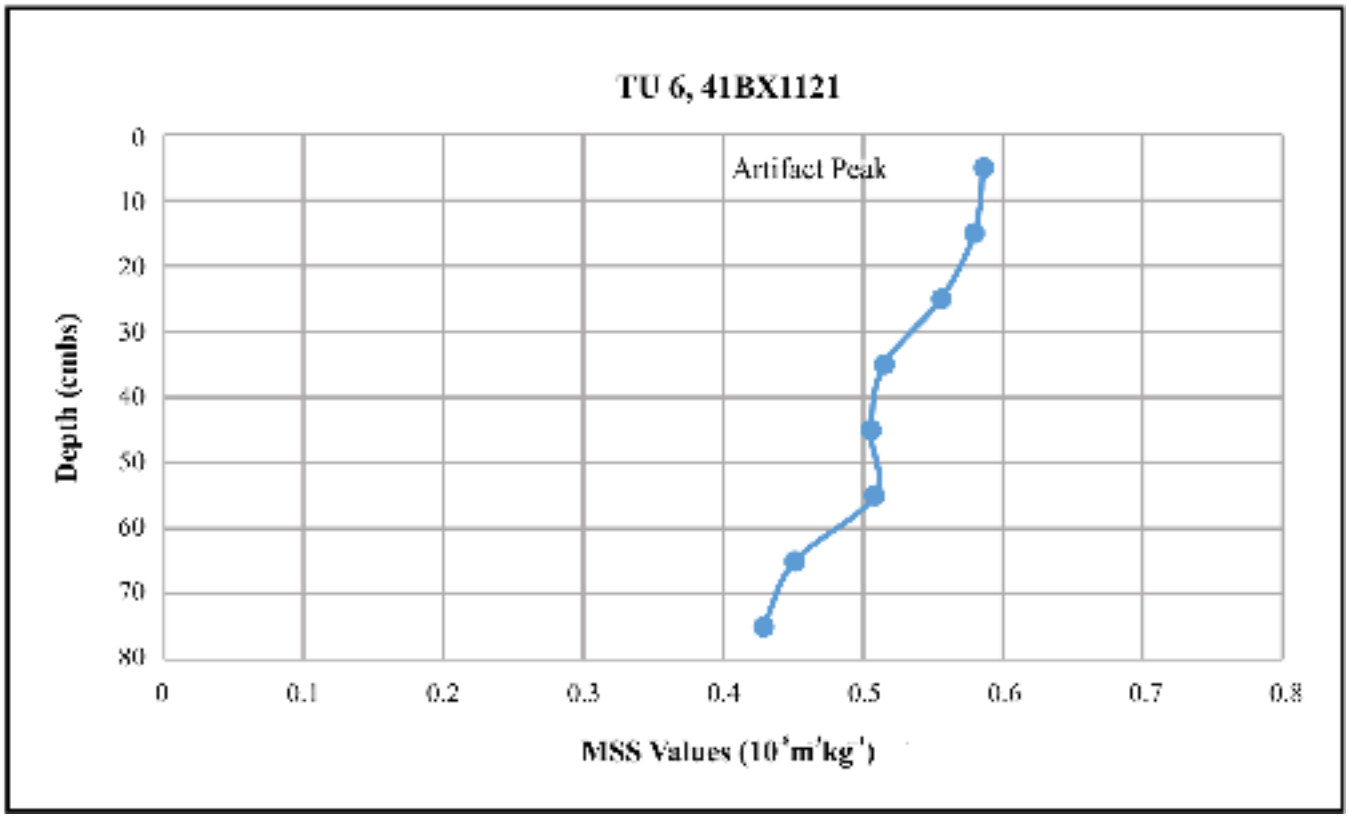

Figure 5-47. MSS Profile of TU 6 at 41BX1121.

Figure 5-48. A sample of lithic artifacts on the surface of 41BX1121 observed during the current project.

Figure 5-49. Site 41BX1122 on a topographic map, with BHT and TU locations.

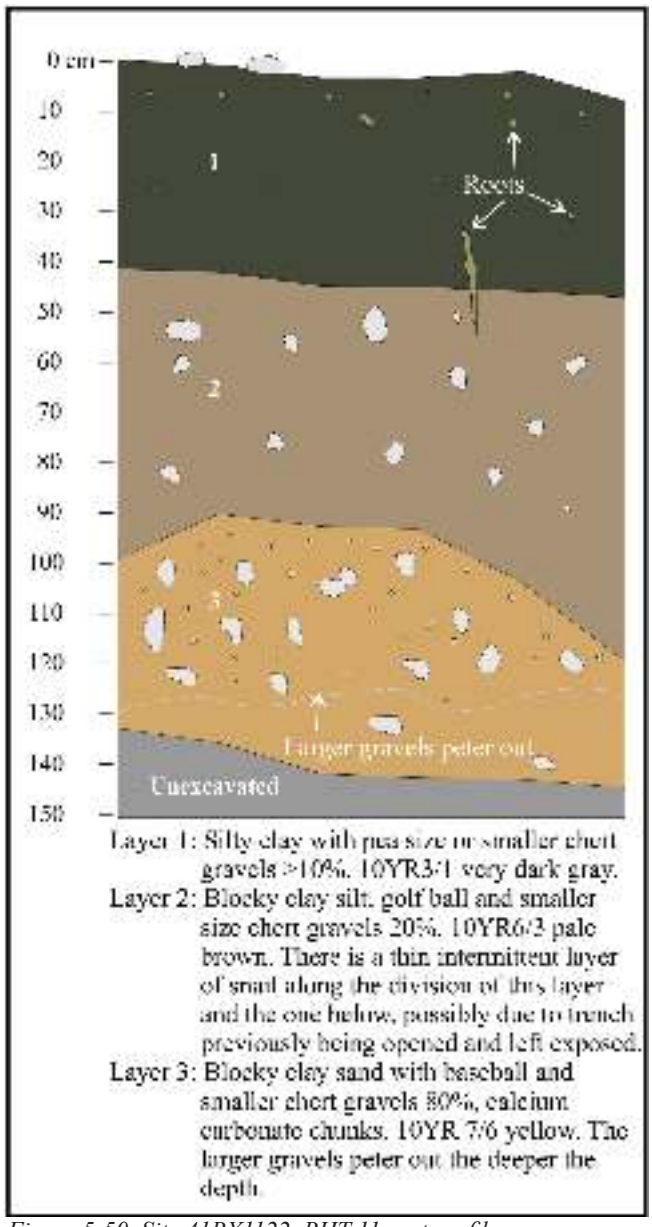

Figure 5-50. Site 41BX1122, BHT 11 east profile.

in.), dense cobbles and yellowish-brown (10YR 5/4) clays were encountered. No cultural material was observed in the backdirt below 130 cmbs (51.2 in.).

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C) found that the site had little potential for deeply buried or stratified cultural deposits due to the site's position on the landscape. However, the assessment also found improved potential for shallowly buried deposits based on the presence of Feature 3.

TUs

TU 7 was excavated to explore the potential feature identified in BHT 12. It was a 50 by 50 cm (19.7 by 19.7 in.) test unit located adjacent to the western edge of the trench. The test unit terminated at 50 cmbd (19.7 in.) after four levels to avoid removing Feature 3, a burned clay feature with charcoal and burned rock (Figure 5-53). The feature was partially bisected by an intrusive tree root. No cultural material was observed below the feature in the trench profile.

Chipped stone counts were low but relatively steady in all excavated levels of TU 7 (Table 5-7). Burned rock shows a significant peak in Level 3 (30-40 cmbd; 11.8-15.7 in.), the level in which the feature was identified (Figure 5-54). While the bulk of the feature was left in place, over 21 g (0.7 oz.) of charcoal and almost 315 g (11.1 oz.) of burned clay was collected, most of which was associated with the feature. Eight lithic tools were identified in Levels 2 to 4 (20-50 cmbd; 7.9-19.7 in.), including one uniface, three edge-modified flakes, and three perforators made on edge-modified flakes. One minimally modified core (tested cobble) was collected. MSS samples were not taken from TU 7 due to the shallow nature of the test unit excavation, which would have offered limited opportunity to identify patterns in the profile.

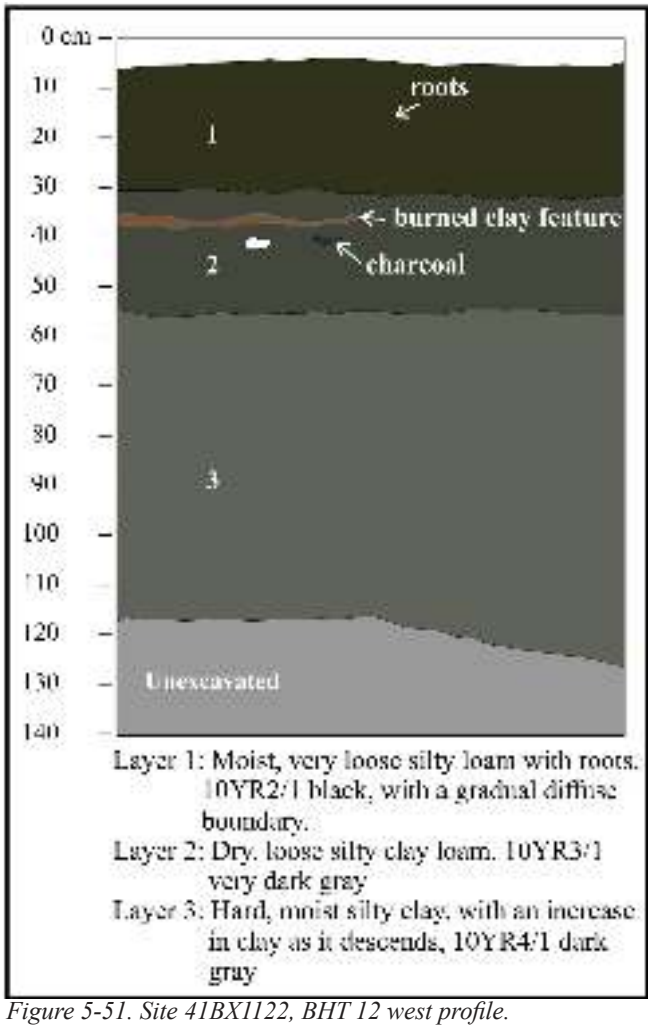

Figure 5-51. Site 41BX1122, BHT 12 west profile.

Figure 5-52. Site 41BX1122, BHT 12 at 2 mbs (6.6 ft.), east profile.

Feature 3

Feature 3 was a burned clay feature containing significant amounts of charcoal and burned rock. The feature extended from 29 to 49 cmbd (11.4-19.3 in.). It was roughly circular in planview and basin-shaped in profile. Its dimensions, observed within the test unit and trench profile, spanned 57 by 50 cm (22.4 by 19.7 in.). The feature was partially bisected by an intrusive tree root. Feature 3 displays a significant fire-hardening and reddening of the rim and walls. The preservation of the shape of the feature, with the exception of the portion damaged by root growth, is unusually good, suggesting that the clay was thoroughly fired, likely through repeated use. Substantial amounts of charcoal were present in Feature 3, and two samples were selected for processing for radiocarbon dating. Figure 5-55 shows the location of the upper sample, collected at a depth of 36 cmbd (14.2 in.). A second radiocarbon sample was selected from farther down in the feature, but that sample did not survive processing.

The processed sample (D-AMS039950) was recovered from the northwestern edge of the feature, which had been impacted by roots (Figure 5-55). The sample was an unusually large (18.8 g [0.7 oz.]), intact chunk of charcoal, which extended into the test unit wall. The sample returned a radiocarbon date of 80 ± 20 RCYBP. Figure 5-56 shows the calibrated results, again using OxCal (Bronk Ramsey 2020). The overall date range of 256 to 33 calBP, with a median date of 120 calBP, was unexpectedly recent. While a historical component is located nearby at 41BX1121, no historical material was recovered during testing at 41BX1122. As discussed subsequently, the material recovered from Feature 3 suggests that it was used in the prehistoric period, and while there is a 27.9% probability that the date falls between 256 and 225 calBP, even this range is primarily outside of the Late Prehistoric period. The CAR has no reason to question the accuracy of the date, but the date may not accurately reflect the use date of Feature 3. The most likely explanation is that the date reflects a root burn.

The CAR is not suggesting that the feature represents results from a root burn (Black 1989; Padilla and Trierweiler 2012). There is limited evidence that forest fires can create burned clay features. Ecological studies indicate that roots are well-insulated by soil during fires (Busse et al. 2005).

Figure 5-53. Site 41BX1122, Feature 3 plan view photo (TU 7, Level 4).

Below surface temperatures during forest fires reach highs of less than 275°C (527°F) in extreme conditions (defined as trees burning for 8 hours) at 2.5 cm (1 in.) below the surface (Beadle 1940), dropping to a maximum temperature in extreme conditions of below 100°C (212°F) at 15.2 cm (6 in.) below the surface (Beadle 1940). A later study examining wildfires occurring in areas with significant woody deposition on the ground found that the maximum below-surface temperature was 313°C (595°F) at 2.5 cm (1 in.), and temperatures dropped significantly with increasing soil depth (Busse et al. 2005). While roots are killed at temperatures as low as 60°C (140°F), this is generally due to heating from surrounding soil rather than the combustion of the roots themselves (Busse et al. 2005), and clay does not become hard-fired and reddened until temperatures near 500°C (932°F) are reached (Kruger 2015). While temperatures this high and higher can be reached in forest fires, they occur above the surface near the height of the fire, in the treetops (Beadle 1940). Studies (Beadle 1940; Black et al. 1989; Busse et al. 2005; Padilla and Trierweiler 2012) of below-surface temperatures during forest fires indicate that even the highest below-surface temperatures reached during forest fires are too low to fire-harden clays.

Several burned clay features have been documented in Central Texas, including at 41BX1920 (DiVito and Oksanen 2012), 41BX256 (Kemp and Mauldin 2021; Padilla and Nickels 2010; Padilla and Trierweiler 2012), 41BX228 (Black 1989; Black and McGraw 1985), 41AT168 (Turpin 2004), 41LK201 (Highley 1986), 41WM230 (Prewitt 1982), and 41MM341 (Gadus et al. 2006). The features take a variety of forms, with some exhibiting a hearth or basin shape (Black 1989; Gadus et al. 2006; Highley 1986; Kemp and Mauldin 2021), while others have been interpreted as structural remains (DiVito and Oksanen 2012; Padilla and Trierweiler 2012; Quigg 2013). When structures are thought to have been present, impressions of support posts and other construction material are common (DiVito and Oksanen 2012; Kruger 2015; Padilla and Trierweiler 2012). Hearth or basin-type features often date to the Archaic period, ranging from the Early Archaic (Kemp and Mauldin 2021) to the Late Archaic (Gadus et al. 2006). Features interpreted as structures have been dated from the Middle Archaic (Padilla and Trierweiler 2012) to the Late Prehistoric (Quigg 2013). While the CAR cannot place Feature 3 into any specific temporal period, it is unlikely that the feature falls in the historic period.

Summary

The initial survey which documented 41BX1122 recommended that the site had significant research potential, based on a high concentration of surface artifacts and the potential for buried deposits. This survey focused primarily on surface documentation (Nickels et al. 1997). Geo-Marine's testing at the site recovered material from all STs. These materials were all recovered from the first 0-20 cmbs (0-7.9 in.), despite the majority of STs reaching 50 cmbs (19.7 in.) or greater. Geo-Marine recommended that the site was not eligible from 0-50

Table 5-7. Summary of Cultural Material Recovered from TU 7, 41BX1122

Level	Feature	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	^{14}C (wt. in g)	Burned Clay (wt. in g)	Historic (ct)
1		10	48.2	0	0	0	0
2		11	66.8	2	0.1	111.5	0
3	3	8	231.0	3	19.9*	72.5	0
4	3	12	90.0	3	0.97	131	0

*Sample submitted for radiocarbon dating. Note that samples not submitted were curated for use in future research.

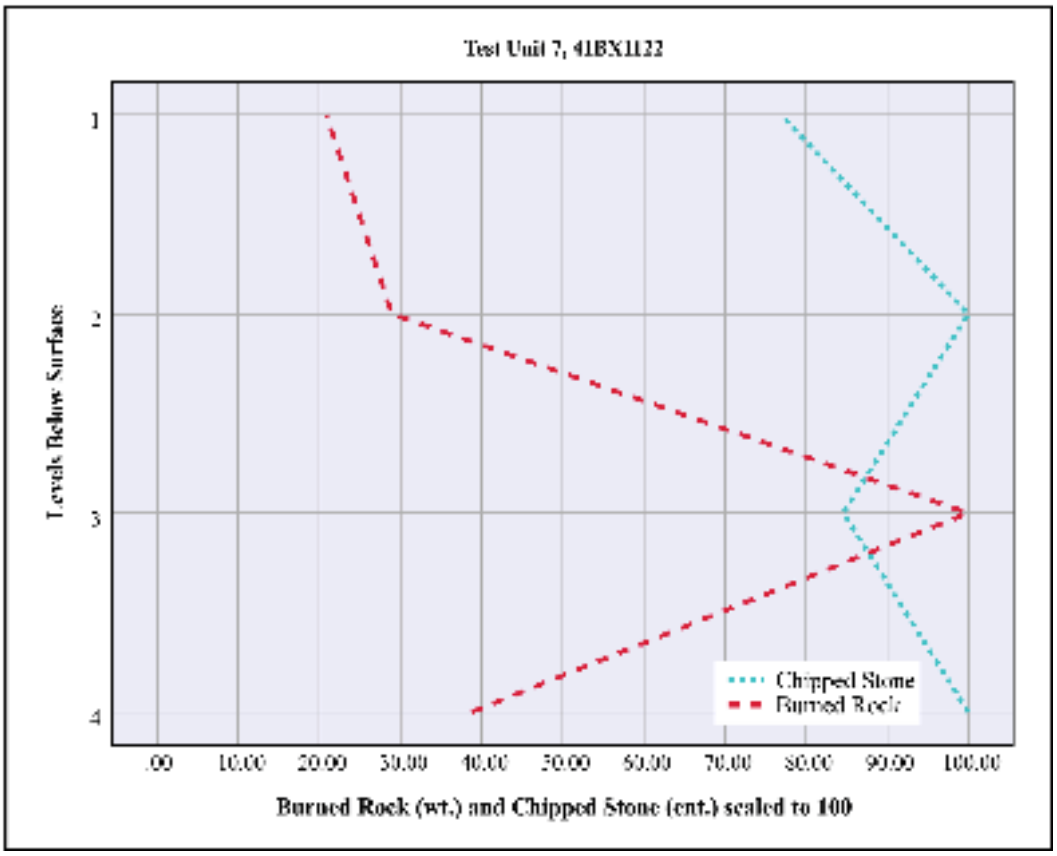

Figure 5-54. Summary of burned rock and debitage distribution by level in TU 7 at 41BX1122. See Table 5-7.

Figure 5-55. Site 41BX1122, in situ radiocarbon sample from TU 7.

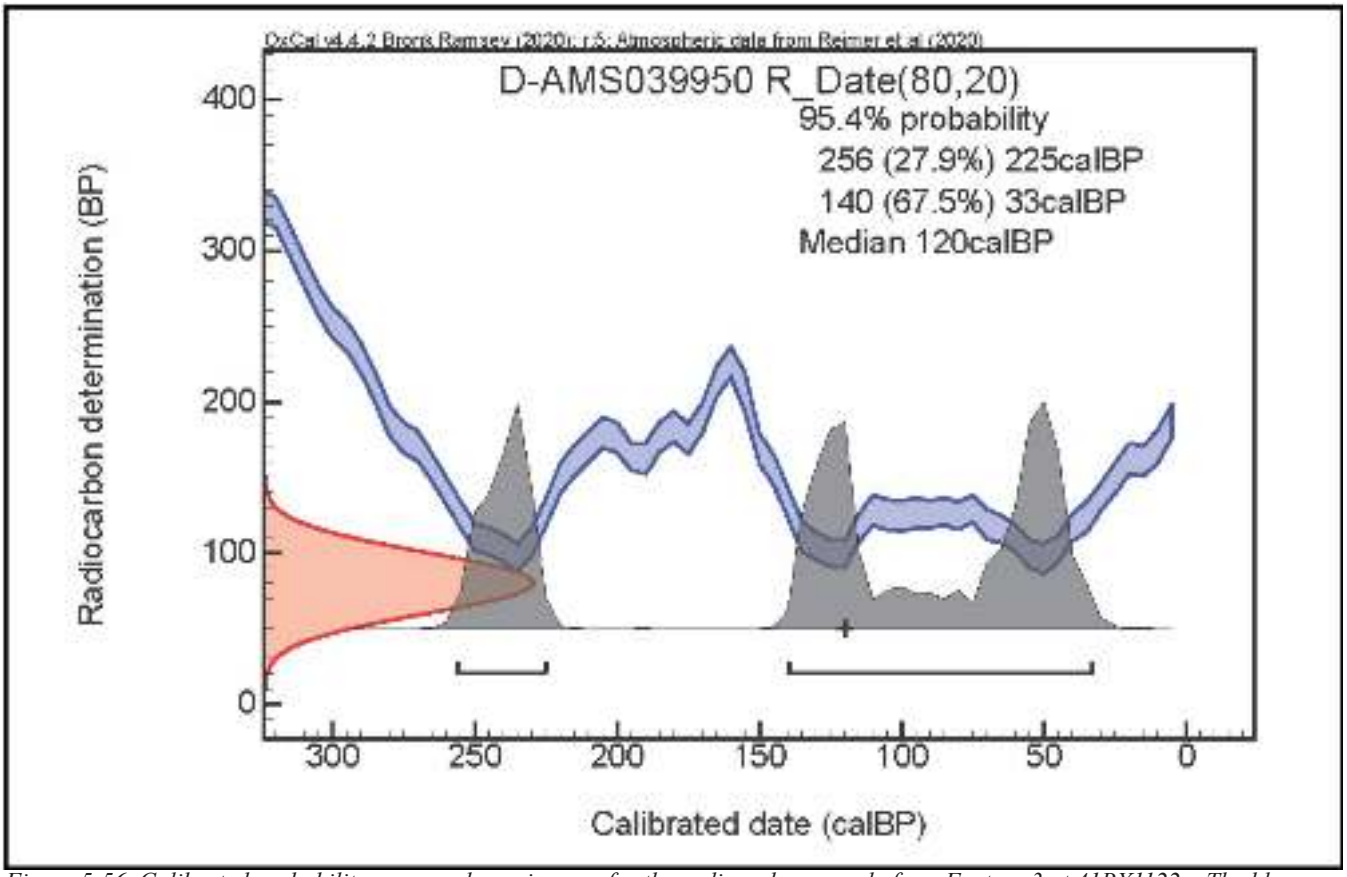

Figure 5-56. Calibrated probability ranges, shown in grey, for the radiocarbon sample from Feature 3 at 41BX1122. The blue line is the radiocarbon curve, while the orange distribution is the measured radiocarbon determination of 80 ± 20 bp.

cmbs (0-19.7 in.), but that backhoe trenching be conducted to test for deeply buried materials (Huhnke 2006). Backhoe trenching and TU excavation at 41BX1122 found that the site contains buried deposits, including well-preserved features containing material suitable for absolute dating. The radiocarbon date falling within the historic period was unexpected. This late date is inconsistent with the nature of the feature and the material recovered from the excavation. The successfully dated sample itself is unusual due to its size. Its position suggests that it may be a root associated with later bioturbation of the feature in that area. If so, its burning is unlikely to be associated with the firing of the feature itself, as the soil directly around it shows no signs of reddening or hardening. Unfortunately, the deeper, more closely associated sample did not survive processing. Attempting to retrieve a date from some of the smaller samples collected, or some of the samples recovered from the screen, may provide a clearer picture of the chronological placement of Feature 3. However, the nature of the feature, as well as the material retrieved from it, clearly suggests that it is prehistoric.

The geoarchaeological assessment (Appendix C) suggests that more deeply buried deposits are not likely, but the presence of the feature indicates potential for other significant buried deposits at the level documented. The burned clay feature found at the site is of a type currently not well understood in Texas prehistory. The basin shape and feature rim are well-preserved, with the exception of damage from a tree root, and charcoal is present within the feature. The presence of buried deposits, including intact features, indicates that this site has high research potential. The CAR recommends that 41BX1122 is eligible for listing in the NRHP under Criterion D.

41BX1125

41BX1125 was located within a wooded area in the southeast portion of Chapman Training Annex. The site was recorded by the CAR in 1994 during a pedestrian survey (Nickels et al. 1997). Chipped stone and a high quantity of FCR were observed on the surface. A ST encountered buried cultural material at 10 cmbs (3.9 in.). The site is located in the floodplain immediately adjacent to Medio Creek, and cultural material was observed eroding from the creek bank at 50 cmbs (19.7 in.). The geologic deposits were found likely to contain buried Holocene materials during a geoarchaeological assessment (Nordt 1997). The site was evaluated as having moderate to high research potential and recommended for listing in the NRHP in a district context (Nickel et al. 1997).

Geo-Marine revisited the site in 2003 (Huhnke 2006). Five STs were excavated during that visit. Three shovel tests were positive for lithic material in the first 10 cm (3.9 in.). In the two STs nearest to the bank, ground water was encountered at 25 cmbs (9.8 in.). Four of the five STs were terminated at 30 cmbs (11.8 in.), and one was terminated at 20 cmbs (7.9 in.). The first 50 cmbs (19.7 in.) of the site was found to have low research potential due to poor geological context, but the potential for deeply buried deposits was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of eligibility for listing in the NRHP (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020).

Current Investigations at 41BX1125

The site was found to be inaccessible for a backhoe, so the CAR proposed to excavate a 2 by 1 m (6.6 by 3.3 ft.) test unit to 140 cmbs (55.1 in.), with a 60 cm (23.6 in.) ST in the bottom to reach 2 mbs (6.6 ft.). TUs 1 and 2 were excavated near the approximate site center on a terrace above Medio Creek, based on the positioning of the site boundary using a Juno GPS unit (Figure 5-57). The details of this methodology are included in Chapter 3. The two units were placed perpendicular to the flow of the creek. Only TU 1 was screened; the other was excavated in bulk to provide an appropriate profile for geoarchaeological evaluation.

In total, 241 pieces of debitage, 821.4 g (29.0 oz.) of burned rock, and 28 lithic tools and cores, including one dart point, were recovered from the excavations. Lithic material was also observed on the surface, and a small hearth (Figure 5-58) was found eroding out of the slope about 12 meters (39.4 ft.) northwest of the units.

TUs

TU 1, the test unit farthest east of the creek, was screened (Table 5-8), while TU 2 was excavated in bulk, though collections of tools and charcoal were made when they could be point provenienced. Soils encountered in TU 1 from 11-70 cmbd (4.3-27.6 in.) consisted of compact silty clays with roots and small quantities of gravel, ranging in color from very dark grayish-brown (10YR 3/2) to grayish-brown (10YR 5/2). Small flecks of carbonates were noted in Levels 3, 5, and 6. From 70-130 cmbd (27.6-51.2 in.), hard silty clays with 1-10% gravel were encountered, ranging in color from dark gray (10YR 4/1) to grayish-brown (10YR 5/2). Some stream-rolling of artifacts was noted beginning in Level 11 (110-120 cmbd; 43.3-47.2 in.). Small flecks and filaments of carbonates were noted. In Level 13 (130-140 cmbd; 51.2-55.2 in.), compact to hard silty clays, grayish-brown (10YR 5/2) to brown (10YR 5/3) in color, with an increase in gravels was noted. Level 14 (140-150 cmbd; 55.2-59.1 in.) contained compact silty clays with 5-30% gravels, light brownish-gray (10YR 6/2) in color. Carbonate filaments were common. A significant increase in cultural material was noted in this level. Level 15 consisted of grayish-brown (10YR 5/2) hard, silty clays with small gravels and carbonates. A likely animal burrow was recorded in the eastern half of the test unit from 153-155 cmbd (60.2-61.0 in.; Figure 5-59). This burrow contained cultural material and charcoal, likely transported from elsewhere within the site, by animal burrowing. The soil in the burrow was softer, very dark grayish-brown (10YR 3/2), had fewer gravels, and contained roots as well as cultural material. The burrow was about 25 cm (9.8 in.) wide. A potential small pit feature was identified below the rodent burrow from 153-162 cmbd (60.2-63.8 in.; Figure 5-60). In the field this feature was considered likely to be associated with the rodent burrow but was treated as a cultural feature due to lack of certainty about the nature of the feature because of disturbance from the burrow. The pit spanned less than 20 cm (7.9 in.). A matrix sample was collected. Test unit excavation was terminated at 165 cmbd (65.0 in.; Figure 5-60). All levels of TU 1 were positive for cultural material.

While TU 2 was not screened, material was collected from the test unit when it was observed and could be point-provenienced (Table 5-9). This material included charcoal, faunal bone, lithic tools, burned rock, and debitage. A proximal biface fragment was recovered from 77.5 cmbd (30.5 in.), and a core from 121 cmbd (47.7 in.).

A ST was excavated in the bottom of the test unit to investigate the deposits to a depth of 200 cmbs (78.7 in.; Figure 5-61). Variable gravels were encountered (Table 5-10). All levels were positive for cultural material, which primarily included lithic material but also some bone and shell. Material is present at significant densities in some levels; Levels 1, 3, and 5 showed debitage counts that were higher than in some TU levels, despite the lower volume of matrix excavated. Three lithic tools were recovered; two edge-modified flakes from 167-177 cmbd (65.7-69.7 in.) and 192-200 cmbd (75.6-78.7 in.) and a uniface worked into a possible barb or drill from 200-212 cmbd (78.7-83.5 in.). A core was recovered from 177-180 cmbd (69.7-70.9 in.).

As shown in Figure 5-62, peaks in chipped stone counts were noted in Levels 5, 12, and 14 of TU 1. Some battering of debitage was noted in Levels 8, 11, 13, 14, and 15. Peaks in burned rock weight were noted in Levels 4, 11, and 15. A small increase was also present in Levels 6 and 7. In total, 22 lithic tools and cores were recovered from TU 1. One Darl-like projectile point (Figure 5-63), broken at the base, was recovered from Level 7 at 79.5 cmbd (31.3 in.) and suggests a transitional Late Archaic component (Turner et al. 2011).

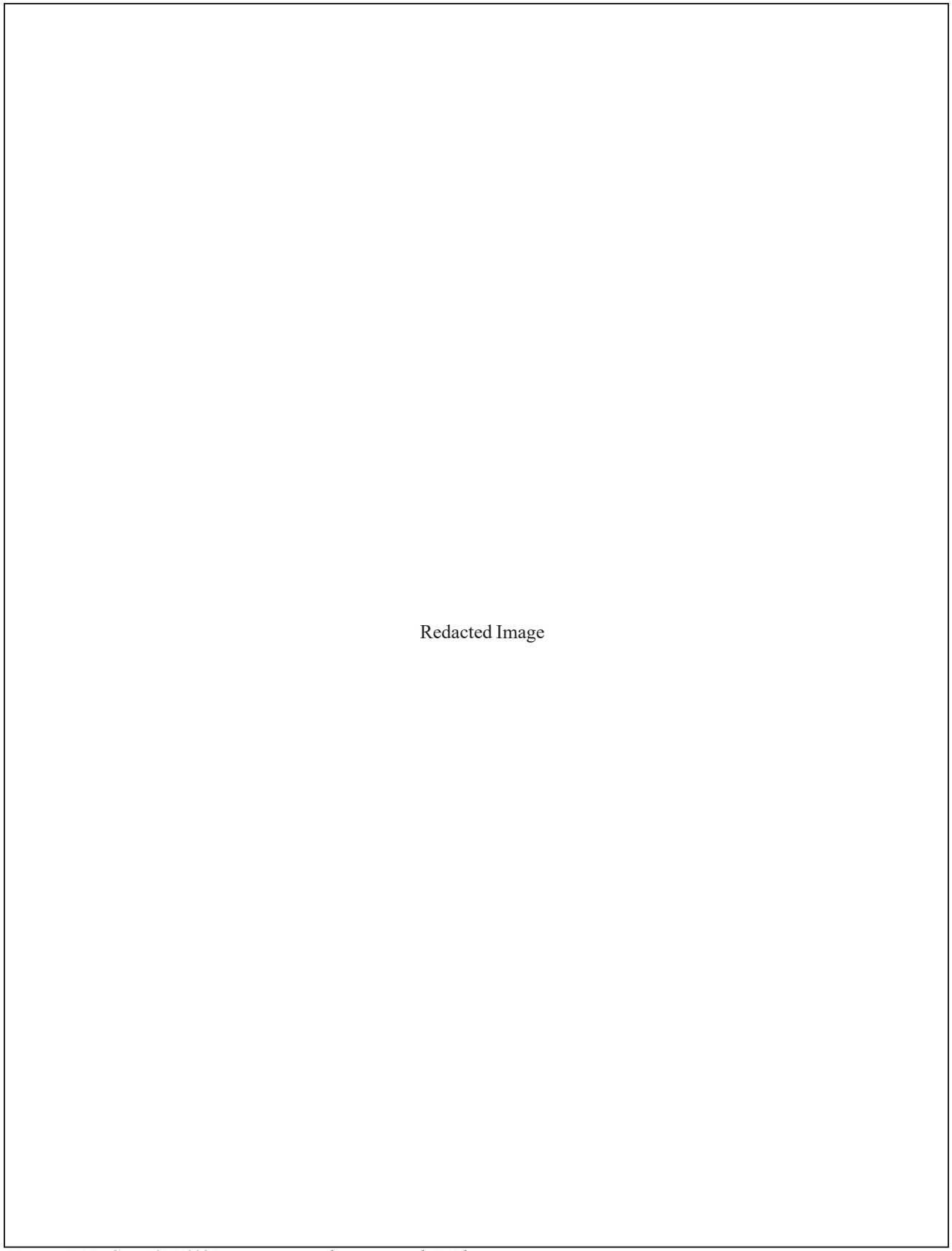

Figure 5-57. Site 41BX1125 on a topographic map, with TU locations.

Figure 5-58. Hearth feature observed on the surface of 41BX1125. Medio Creek is in the background.

Table 5-8. Summary of Material Recovered from TU 1 at 41BX1125

Level	Feature	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	^{14}C (wt. in g)	Bone/Shell (wt. in g)	Snail (wt. in g)	Historic (ct)
1		7	14.0	1	0	0	9.6	0
2		6	6	1	0	0.5	13.3	0
3		7	105.0	2	0	2.4	18.6	0
4		10	178.4	1	0	0.2	64.3	0
5		15	20.7	2	0	0	23.7	0
6		6	31.3	2	0	0	15	0
7		4	32.8	3	9.8 in soil*	0.1	21.3	0
8		7	18.1	1	1.2	5.5	13	0
9		6	18.3	1	0.7	1.4	8.7	0
10		1	11.6	0	106.8 in soil	0	3.6	0
11		10	52.8	1	11.6 in soil*	0.8	4.4	0
12		19	1.8	0	<0.1	0.1	6.2	0
13		4	21.3	0	107.2 in soil*	0	2.6	0
14		48	61.3	3	2.5	0.8	1.9	0
15	1	46	129.5	4	45.2 in soil	7.1	4.3	0

*Sample submitted for radiocarbon dating. Note that samples not submitted were curated for use in future research.

Figure 5-59. Site 41BX1125, pit feature below animal burrow. 160 cmbd (62.3 in.).

Figure 5-60. Site 41BX1125, TU 1 plan view at termination. 165 cmbd (65.0 in.).

Table 5-9. Summary of Material Recovered from TU 2 at 41BX1125

FS #	Provenience	Depth (cmbd)	Superclass	Class	Description	Count (Each)	Weight (g)
97	TU 2	77.5	Lithics	Bifaces/Unifaces	Biface, proximal fragment	1	5.6
97	TU 2	77.5	Lithics	Debitage		2	8.1
106	TU 2	85	Organic	Faunal Bone	Large mammal	1	16.8
102	TU 2	94	Lithics	Burned Rock	Possible remains of tool, too burned to tell	3	20.5
102	TU 2	94	Lithics	Burned Rock		1	3.4
102	TU 2	94	Lithics	Debitage		1	43.5
102	TU 2	94	Organic	Faunal Bone	Two possibly identifiable, med/ large mammal		3.9
105	TU 2	99	Organic	Faunal Bone	Refits, weathered, maybe large mammal		4.7
104	TU 2	99	Samples	^{14}C Sample	Charcoal in soil		4.8
103	TU 2	101	Organic	Faunal Bone	Weathered, 1 possibly large mammal		6.4
107	TU 2	109	Samples	^{14}C Sample	Charcoal in soil		16.3
108	TU 2	112	Lithics	Burned Rock	Limestone	1	94.2
113	TU 2	121	Lithics	Cores		1	221.7
114	TU 2	121	Samples	^{14}C Sample			0.1
110	TU 2	122	Lithics	Debitage		1	22.1
112	TU 2	125	Lithics	Debitage		1	9.8
111	TU 2	128	Lithics	Debitage	Battered flakes	2	44.2
124	TU 2	153	Lithics	Debitage		1	7.3
123	TU 2	158	Lithics	Debitage	Battered	1	22.5

This is the only temporally diagnostic lithic tool recovered to date from 41BX1125 (Huhnke 2006; Nickels et al. 1997). Two biface fragments, one medial and one distal, were recovered from Levels 3 (30-39 cmbd [11.8-15.4 in.]) and 5, and one large, rough biface with more than 50% cortex was recovered from Level 15 (Figure 5-64). A uniface fragment was recovered from Level 7. Thirteen edge-modified flakes were recovered from Levels 1-8, Level 14 and Level 15. Three of these were perforators (Figure 5-65). Two cores were recovered from TU 1 (Figure 5-66) from Level 9 and Level 14.

Organic material was better preserved at this site than any of the other Medio Creek sites investigated during this project. Charcoal was recovered from nine levels as well as 18.9 g (0.7 oz.) of faunal bone and mussel shell. Three samples from TU 1 were submitted for radiocarbon dating. Sample D-AMS039951, recovered from Level 7 (77 cmbd; 30.3 in.), returned a radiocarbon date of 1151 ± 22 date which calibrated in OxCal (Bronk Ramsey 2020) to 1177 to 973 calBP, with a median date of 1040 calBP. The most likely range was from 1082 to 973 calBP (75.4%). This date was associated with a Darl-like projectile point. These points date to the close of the Late Archaic period (Turner et al. 2011). Sample D-AMS039949 was recovered from Level 11 (113 cmbd; 52.4 in.). This sample returned a date of 1134 ± 23, which calibrates to 1176 to 958 calBP, with a median date of 1019 calBP. The highest probability range, at 92.6%, is from 1073 to 958 calBP. Note that the calibrated ranges significantly overlap with those of the previous data. Sample D-AMS039952 was recovered from Level 13 (136 cmbd; 53.5 in.). This sample returned a radiocarbon date of 1023 ± 21, which calibrates in OxCal to between 960 and 914 calBP (95.4%). The median date is 937 calBP. Though they span roughly 60 cm (23.6 in.), all three dates fall at the beginning of the Late Prehistoric period. In addition, the stratigraphic sequence is reversed, with the deepest date being roughly 100 years earlier than the shallowest sample. This likely suggests mixing of the deposits, though the material seems to consistently date to the transition of the Late Archaic and early Late Prehistoric periods.

Snails and snail shells were common in the unit, and they were collected where encountered. They were present in

Figure 5-61. Site 41BX1125, ST excavated in bottom of TU 1/TU 2. Terminated at 220 cmbd (200 cmbs; 78.7 in.).

all levels of the TUs, and their distribution mirrored the distribution of cultural material, peaking at Levels 4, 7, 12, and 15. Some of the snails recovered were found during processing to still be alive, and live samples of snails were noted in Levels 1, 2, and 4. No historic or modern material was noted in any level.

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C), found that the site had potential for shallowly buried cultural materials but little potential for deeply buried and stratified cultural materials. This finding was based on the site's position within the landscape and evidence of old channel gravels within the test unit profiles.

MSS Patterns

MSS samples were taken from the profile of TU 1. The MSS values show a gradual rise from 140 cmbs to 55 cmbs (51 to 21.7 in.), with several small peaks, a larger peak from 45-55 cmbs (17.7-21.7 in.), and another small peak at 15 cmbs

Table 5-10. Summary of Material Recovered from ST in the Bottom of TU 1/TU 2 at 41BX1125

Level and Depth (cmbd)	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	^{14}C (wt. in g)	Bone/Shell (wt. in g)	Snail (wt. in g)	Historic (ct)
1 (164-177)	9	0	1	0	42.9	0	0
2 (177-180)	3	0.6	1	0	39.1	3.3	0
3 (180-192)	14	0	0	0	0.5	2.2	0
4 (192-200)	2	0	1	0	0	0	0
5 (200-212)	7	0	1	0	0	0	0
6 (212-220)	1	0	0	0	0.3	0	0

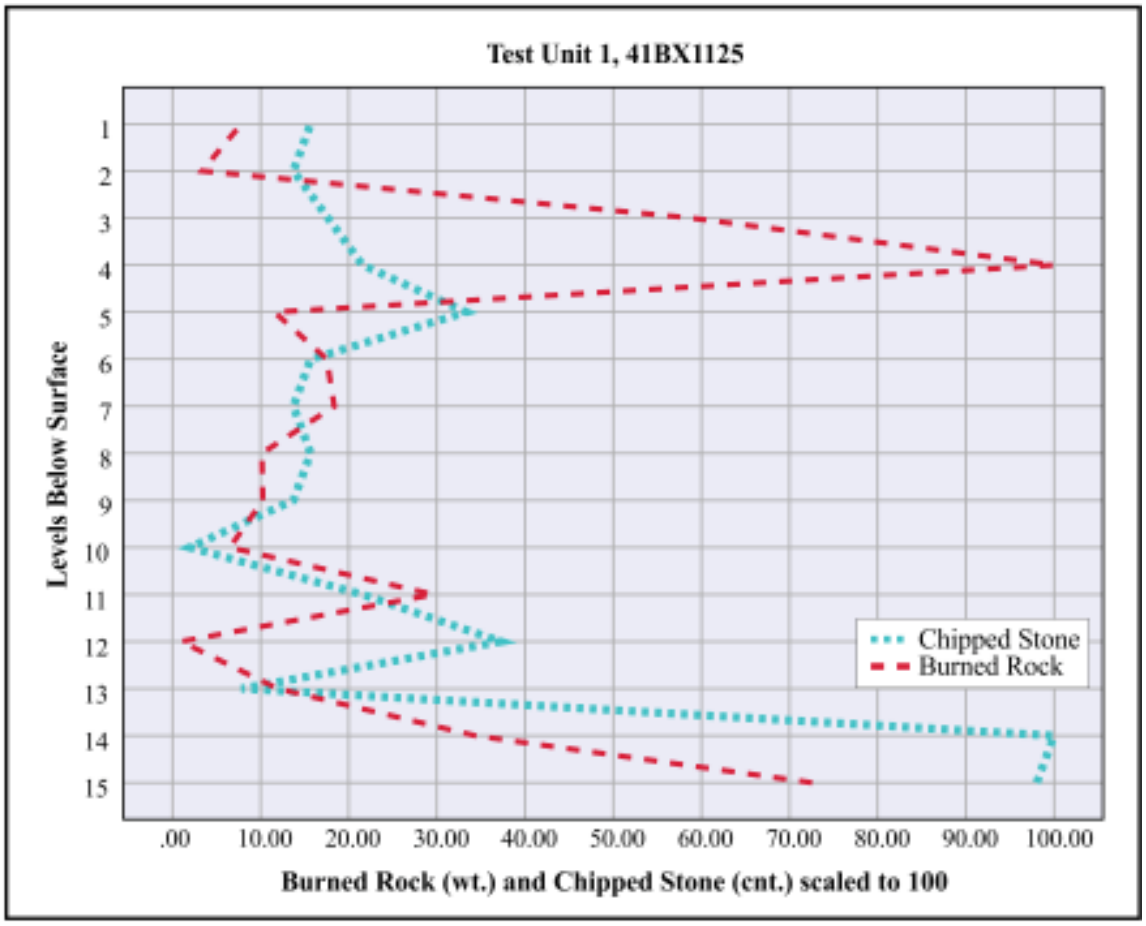

Figure 5-62. Distribution of debitage and burned rock in TU 1 at 41BX1125, by level. See Table 5-8.

Figure 5-63. Projectile point recovered from TU 1, Level 7 (79.5 cmbd; 31.3 in.), 41BX1125.

(5.9 in.; Figure 5-67). As shown previously, in Figure 5-62, there are three broad peaks in burned rock and chipped stone in this unit, with high recovery in Levels 14 and 15, Levels 11 and 12, and Levels 4 and 5. These are highlighted in Figure 5-67. The larger peak from 45-55 cmbs (17.7-21.7 in.) in MSS is associated with a significant increase in cultural material in Levels 4 (30-40 cmbs [11.8-15.7 in.]) and 5 (40-50 cmbs [15.7-19.7 in.]). This suggests a stable surface with accumulation. The small peak at 15 cmbs (5.9 in.) is likely associated with organic material accumulating on the surface and being transported down. Finally, the smaller lower peaks in MSS values do not seem to correlate with the lower artifact peaks.

Summary

While there is disturbance to limited areas of the site due to animal activity, 41BX1125 shows evidence of stability of a single surface in both artifact densities and MSS values. No culturally sterile levels were encountered during the investigation. The geoarchaeological assessment (Appendix C) suggests that the site has potential for buried cultural materials due to its position on the landscape, but also that the site has low potential for buried materials below 1 mbs (3.3 ft.). All three radiocarbon dates obtained from the site date to the beginning

Figure 5-64. Sample of bifaces and unifaces recovered from 41BX1125: a.) TU 1, Level 3; b.) TU 1, Level 7; c.) ST, Level 5; d.) TU 1, Level 5; e.) TU 2, 77.5 cmbd (30.5 in.).

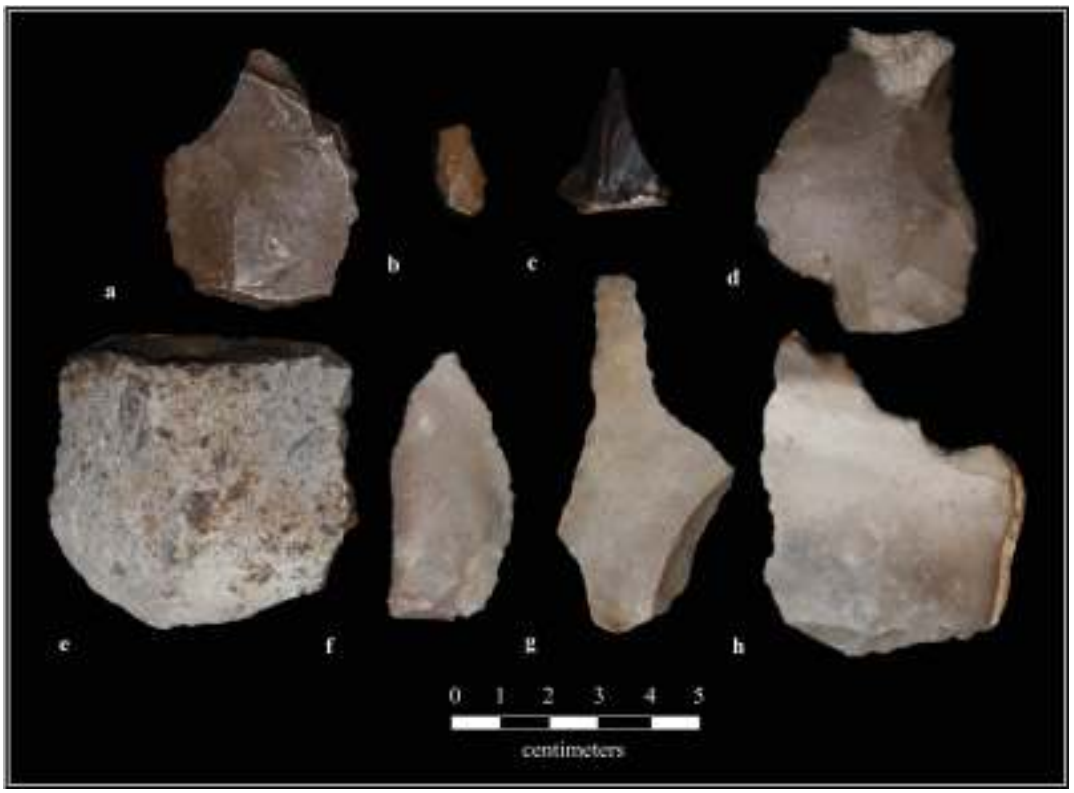

Figure 5-65. Sample of edge-modified flakes recovered from 41BX1125: a.) TU 1, Level 15; b.), TU 1, Level 8; c.) TU 1, Level 7; d.), TU 1, Level 1; e.) ST, Level 1; f, g.) TU 1, Level 14; h.) TU 1, Level 2.

Figure 5-66. Sample of cores recovered from 41BX1125: a.) TU 1, Level 14; b.) TU 2, 121 cmbd (47.6 in.); c.) ST, Level 2.

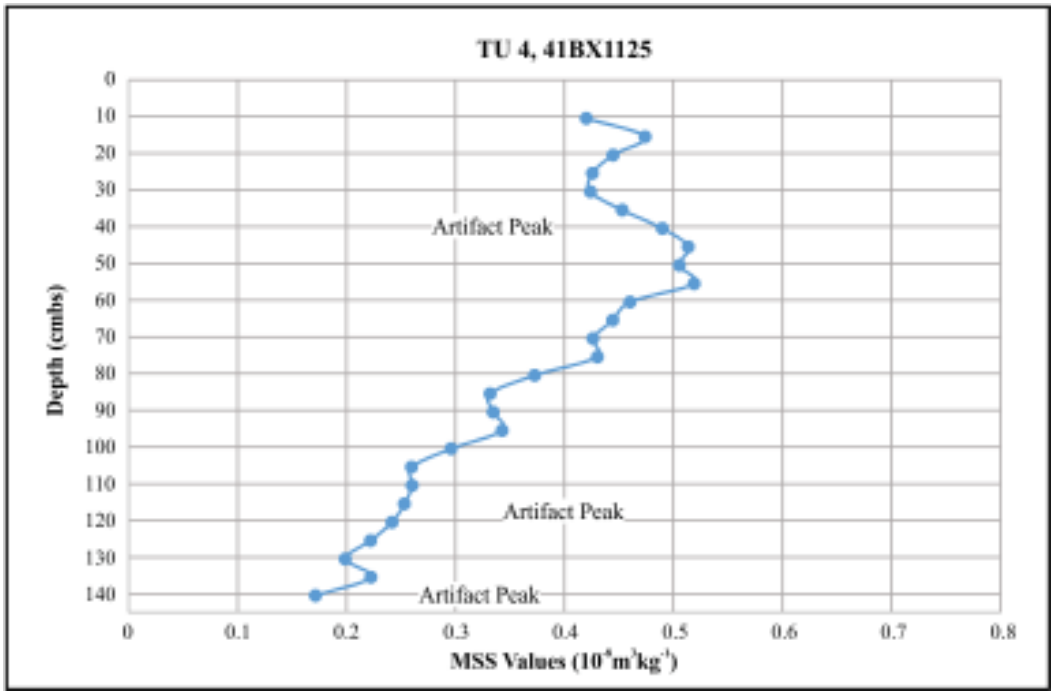

Figure 5-67. Distribution of MSS values in TU 1 at 41BX1125 by depth below surface.

of the Late Prehistoric, with the single diagnostic dating slightly earlier, at the close of Late Archaic. The MSS profile indicates that outside the animal burrow, deposits retain some integrity, and the correlation between MSS values and artifact density reinforces this point. Site 41BX1125 is one of the few sites on Medio Creek from which a diagnostic artifact was recovered in a buried context. Additionally, 41BX1125 has the best preservation of organic material of any of the sites tested along Medio Creek during this investigation, resulting in the recovery of both charcoal and faunal bone. While there is some question regarding the integrity of the deposits, the material recovered seems to be temporally limited. As such, site data could yield information on both subsistence and paleoenvironmental conditions during the close of the Late Archaic and the beginning of the Late Prehistoric. The CAR suggests that 41BX1125 has significant research potential and is recommended eligible for listing in the NRHP under Criterion D.

41BX1127

41BX1127 is located within a wooded area in the southeast portion of Chapman Training Annex, south and east of a bend in Medio Creek and east of 41BX1069. It is a prehistoric site, recorded by the CAR in 1994 (Nickels et al. 1997). Chipped stone and a high quantity of FCR were recorded on the surface. A ST encountered charcoal and deer bone from 20-30 cmbs (7.9-11.8 in.), with lithics encountered to a depth of 50 cmbs (19.7 in.). The site is on the first terrace of Medio Creek, which was found likely to contain buried Holocene deposits by a geoarchaeological assessment (Nordt 1997). Disturbance to the site by animal burrowing was noted. Research potential was found to be high, and the site was recommended eligible for listing in the NRHP within a district context (Nickels et al. 1997).

The site was revisited by Geo-Marine in 2003 (Huhnke 2006). Eleven STs were excavated during testing. A sparse amount of cultural material was encountered to a depth of 40 cmbs (15.7 in.), including debitage and two bifaces. Five of the STs terminated at 20 cmbs (7.9 in.), three terminated at 30 cmbs (11.8 in.), and three terminated at 40 cmbs (15.7 in.). No temporally diagnostic lithic tools were recovered from either investigation. The site was recommended as having low data potential to a depth of 50 cmbs (19.7 in.), but the potential for deeply buried deposits was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of eligibility for listing in the NRHP (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020).

Current Investigations at 41BX1127

The site area was found to be inaccessible by a backhoe, so the CAR proposed a similar methodology as was used at 41BX1125, consisting of the excavation of a 2 by 1 m (6.6 by 3.3 ft.) set of units to 150 cmbs (59.1 in.) with a 60 cm (23.6 in.) ST in the bottom to reach 2 mbs (6.6 ft.). Only one 1 by 1 m (3.3 by 3.3 ft.) test unit was screened; the other was excavated in bulk to provide an appropriate profile for geoarchaeological evaluation. This allowed the deposits to be tested to the required depth. This methodology is detailed in Chapter 3. In total, 302 pieces of debitage, 3,378.9 g (119.2 oz.) of burned rock, and 49 lithic tools and cores were recovered from the excavations. The excavation of TUs 8 and 9 was located near the center of the site as identified using a Juno GPS in the field (Figure 5-68).

TUs

TU 8 was excavated in levels and screened, while TU 9 was excavated in bulk. The first six levels of TU 8 consisted of clumpy silty clay, with increasing gravels and cobbles (Figure 5-69). In Level 7 of TU 8 (70-80 cmbd; 27.6-31.5 in.), dense (70%) gravels, consisting of large cobbles to pea-size stones, were encountered. In Level 14 (140-150 cmbd; 55.1-59.1 in.), gravel content dropped slightly to about 50%, and gravel size decreased to fist-sized or smaller. The soil became sandier. A ST was excavated in the center of the test unit (Figure 5-70). This soil change persisted in the first level of the ST, but dense gravels were encountered again in the bottom of Level 2 (169 cmbd; 66.5 in.). In Level 4 of the ST (190-200 cmbd; 74.8-78.7 in.), calcium carbonates were noted, as well as a decrease in gravel size. Gravel size increased again in the final level of the ST (200-210 cmbd; 78.7-82.7 in.).

Cultural material was recovered from all levels of the TU, including debitage, burned rock, and lithic tools (Table 5-11). Glass and metal were present in Level 1, the only level which contained historic material. No temporally diagnostic artifacts were recovered from TU 8, but charcoal was present. Bone and mussel shell were also recovered. As shown in Figure 5-71, burned rock weight and chipped stone counts showed a significant peak in Level 6. Charcoal was recovered from this level as well. The potential edge of a burned rock feature was identified near the east wall of the unit, but excavation in TU 9 failed to locate a burned rock concentration in that area. Nevertheless, burned rock quantity and size in the level increased significantly and burned rock was found scattered throughout the level. Artifact quantities dropped in Level 8 as dense gravels were encountered. A small peak in chipped stone and burned rock was observed from Levels 11-13, although gravels remained dense.

In total, 45 lithic tools and cores were recovered from TU 8. Seven bifaces and biface fragments were recovered from Levels 3, 4, 6, 7 and 12, including a rough biface made on a cobble with possible base work recovered from 44 cmbd (17.3

Figure 5-68. Site 41BX1127 on a topographic map with TU locations.

Figure 5-69. Site 41BX1127, profile of TUs 8 and 9 at 140 cmbs (55.1 in.). Note dense gravels, ST in foreground.

Figure 5-70. Site 41BX1127, ST at terminations of TUs 8 and 9.

Table 5-11. Summary of Material Recovered from TU 1 at 41BX1127

Level	Debitage (ct)	Burned Rock (wt. in g)	Lithic Tools and Cores (ct)	^{14}C (wt. in g)	Bone/Shell (wt. in g)	Snail (wt. in g)	Historic (ct)
1	10	59.2	3	0	0	10.3	3
2	10	41.1	2	0	0	1.4	0
3	31	17.9	7	2.3	0	2.9	0
4	38	147.7	4	0	0	0	0
5	48	842.5	1	5.8	0.1	4	0
6	59	1323.9	8	8.0 in soil*	0.1	25.4	0
7	24	269.5	10	0	0.9	6.1	0
8	11	93.3	1	0	0.2	0	0
9	6	3	1	0	1.7	0	0
10	3	0	0	0	0.2	0	0
11	12	5.4	2	0	0	0	0
12	11	6.6	1	0	0	0	0
13	4	47.8	4	0	0	0.8	0
14	8	0	1	0	0.06	0	0

*Sample submitted for radiocarbon dating. Note that samples not submitted were curated for use in future research.

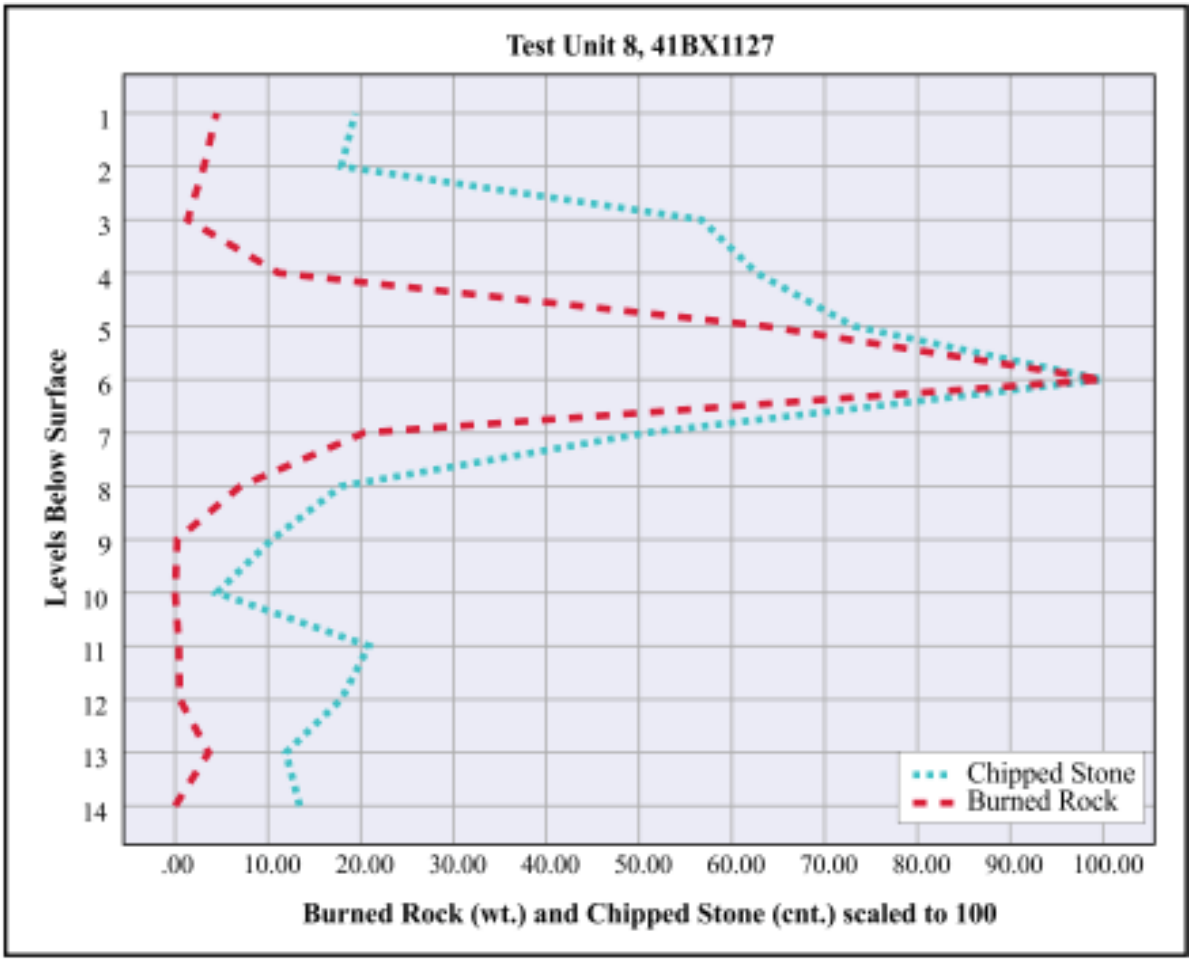

Figure 5-71. Distribution of chipped stone and burned rock by level in TU 8 at 41BX1127. See Table 5-11.

in.; Figure 5-72), and a thin medial/distal biface fragment recovered from 63 cmbd (24.8 in.), which had significant patination on one side (Figure 5-73). Two unifaces were recovered from Levels 1 and 2. Twenty-six edge-modified flakes were recovered from Levels 1-9, Level 11, Level 13, and Level 14 (Figures 5-74 and 5-75). An additional three perforators made on edge-modified flakes were recovered from Level 7. Seven lithic cores were recovered from Levels 4, 7, 11, and 13 (Figure 5-76).

A charcoal sample was submitted for radiocarbon dating from a depth of 60 cmbd (23.6 in.). The sample (D-AMS039946) returned a date of 2757 ± 24 RCYBP. In OxCal (Bronk Ramsey 2020), this calibrated to a date range of from 2928 to 2777 calBP, with a median date of 2839 calBP. The highest probability range (87.4%) is between 2886 and 2777 calBP. Assuming the sample is in context, this places the artifact peak within the Late Archaic period.

While TU 9 was not screened, material from this test unit was collected when it was observed (Table 5-12). No material was recovered in place due to the dense gravel matrix. Material was recovered from 0-80 cmbd (0-31.5 in.); no cultural material was recovered from TU 9 below this depth. The material collected includes 27 flakes, 502.9 g (17.7 oz.) of burned rock, a mussel shell fragment, an edge-modified flake, and two bifaces, including one possible spokeshave. The soil profile uncovered was similar to that of TU 8.

A ST was excavated in the bottom of TU 8 once excavation of both units was completed, to a final depth of 210 cmbd (82.7 in.). This ST encountered sandier soils with dense gravels and carbonates, ranging in color from brown (10YR 4/3) to yellowish-brown (10YR 5/4). Only one artifact was recovered, a fragment of burned chert weighing 4.07 g (0.14 oz.), collected from 180-190 cmbd (70.9-74.8 in.).

Geoarchaeological Assessment

TCI's assessment of 41BX1127 (Appendix C) found that the site had potential for shallowly buried cultural materials but little potential for deeply buried and stratified materials due the site's position on the landscape. The site is positioned

Figure 5-72. Sample of bifaces and unifaces recovered from 41BX1127: a.) TU 8, Level 4; b.) TU 8, Level 2; c.) TU 9 (0-80 cmbd; 0-31.5 in.).

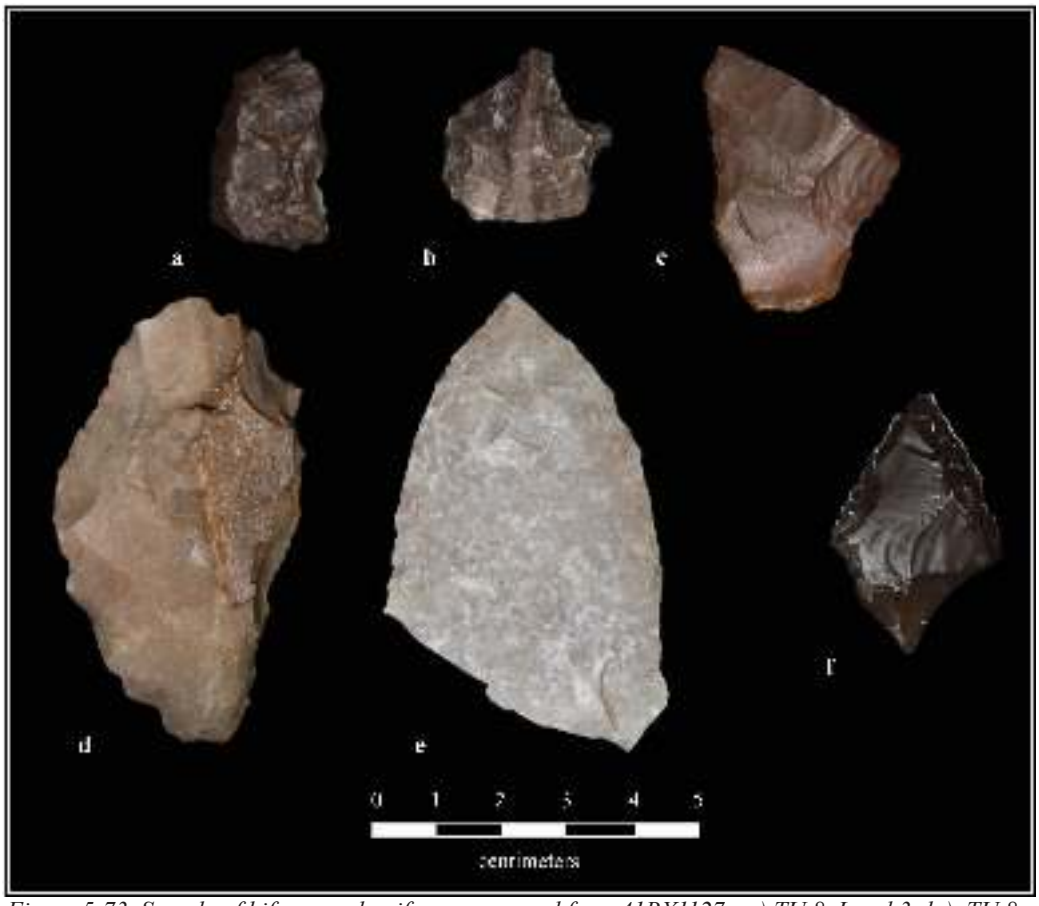

Figure 5-73. Sample of bifaces and unifaces recovered from 41BX1127: a.) TU 8, Level 3; b.), TU 8, Level 7; c.) TU 8, Level 12; d.) TU 9 (0-80 cmbd; 0-31.5 in.); e.) TU 8, Level 6; f.) TU 8, Level 1.

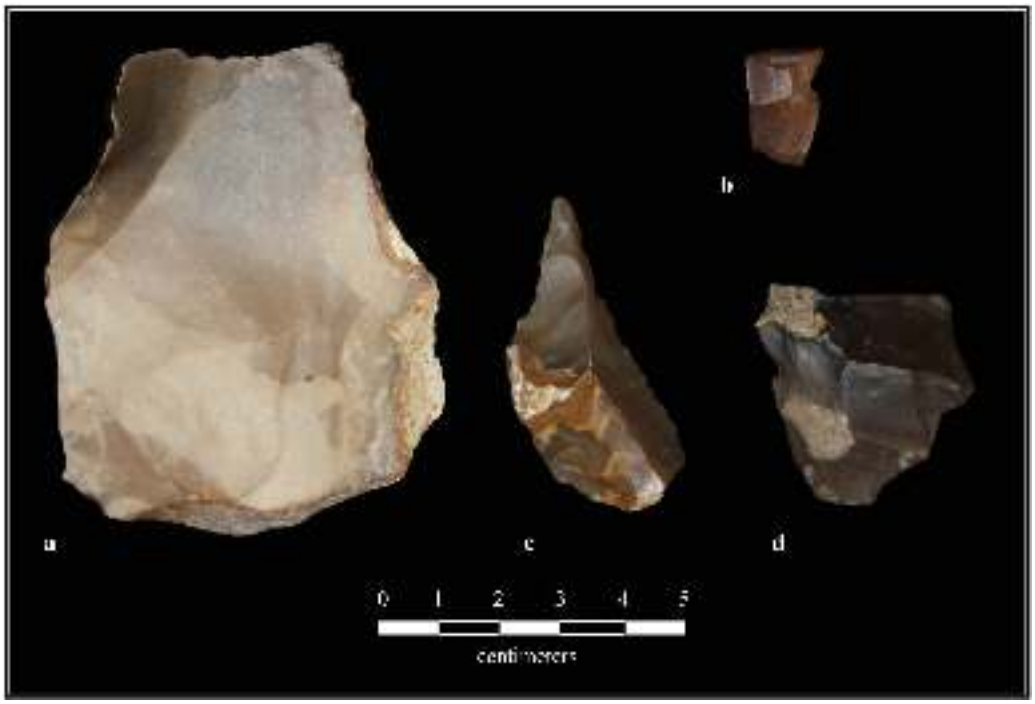

Figure 5-74. Sample of edge-modified flakes recovered from 41BX1127: a.), TU 8, Level 9; b.), TU 8, Level 2; c.) TU 8, Level 14; d.) TU 8, Level 3.

Figure 5-75. Sample of edge-modified flakes recovered from 41BX1127, TU 8, Level 6.

within the floodplain of Medio Creek, and the test unit showed evidence of previous flooding episodes and creek bed.

MSS Patterns

MSS samples were taken from the profile of TU 8 at 41BX1127 (Figure 5-77). MSS values show fluctuation between 45-135 cmbs (17.7-53.1 in.). There are peaks at 105 cmbs (41.3 in.), 45 cmbs (17.7 in.), and 15 cmbs (5.9 in.) that potentially indicate stable surfaces. The peak at 15 cmbs (5.9 in.) is likely associated with the current surface. The significant artifact peak at 50-60 cmbs (19.7-23.6 in.) is about 10 cm (3.9 in.) below the stable surface indicated at 45 cmbs (17.7 in.). The bottom peak is associated with a small increase in artifacts from 100-110 cmbs (39.4-43.3 in.). The clear drop in MSS values from 45-95 cmbs (17.7-37.4 in.) is likely associated with the dense gravel layer encountered from 55-140 cmbs (21.7-55.1 in.).

Summary

While 41BX1127 shows evidence of flood disturbance in some levels, analysis of artifact density and MSS values indicates some stability of past surfaces in others. While the

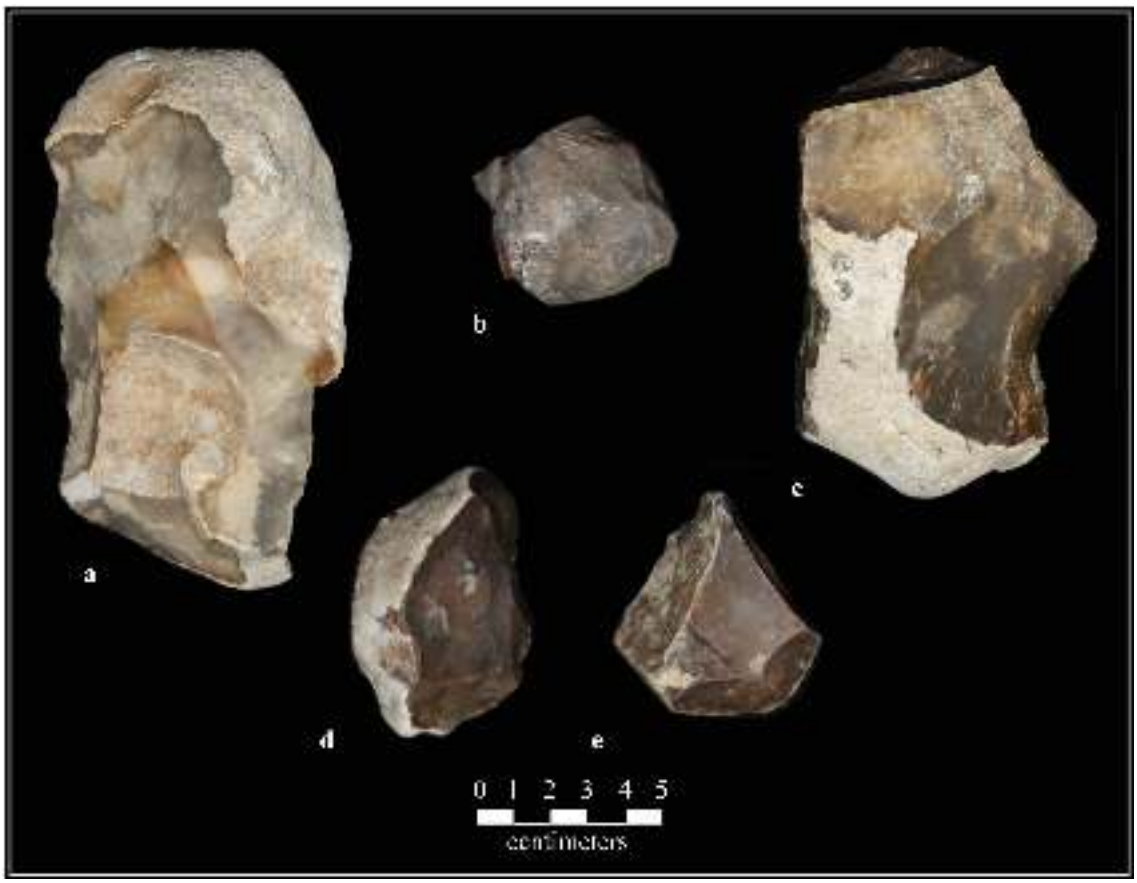

Figure 5-76. Sample of cores recovered from 41BX1127: a.) TU 8, Level 4; b, c.) two cores from TU 8, Level 13; d., e.) two cores recovered from TU 8, Level 7.

Table 5-12. Summary of Material Recovered from TU 9 at 41BX1127

FS #	Provenience	Depth (cmbd)	Superclass	Class	Description	Count (Each)	Weight (g)
115	TU 9	0-80	Lithics	Bifaces/Unifaces	Biface	1	
115	TU 9	0-80	Lithics	Bifaces/Unifaces	Biface, possible spokeshave	1	
115	TU 9	0-80	Lithics	Burned Rock		7	502.9
115	TU 9	0-80	Lithics	Cores		1	168.2
115	TU 9	0-80	Lithics	Debitage	Battering present	22	142.4
115	TU 9	0-80	Lithics	Debitage		3	
115	TU 9	0-80	Lithics	Debitage	Battered	2	46.6
115	TU 9	0-80	Lithics	Edge Modified		1	
115	TU 9	0-80	Organic	Shell	Mussel, umbo		0.5

ST encountered only one artifact, the results still suggest the potential for even more deeply buried material at the site. The geoarchaeological assessment suggests potential for buried materials above 1 mbs (3.3 ft.), but low potential for buried materials below this depth. However, analysis of artifacts recovered and MSS samples suggests some potential for a lower period of stability and associated peak, just below 1 mbs (3.3 ft.). The preservation of organic material such as charcoal and bone offers opportunities for additional absolute dating, as well as potential data for studies on subsistence and paleoenvironment. This is especially notable due to the lack of preservation of such materials at most other sites along Medio Creek, such as at 41BX1069. The radiocarbon date of the upper material places 41BX1127 in the Late Archaic period. Deeply buried materials at the site hints at an earlier occupation. The CAR suggests that 41BX1127 has significant research potential and should be considered eligible for listing in the NRHP.

41BX1130

41BX1130 is located in the Mesquite-Live Oaks-Bluewood Parks ecoregion (TPWD 2020). The soils are Lewisville

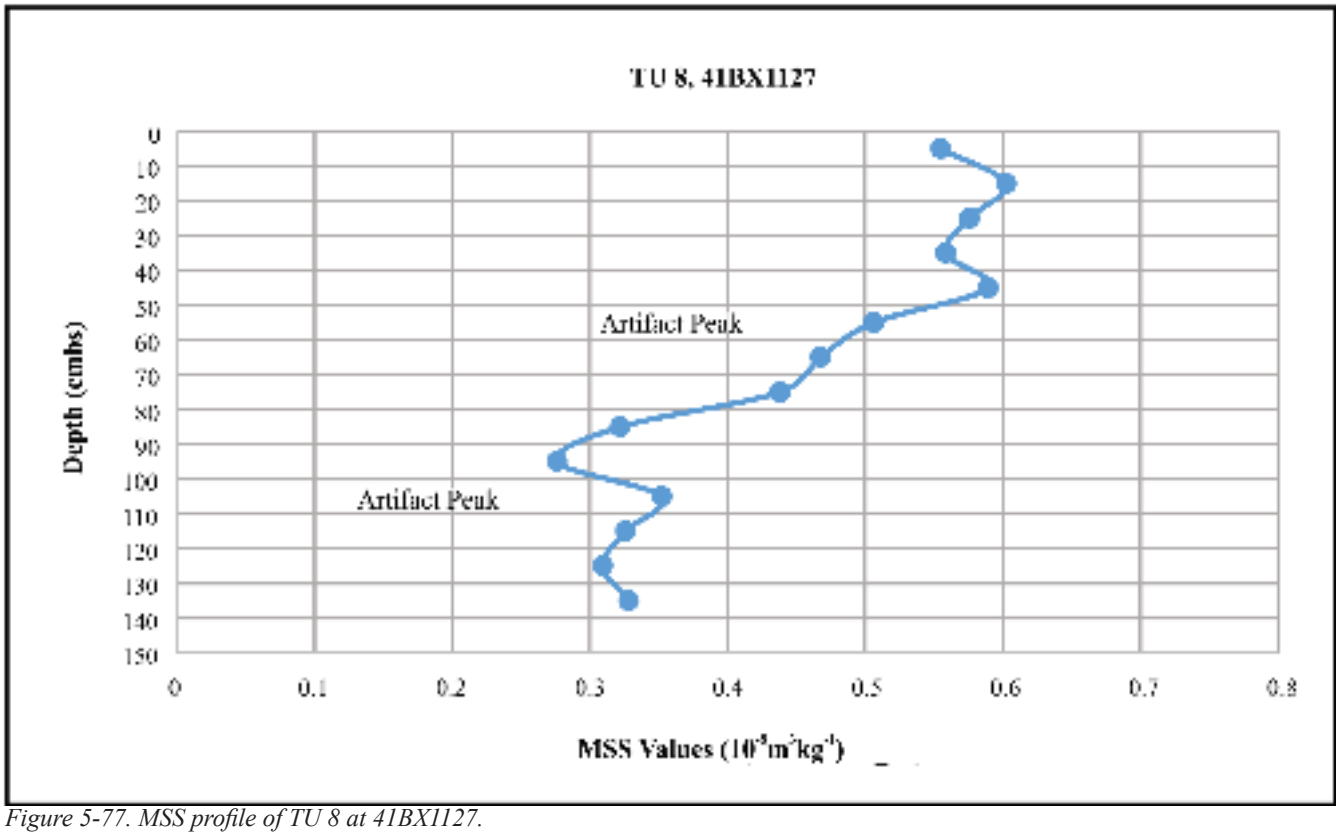

Figure 5-77. MSS profile of TU 8 at 41BX1127.

silty clays (LvA) (NRCS 2020). The site was recorded by the CAR in 1994 during a pedestrian survey (Nickels et al. 1997). A small quantity of lithic material was observed on the surface, which appeared to be impacted by the historic component. A ST did not encounter any buried cultural material. The site is located on the first terrace of Medio Creek, which was found to be likely to contain buried Holocene deposits by a geoarchaeological assessment (Nordt 1997). The site was found to have minimal research potential but was recommended for listing in the NRHP in a district context (Nickels et al. 1997).

The site was revisited by Geo-Marine in 2003 (Huhnke 2006). Thirteen STs were excavated during testing. Ten of the STs were positive for cultural material from 0-20 cmbs (0-7.9 in.), consisting of 56 artifacts in total. Material included a biface collected from the surface, debitage, and four cores. No temporally diagnostic lithic artifacts or organic material suitable for absolute dating was recovered during either investigation (Huhnke 2006; Nickels et al. 1997). Eight of the STs terminated at 20 cmbs (7.8 in.) or less, and five terminated at 30 cmbs (11.8 in.). The research potential for the site was found to be low from 0-50 cmbs (0-19.7 in.), but the potential for deeper deposits was not evaluated. Geo-Marine recommended testing for deeply buried deposits to make a final recommendation of eligibility for listing in the NRHP (Huhnke 2006). The THC states that the NRHP eligibility status of the site is undetermined (THC 2020).

Current Investigations at 41BX1130

The site is located adjacent to the Explosive Ordinance Disposal (EOD) area in the far southeastern corner of Chapman Training Annex, southwest of Medio Creek. The CAR excavated three BHTs within the site, including BHTs 13, 14, and 15 (Figure 5-78). Both historic and prehistoric material was scattered on the site surface, with evidence of the dumping of historic construction material. The only cultural material recovered from below the surface was 64.58 g (2.28 oz.) of burned chert from the backdirt of the first 60 cm (23.6 in.) of BHT 15. No cultural material was observed in the trench profiles. Due to a lack of evidence of buried cultural material, no TUs were excavated within the site.

BHTs

BHT 13 was located in the southern portion of the site along a patrol road. It was 5.2 m (17.1 ft.) in length and 1 m (3.3 ft.) in width. It was oriented east to west. Excavation was halted at 127 cmbs (50 in.) to allow archaeologists to examine and document the soil profile. No cultural material was observed within the profile or the backdirt. Three layers were identified in the soil profile (Figure 5-79). Layer 1 extended from 0-10 cmbs (0-3.4 in.) and consisted of black loose silty loam (10YR 2/1). Layer 2 extended from 10-70 cmbs (3.4-27.6 in.). It consisted of dark gray (10YR 4/1) silty clay. Layer 3 extended from 70-130 cmbs (27.6-51.2 in.) and consisted of grayish-brown silty clay with 5-10% caliche and carbonates (10YR 5/2). After the profile was documented, excavation continued to a depth of 2 mbs (6.6 ft.), encountering blocky, compact yellowish-brown (10YR 5/4) clays with carbonates (Figure 5-80). No cultural material was observed in the deeper soil deposits.

BHT 14 was located in the central portion of the site east of the EOD area. It was 4.47 m (14.6 ft.) in length, 108 cm (42.5 in.) wide, and was oriented north-south. Excavation was halted at 137 cmbs (53.9 in.) to allow archaeologists to examine and record the profile. No cultural material was observed in the profile or the backdirt. Four layers were identified in the trench profile (Figure 5-81). Layer 1 extended from 0-5 cm (0-2.0 in.) and consisted of very loose black (10YR 2/1) silty clay. Layer 2 extended from 5-75 cmbs (2.0 in.-29.5 in.) and consisted of mottled black (10YR 2/1) and brown (10YR 5/3) silty clay with small gravels and crushed snail shells. Layer 3 extended from 75-125 cmbs (29.5-49.2 in.) and consisted of hard, blocky dark gray (10YR 4/1) clay with calcium carbonate chunks. Layer 4 extended from 125-137 cmbs (49.2-59.9 in.) and consisted of hard, blocky dark gray and yellowish-brown mottled (10YR 4/1, 10YR 5/6) clay with calcium carbonate chunks. After the profile was documented, excavation continued to a depth of 2 mbs (6.6 ft.), encountering blocky, compact yellowish-brown (10YR 5/4) clays with carbonates (Figure 5-82). No cultural material was observed in the deeper soil deposits.

BHT 15 was located in the northern portion of the site east of the EOD area. It was 4.5 m (14.8 ft.) in length, 1 m (3.3 ft.) wide, and oriented northeast 50 degrees. Some lithic material was observed on the surface. Excavation was halted at 130 m (51.2 in.) to allow archaeologists to examine and record the profile. Sixty-eight grams of burned rock was recovered from the backdirt of the upper 60 cm (23.6 in.), but no cultural material was observed in the profile. Four layers were identified in the profile (Figure 5-83). Layer 1 extended from 0-10 cmbs (0-3.9 in.) and consisted of very dark grayish-brown (10YR 3/2) silty loam with roots. Layer 2 extended from 10-70 cmbs (3.9-27.6 in.). It consisted of grayish-brown (10YR 5/2) silty clay, and contained roots concentrated near the top. Layer 3 extended from 70-90 cmbs (27.6-35.4 in.). It consisted of yellowish-brown (10YR 5/4) clumpy, rubified clay. Layer 4 extended from 90-130 cmbs (35.4-51.2 in.). It consisted of yellowish-brown sandy clay with

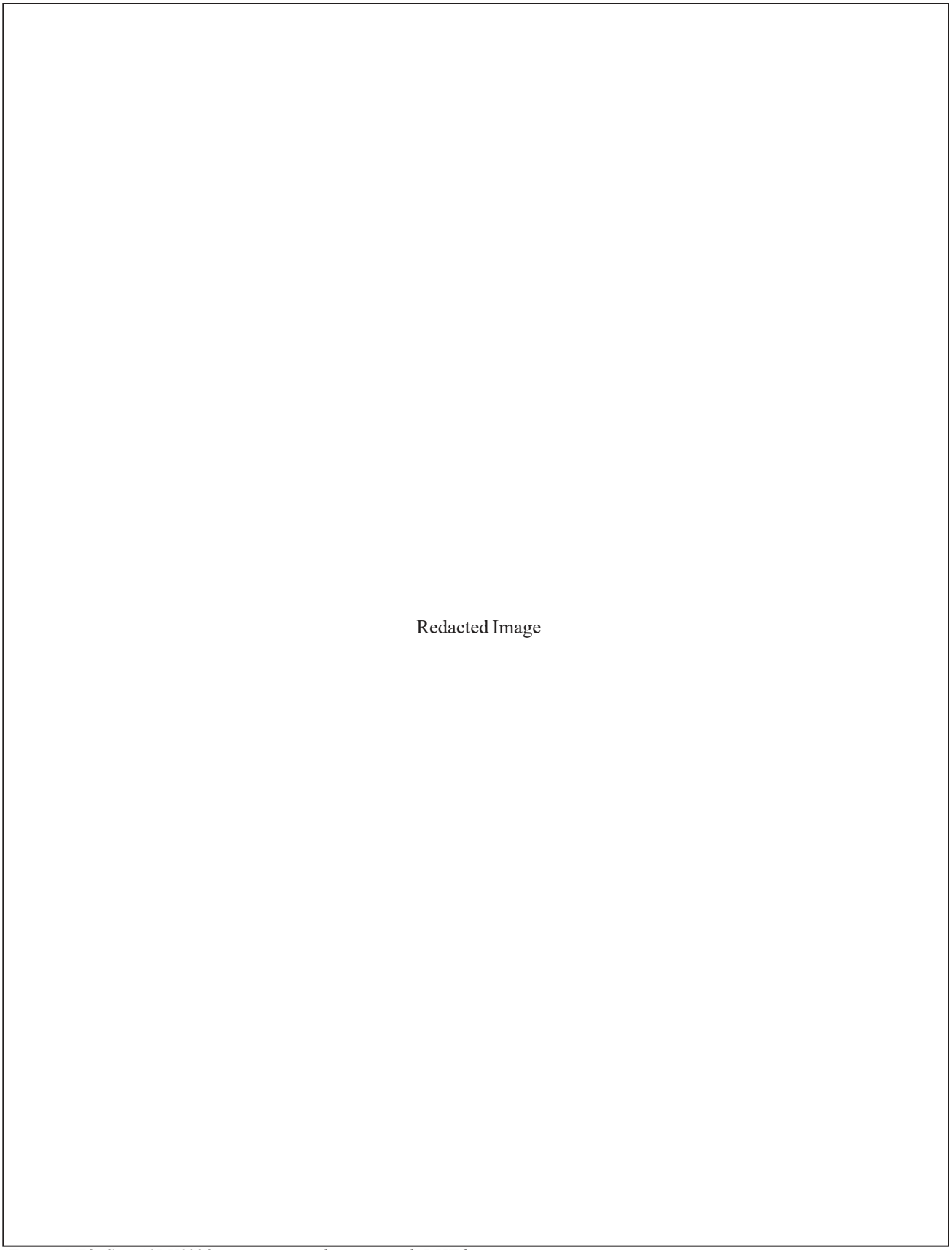

Figure 5-78. Site 41BX1130 on a topographic map with BHT locations.

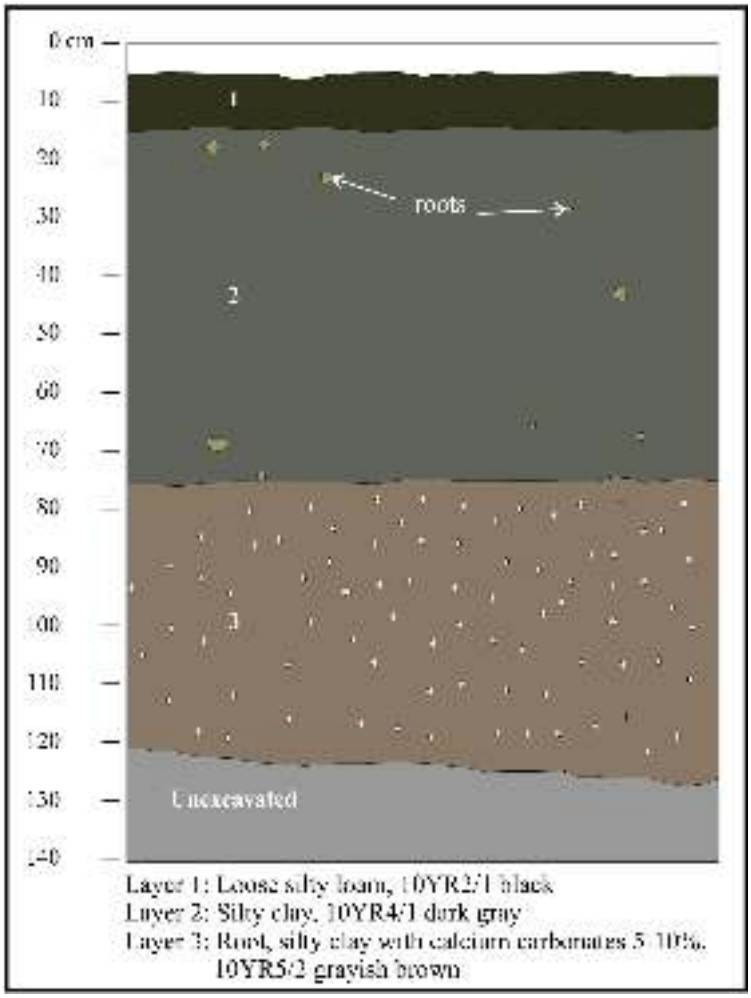

Figure 5-79. Site 41BX1130, BHT 13 east profile.

Figure 5-80. Site 41BX1130, BHT 13 east profile at 2 mbs (6.6 ft.).

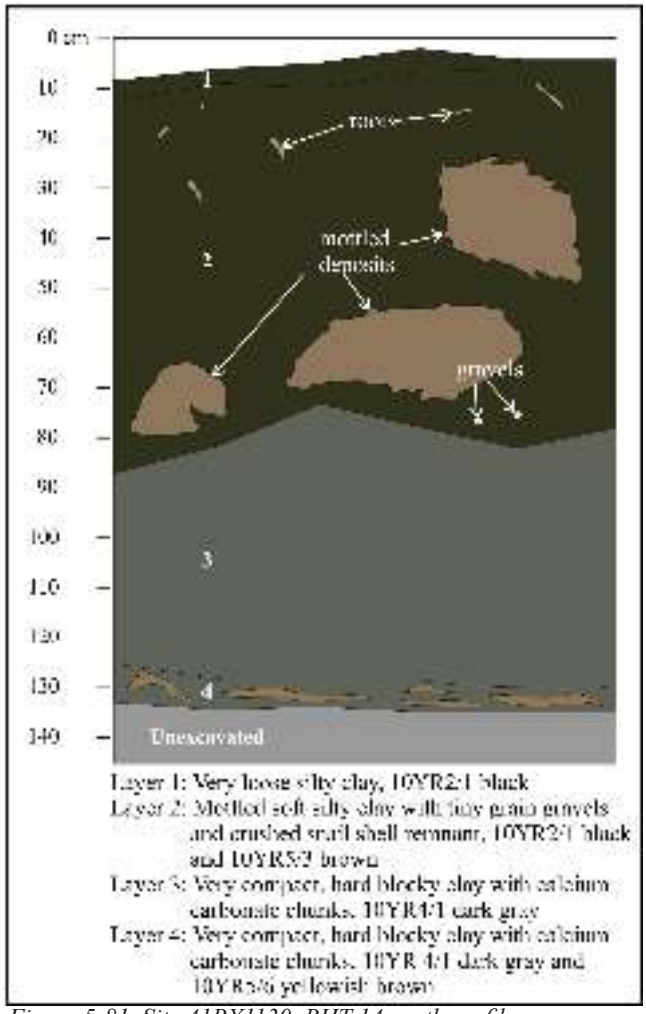

Figure 5-81. Site 41BX1130, BHT 14 north profile.

Figure 5-82. Site 41BX1130, BHT 14 south profile at 2 mbs (6.6 ft.).

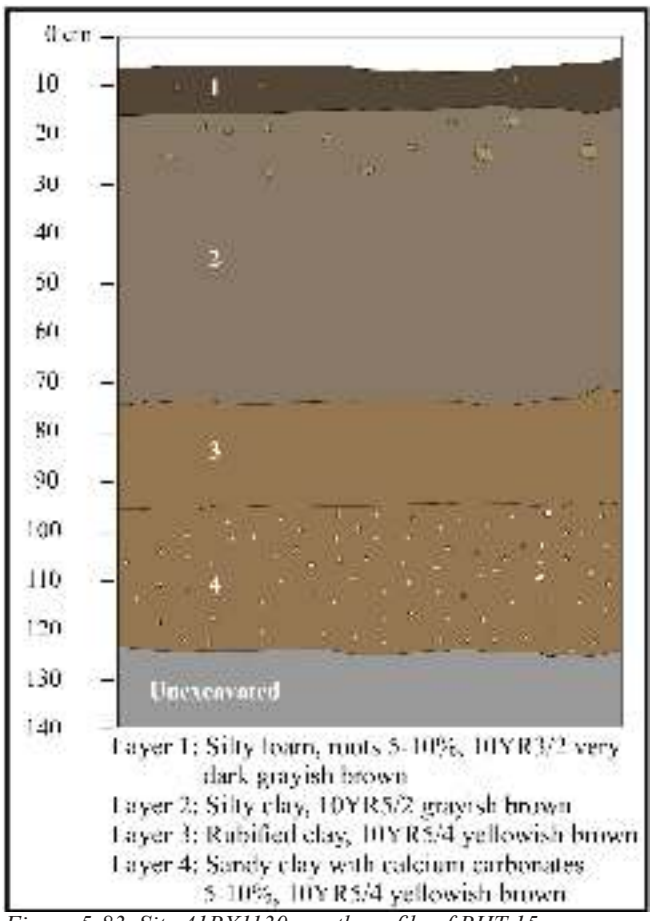

Figure 5-83. Site 41BX1130, south profile of BHT 15.

5-10% calcium carbonates (10YR 5/4). After the profile was documented, excavation continued to 2 mbs (6.6 ft.), encountering deposits similar to Layer 4 (Figure 5-84). No cultural material was observed in the deeper soil deposits.

Geoarchaeological Assessment

TCI's geoarchaeological assessment (Appendix C) found that the site had little potential for deeply buried and stratified cultural materials. This finding was based on the site's position within the landscape, as well as the results of backhoe trenching.

Summary

Due to the lack of buried material encountered in BHTs, no TUs were excavated at 41BX1130. The results of the survey that initially documented the site (Nickels et al. 1997) recommended that the site was eligible for inclusion in the NRHP within a district framework but noted that the research potential of the site was minimal as a single analytical unit, due to low density of material, disturbance, and a lack of buried material encountered in the single ST excavated. This initial survey focused primarily on the documentation of surface material (Nickels et al. 1997). Geo-Marine's testing at the site encountered cultural material in 10 of the 13 STs excavated. This material was restricted to the first 20 cm (7.9 in.); however, no ST was excavated deeper than


Figure 5-84. Site 41BX1130, BHT 15 south profile at 2 mbs (6.6 ft).

30 cm (11.8 in.). The site was recommended as not eligible from 0-50 cmbs (0-19.7 in.), but backhoe trenching was recommended to investigate the potential for deeply buried deposits (Huhnke 2006). The CAR's investigation confirmed previous findings that suggested a lack of buried material at the site. The surface deposits at the site have been disturbed by historic activity, the construction of the EOD area, and the road. The geoarchaeological assessment (Appendix C) found that there was little potential for buried and stratified cultural materials. Due to a lack of buried deposits and site integrity, 41BX1130 has been found to be lacking in research potential and is recommended not eligible for listing in the NRHP.

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Chapter 6: Summary and Conclusions

From November 2019 to August 2020, the CAR investigated 16 sites located on Camp Bullis and Lackland AFB in San Antonio, Texas, to make a final NRHP eligibility recommendation for the sites, which were chosen for evaluation by the JBSA-CRM. Six sites (41BX432, 41BX1013, 41BX1277, 41BX1322, 41BX1344, and 41BX1445) were evaluated archaeologically on Camp Bullis, and one site (41BX1211) was recorded and evaluated. Nine sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130) located on Lackland AFB were evaluated archaeologically and geoarchaeologically.

Site-specific methodologies were employed for the sites evaluated on Camp Bullis, designed to fill gaps in available data identified during literature review. These methods included shovel testing of sites with no previous below-ground testing, test unit excavation and backhoe trenching to explore potential features identified by previous investigations, recording site locations and features with GPS, and background research. Of the six sites evaluated on Camp Bullis, four (41BX432, 41BX1013, 41BX1277, and 41BX1445; Table 6-1) are recommended eligible for listing in the NRHP. Additionally, after it was recorded and assessed, 41BX1211 is recommended eligible for listing in the NRHP. Two sites, 41BX1322 and 41BX1344, are recommended not eligible due to lack of site integrity.

At Camp Bullis, 18 STs were excavated at 41BX1013, 41BX1344, and 41BX1445. While STs were planned for 41BX1277, none were excavated due to lack of soil in the area. However, the structure at 41BX1277 was recorded using GPS and photos, and the ground surface examined for cultural material. Site 41BX1211 was also recorded using GPS and photos. Site 41BX1322 could not be relocated and may be too damaged by erosion for positive identification. At 41BX432, two tests units, intended to explore two previously identified historic features, and three BHTs were excavated. In total, 674 artifacts were collected from below-ground contexts during testing at Camp Bullis, 670 of which were recovered from 41BX432 (99%). A scrap of metal and a button were recovered from 41BX1013, and a fragment of burned rock and an edge-modified flake from 41BX1344. No artifacts were recovered from shovel testing at 41BX1445.

The sites chosen for evaluation at Camp Bullis spanned a range of potentially significant contexts within regional archaeology, including historic military contexts (Cestaro et al. 2000; Scott 1999), historic farms and ranches (Kibler and Gardner 1997; Pagoulatos 2006; Scott 1999; Wilder et al. 2003), and prehistoric contexts (Cestaro et al. 2000). Due to this broad range of sites, each had to be evaluated within its own unique context. Sites 41BX432, 41BX1013, 41BX1211 and 41BX1445 are recommended eligible for listing in the NRHP as intact portions of historic Hill Country ranches (Dase et al. 2010; Freemen 1994b; Moore et al. 2013). All are associated with the influx of German immigrants to the area following Meusebach's early settlement (Freemen 1994b), and 41BX432 is also closely associated with goat ranching, an industry that is uniquely significant to the area (Freemen 1994b; Pagoulatos 2006; Scott 1999). Additionally, 41BX1013 is directly associated with John O. Meusebach, a significant figure in Texas history as well as local history, due to his role in establishing German immigrant settlements in the Hill Country (Freemen 1994b; Kibler and Gardner 1997). Site 41BX1211 is an example of a feature type that is unique to the region and associated with a particular ethnic group, German farmers (Dase et al. 2010; Knott 2004). The CAR's findings are consistent with previous assessments of these sites (Kibler and Gardner 1007; Pagoulatos 2006; Scott 1999; Wilder et al. 2003). Impacts on these sites and the structures present should be avoided, including the damage from clearing activities noted at 41BX432 and 41BX1211.

Sites 41BX1277 and 41BX1322 were evaluated as potentially significant within the substantial historic military context of the area. 41BX1277 are recommended eligible for listing in the NRHP based on its association with training maneuvers that contributed to the development of strategies employed by the US Army as whole from WWII to the Korean War, as well as the buildup of Camp Bullis for its significant use in WWII and the bunker's association with WPA activity on the base. This finding is consistent with the previous assessment of 41BX1277 (Scott 1999). Impacts on the site should be avoided, and the structure kept intact. Site 41BX1322 was unable to be definitively relocated, and appears to be so significantly impacted by erosion, clearing, and jeep trails that it is no longer identifiable. Due to the lack of site integrity, the site is recommended not eligible for listing in the NRHP.

Site 41BX1344 was the only prehistoric site chosen for evaluation at Camp Bullis. While rockshelters and caves were an important part of the prehistoric landscape now occupied by Camp Bullis (Hudler 2000), this site has been severely impacted by erosion and contains very sparse cultural deposits that were heavily eroded. The site was previously recommended as potentially significant for research if buried,

Table 6-1. Site Recommendations

Location	Site Trinomial	Work Conducted	NRHP Eligibility Recommendation	Criteria (if eligible)
Camp Bullis	41BX432	Archaeological Evaluation	Eligible	A, B, D
Camp Bullis	41BX1013	Archaeological Evaluation	Eligible	B, C
Camp Bullis	41BX1277	Archaeological Evaluation	Eligible	A
Camp Bullis	41BX1322	Archaeological Evaluation	Not Eligible	
Camp Bullis	41BX1344	Archaeological Evaluation	Not Eligible	
Camp Bullis	41BX1445	Archaeological Evaluation	Eligible	A
Camp Bullis	41BX1211	Site Recording and Archaeological Evaluation	Eligible	A, D
Lackland AFB-Chapman Training Annex	41BX1069	Geoarchaeological/ Archaeological Evaluation	Not Eligible	
Lackland AFB-Chapman Training Annex	41BX1092	Geoarchaeological/ Archaeological Evaluation	Not Eligible	
Lackland AFB-Chapman Training Annex	41BX1093	Geoarchaeological/ Archaeological Evaluation	Eligible	D
Lackland AFB	41BX1107	Geoarchaeological/ Archaeological Evaluation	Not Eligible	
Lackland AFB-Chapman Training Annex	41BX1121	Geoarchaeological/ Archaeological Evaluation	Not Eligible	
Lackland AFB-Chapman Training Annex	41BX1122	Geoarchaeological/ Archaeological Evaluation	Eligible	D
Lackland AFB-Chapman Training Annex	41BX1125	Geoarchaeological/ Archaeological Evaluation	Eligible	D
Lackland AFB-Chapman Training Annex	41BX1127	Geoarchaeological/ Archaeological Evaluation	Eligible	D
Lackland AFB-Chapman Training Annex	41BX1130	Geoarchaeological/ Archaeological Evaluation	Not Eligible	

intact deposits could be located (Cestaro et al. 2000). Due to the lack of intact buried deposits and the concomitant lack of research potential, the site is recommended not eligible for listing in the NRHP.

Sites recorded at Camp Bullis offer preservation of information about the long history of land use in the area, particularly evidence concerning early agricultural activities in the Hill Country. While shallow soils at the base can limit research opportunities, site layouts and relationships of features to each other can provide data on historic ranches and farms (Dase et al. 2010). The historic component of 41BX432 is recommended eligible for listing in the NRHP under Criterion A due its association with early agriculture in Bexar County, the settlement of the area by German immigrants, and its specific association with the development of the mohair industry in the Hill Country (Dase et al. 2010). The site is also associated with several individuals considered pioneers in the mohair industry in Texas, including William Parrish, Gustavus Hoerle, Henry Fink, and the Oppenheimer brothers, making the site eligible under Criterion B. As noted in previous investigations, the layout of the site remains intact (Pagoulatos 2006; Scott 1999), and the current investigation established that intact features associated with the ranch are present below surface. This indicates that the site has research value concerning early ranching activities in the area, and therefore is also recommended eligible for listing in the NRHP under Criterion D. Site 41BX1013 is recommended for listing in the NRHP due to its association with John O. Meusebach and his early agricultural activities in the area (Criterion B). Despite the addition of the windmill, photographs indicate that the original rough limestone of the well is intact. Site 41BX1211 is recommended eligible for listing in the NRHP as an example of an agricultural landscape feature associated with early Bexar County ranching activities as well as with a specific ethnic group. While archival research suggests that this specific site was likely not constructed by the German immigrant farmers limestone rock fences are commonly associated with (Knott 2004), this only adds to the site's potential to contribute to

better understanding of the origins and role of such fences. The site has research value (Criterion D) due to the unusual nature of Nathaniel Lewis's ranch as well as the potential data the site may provide about land use patterns, agricultural practices, and labor practices in the Hill Country (Knott 2004). Site 41BX1445 is recommended eligible for listing in the NRHP under Criterion A due to its association with early ranching activities in Central Texas and the Hill Country. Due to Camp Bullis' role in military training for over a century, many sites illuminating military history are preserved on Camp Bullis as well. These sites hold significance due to their association with important events in United States history, including two world wars (Freemen 1994a). Site 41BX1277 is recommended eligible for listing in the NRHP under Criterion A due its association with the training activities of the Triangular Division. It also exhibits characteristics distinctive of building on the base during the WPA era, such as its poured concrete construction.

At Lackland, all nine sites chosen for testing were targeted for geoarchaeological evaluation. Backhoe trenching to a depth of 2 mbs was conducted at seven sites (41BX1069, 41BX1092, 41BX1093, 41BX1107, 41BX1121, 41BX1122, and 41BX1130) to provide geoarchaeological evaluation and testing of the sites for deeply buried deposits. When evidence of deeply buried material was encountered, TUs were excavated to gain data on the nature and integrity of the deposits to provide an accurate evaluation. At 41BX1125 and 41BX1127, the CAR was unable to gain access to the sites with a backhoe. Instead, a 1 by 2 m (3.3 by 6.6 ft.) test unit block was excavated at each site to a depth of 140 cmbs (55.1 in.), and one side was screened. A ST was excavated in the bottom to reach a final depth of 2 mbs (6.6 ft.). This provided a profile for the geoarchaeologist to examine as well as data on the nature and integrity of the deposits.

Fifteen BHTs and 11 test units were excavated during testing at Lackland AFB. Recovered material included 1,324 pieces of debitage, 23 cores, 127 lithic tools, and over 33 kg (72.8 lb.) of burned rocks as well as 47 ^{14}C samples and 315 g (11.1 oz.) of burned clay. Four buried prehistoric features were recorded; these included two burned rock features at 41BX1093, a burned clay feature at 41BX1122, and a potential pit at 41BX1125. Additionally, a surface hearth was recorded at 41BX1125.

All the sites chosen for evaluation on Lackland AFB were primarily prehistoric in nature, and all but one (41BX1107) were located along Medio Creek. If historic components were present, these components had previously been found not eligible for listing in the NRHP. All of the sites had been initially identified by surface examination and had been subject to testing to 50 cmbs (19.7 in.) or less but were recommended for deep testing (Huhnke 2006; Nickels et al. 1997). While previous research has suggested the possibility of impact on archaeological sites by historic ranching activities in the area, very little historic material was recovered from any of the sites, with the exception of a dump uncovered at 41BX1092 (Huhnke 2006).

At sites 41BX1092 and 41BX1130, deposits appear to be concentrated on the surface. No buried material or intact features were observed. These sites are recommended not eligible for listing in the NRHP due to lack of research potential. This finding is consistent with Huhnke's (2006) recommendation that these two sites were unlikely to contain significant buried materials.

Sites 41BX1069, 41BX1107, and 41BX1121 contained sparse buried materials. At 41BX1069, buried materials were recovered, and there was some evidence of peaks in artifact distribution. However, MSS profiles suggested extensive bioturbation, materials were sparse, and no organic material or intact features were documented. While 41BX1107 contained buried materials, the materials were sparse and inconsistent. MSS values indicated a lack of site integrity, with most material concentrated near the surface. No diagnostic artifacts, organic material, or intact features were documented at 41BX1107. No material was recovered from 41BX1121 below 70 cmbd (27.6 in.), and material was primarily concentrated near the site surface. No diagnostic artifacts, organic material or intact features were documented at 41BX1121. MSS values indicated a lack of surface stability. All of these sites are recommended not eligible for listing in the NRHP due to the lack of research potential. This is consistent with Huhnke's assessment that these sites likely were not in good geological context.

Sites 41BX1093, 41BX1122, 41BX1125, and 41BX1127 are recommended eligible for listing in the NRHP due to their significant research potential (Table 6-1). Intact features were recorded at 41BX1093 and 41BX1122, and a feature was recorded at the surface at 41BX1125. Site 41BX1127 showed evidence of deeply buried, stratified deposits. All four sites yielded samples for radiocarbon dating, and a temporally diagnostic projectile point was recovered from Level 7 (79.5 cmbd; 31.3 in.) at 41BX1125. The burned clay feature documented at 41BX1122 is a well-preserved example of a feature type that is not well understood in this region. Previous investigations have noted the lack of preserved features in the area (Huhnke 2006), increasing the value of those that remain. Sites 41BX1093 and 41BX1127 were previously identified by Huhnke as having more potential to contain buried deposits, but 41BX1122 was considered likely to be in poor geological context and 41BX1125 was

evaluated as likely to contain no buried material below 30 cmbs. All four sites were previously argued to be not eligible for listing in the NRHP based on material recovered at depths up to 50 cmbs (19.7 in.). However, Appendix B of the report of these investigations (Huhnke 2006) indicates that none of the previous testing at 41BX1125 reached depths below 30 cmbs (11.8 in.), or at 41BX1127 below 40 cmbs (15.7 in.). One ST at 41BX1093 did encounter material to 60 cmbs (23.6 in.), and two STs at 41BX1122 reached 60 cmbs (23.6 in.). During the current investigation, burned rock features at 41BX1093 were documented from 39-58 cmbs (15.4-22.8 in.), and the burned clay feature at 41BX1122 was recorded at 19-39 cmbs (7.5-15.4 in.). The depth of the burned clay feature appears consistent with a peak in artifacts recovered from shovel testing noted in Huhnke (2006:Appendix B). Peak deposits at 41BX1125 occurred from 30-40 cmbs (11.8-15.7 in.), 100-110 cmbs (39.4-43.3 in.), and 120-130 cmbs (47.2-51.2 in.). The material seems to consistently date to early in the Late Prehistoric. Peak deposits at 41BX1127 occurred at 50-60 cmbs (19.7-23.6 in.), as well as from 100-130 cmbs (39.4-51.2 in.). MSS values for 41BX1127 indicated some surface stability at this lower level. All four eligible sites contain potentially significant research data above 50 cmbs (19.7 in.), including two buried features above that depth, in contrast with previous findings (Huhnke 2006). Occupation periods at the sites ranged at least from the Late Archaic through the Late Prehistoric periods, with more deeply buried materials at 41BX1125 and 41BX1127 suggesting earlier occupations, although they could not be securely dated during this investigation.

The number of sites and depth of deposits indicates that the Medio Creek area was a focus of prehistoric habitation during the Late Archaic and Late Prehistoric. Organic remains were recovered at the four sites recommended eligible for listing in the NRHP, and two of these contain intact features, indicating that further research at these sites could illuminate the chronology and subsistence practices in the area. While the lack of recovery of formal, diagnostic lithic tools has been noted in previous investigations (Huhnke 2006) and continued to be the case during the current investigations, an increased focus on expedient tool types can be an indication of different patterns of site use and settlement pattern (Binford 1980, 2001). The lithic tool assemblages should be considered in this context. Increased use of expedient tools may be associated with smaller-scale, more frequent mobility among hunter-gatherers (Binford 1980, 2001). The level of complexity of tools can also be associated with resource stress (Binford 2001; Boydston 1989) and risk mitigation (Bousman 1993). Therefore, dismissing the research value of archaeological sites lacking formal lithic tool types runs the risk of eliminating data associated with particular mobility strategies or resource availability. Despite minimal recovery of diagnostic lithic tools during the investigations at 41BX1093, 41BX1122, 41BX1125, and 41BX1127, the presence of buried, intact features at 41BX1093 and 41BX1122, the recovery of organic materials, and evidence of buried deposits with moderate to good integrity indicates significant research potential at these sites.

Impact on the sites recommended eligible for listing in the NRHP (41BX432, 41BX1013, 41BX1093, 41BX1122, and 41BX1125; and 41BX1127, 41BX1211, 41BX1277, 41BX1445,) should be avoided. Sites 41BX432, 41BX1013, 41BX1211, 41BX1277, and 41BX1445 includes historic structural remains. Damage to these structural features should be avoided. Sites 41BX432, 41BX1092, 41BX1122, 41BX1125, and 41BX1127 contain significant deposits below the surface. Impact on these archaeological deposits should be avoided. If impacts cannot be avoided, further excavation may be necessary to recover archaeologically significant data.

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Appendix A: Summary of Bexar County Sites Previously Recorded at Camp Bullis*

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX36	Prehistoric	Campsite; resource procurement	1988	Not Eligible
41BX371	Pre-Archaic	Temporary hunting campsite	1977	Not Eligible
41BX372	Prehistoric	Chipping/habitation site	1977	Not Eligible
41BX373	Prehistoric	Lithic procurement	1977	Not Eligible
41BX374	Prehistoric	Lithic scatter	1977	Not Eligible
41BX375	Prehistoric	Lithic procurement	1977	Not Eligible
41BX376	Late Paleoindian/Pre-Archaic	Campsite	1977	Not Eligible
41BX377	Late Prehistoric, Late Archaic	Hearth, lithic artifacts	1977	Eligible
41BX378	Late Archaic	Knapping site	1977	Not Eligible
41BX379	Late Prehistoric	Knapping site	1977	Not Eligible
41BX380	Late Prehistoric	Hunting camp	1977	Not Eligible
41BX381	Late Paleoindian	Lithic scatter	1977	Not Eligible
41BX382	Late Archaic	Temporary site	1977	Not Eligible
41BX383	Prehistoric, Historic	Lithic scatter, historic dump	1977	Not Eligible (Prehistoric)
41BX384	Prehistoric	Lithic procurement	1977	Not Eligible
41BX385	Late Prehistoric	Knapping site	1977	Not Eligible
41BX386	Late Prehistoric	Lithic procurement	1977	Not Eligible
41BX387	Late Archaic	Temporary work site	1977	Not Eligible
41BX388	Early Archaic	Kill/butchering site	1977	Not Eligible
41BX390	Archaic	Knapping site	1977	Undetermined
41BX391	Prehistoric	Lithic scatter	1977	Not Eligible
41BX392	Prehistoric	Resource collecting	1977	Not Eligible
41BX393	Prehistoric	Lithic scatter	1977	Not Eligible
41BX394	1900-1930	Farm	1977	Not Eligible
41BX402	Prehistoric	Knapping, food processing, occupation	1977	Not Eligible
41BX403	Prehistoric	Lithic scatter	1977	Not Eligible
41BX404	Prehistoric	Lithic procurement	1977	Not Eligible
41BX405	Prehistoric	Knapping site	1977	Not Eligible
41BX406	Prehistoric	Quarry site	1977	Not Eligible
41BX407	Prehistoric	Campsite	1977	Not Eligible
41BX408	Paleoindian, Middle Archaic	Campsite	1977	Not Eligible
41BX409	Pre-Archaic	Camping, knapping, food processing, woodworking	1977	Not Eligible
41BX410	Prehistoric	Lithic scatter	1977	Not Eligible
41BX411	Prehistoric	Quarry site	1977	Not Eligible
41BX412	Prehistoric	Campsite	1977	Not Eligible

*Appendix A: Summary of Bexar County Sites Previously Recorded at Camp Bullis**

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX413	Prehistoric	Campsite	1977	Not Eligible
41BX414	Prehistoric	Quarry site	1977	Not Eligible
41BX415	Prehistoric	Quarry site	1977	Not Eligible
41BX416	Prehistoric	Reduction site	1977	Not Eligible
41BX417	Prehistoric	Quarry site	1977	Not Eligible
41BX418	Prehistoric	Lithic scatter	1977	Not Eligible
41BX419	Prehistoric	Quarry site	1977	None
41BX420	Historic, prehistoric	German ranch, campsite	1977	Eligible (prehistoric)
41BX421	Prehistoric	Lithic concentration	1977	None
41BX423	Prehistoric	Lithic scatter	1977	Undetermined
41BX424	Late Paleoindian	Hunting Camp	1977	Not Eligible
41BX425	Prehistoric	Burned rock midden	1977	Eligible
41BX426	Prehistoric	Lithic scatter	1977	Not Eligible
41BX428	Prehistoric	Burned rock midden	1977	Eligible
41BX429	Prehistoric	Lithic procurement	1977	Not Eligible
41BX430	Prehistoric	Burned rock midden	1977	Eligible
41BX431	Prehistoric	Campsite	1977	Not Eligible
41BX432	Late 19th century, prehistoric	Historic home, burned rock midden	1977	Prehistoric Not Eligible, historic eligible
41BX433	Late 19th century	Farmhouse	1977	Not Eligible
41BX434	Historic	House foundations	1977	Not Eligible
41BX504	Prehistoric	Lithic scatter	1979	None
41BX679	Prehistoric	Campsite	1985	None
41BX802	Late Prehistoric	Rockshelter	1989	Not Eligible
41BX803	Late Paleoindian/Early Archaic	Lithic scatter	1989	None
41BX804	Archaic	Lithic scatter	1989	Not Eligible
41BX805	Archaic	Lithic scatter	1989	None
41BX806	Prehistoric	Open camp/lithic scatter	1989	None
41BX807	Archaic	Open camp/lithic scatter	1989	None
41BX808	Prehistoric	Open camp/lithic scatter	1989	None
41BX809	Prehistoric	Open camp/lithic scatter	1989	None
41BX810	Prehistoric	Open camp/lithic scatter	1989	None
41BX811	Late Prehistoric, late Archaic	Lithic scatter	1989	Not Eligible
41BX812	Archaic	Open campsite/lithic scatter	1989	None
41BX813	Prehistoric	Open campsite/lithic scatter	1989	None
41BX814	Prehistoric	Lithic scatter	1989	None
41BX815	Archaic	Lithic scatter	1989	None
41BX816	Prehistoric	Lithic scatter	1989	None
41BX817	Archaic	Lithic scatter/open campsite	1989	None
41BX818	Middle to Late Archaic	Burned rock midden/campsite	1989	None
41BX819	Late Prehistoric II, Late Archaic	Lithic scatter	1989	None

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX820	Mid-19th century to 1941	Historic ranch	1989	None
41BX821	1917-postWWII	Historic structure; powder magazine	1989	None
41BX822	ca. 1917	Historic structure (military)	1989	None
41BX823	ca. 1917	Historic structure (military)	1989	None
41BX824	1938-1942	Historic structure (military)	1989	None
41BX825	WWII era	Historic structure	1989	None
41BX826	ca. 1917	Historic structure (military)	1989	Not Eligible
41BX827	ca. 1917	Historic structure (military)	1989	None
41BX828	ca. 1917	Historic structure (military)	1989	Not Eligible
41BX918	Prehistoric	Campsite	1988	Eligible
41BX919	Prehistoric	Campsite	1988	None
41BX921	Prehistoric	Campsite	1988	None
41BX922	Prehistoric	Campsite	1988	None
41BX923	Prehistoric	Campsite	1988	Not Eligible
41BX924	Prehistoric	Campsite	1988	Not Eligible
41BX925	Prehistoric	Lithic scatter	1988	None
41BX1010	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1011	Late Paleoindian, Early Archaic, Late Archaic, early to middle 20th century	Campsite, historic trash dump	1998	Not Eligible (both components)
41BX1012	ca. 1917	Historic military cistern	1998	Not Eligible
41BX1013	19th to 20th century	Historic wells	1998	Undetermined
41BX1014	ca. 1917	Historic sewer treatment facility	1998	Not Eligible
41BX1015	Historic	Historic dump	1994	Not Eligible
41BX1016	Middle Archaic	Campsite	1994	Not Eligible
41BX1017	Prehistoric, Historic	Lithic scatter, military training	1994	Not Eligible (both components)
41BX1018	Prehistoric	Lithic scatter	1994	Not Eligible
41BX1019	Early 20th century	Historic trash dump	1994	Not Eligible
41BX1020	Historic	Military structural foundation	1994	Not Eligible
41BX1021	Historic	Military work camp	1994	Not Eligible
41BX1022	Middle Archaic	Open campsite	1994	Not Eligible
41BX1023	Early Archaic through Toyah	Open campsite	1994	Not Eligible
41BX1024	Historic	Ranch/farm	1994	Not Eligible
41BX1025	Prehistoric	Lithic scatter	1994	Not Eligible
41BX1026	Late Archaic, Late Prehistoric/Neo-American	Open campsite	1994	Not Eligible
41BX1027	Prehistoric	Open campsite	1994	Not Eligible
41BX1028	Historic	Military bunker	1994	Undetermined
41BX1029	Early Archaic	Open campsite	1994	Eligible
41BX1030	Prehistoric	Lithic scatter	1994	Not Eligible

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1031	Late Prehistoric/Neo-American	Rockshelter	1994	Undetermined
41BX1032	Prehistoric	Rockshelter	1994	Undetermined
41BX1033	Middle Archaic, Late Prehistoric/Neo-American	Open campsite	1994	Not Eligible
41BX1034	Early 20th century	Military wells	1994	Not Eligible
41BX1035	Early Archaic	Open campsite	1994	Undetermined
41BX1036	ca. 1938	Military bunker	1994	Undetermined
41BX1037	Middle Archaic, WWII era	Open campsite, military ordinance	1994	Not Eligible (prehistoric)
41BX1038	Early Archaic	Lithic scatter	1994	Not Eligible
41BX1039	Prehistoric	Lithic scatter	1994	Not Eligible
41BX1040	Late Prehistoric/Neo-American	Lithic scatter	1994	Not Eligible
41BX1041	Archaic	Open campsite	1994	Not Eligible
41BX1042	WWII era	Military training feature	1994	Not Eligible
41BX1043	Middle Archaic	Open campsite	1994	Not Eligible
41BX1044	Early Archaic, Historic	Open campsite, farm complex	1994	Eligible (both components)
41BX1046	Prehistoric	Lithic scatter	1994	Not Eligible
41BX1047	Early Archaic	Open campsite	1994	Not Eligible
41BX1048	Early Archaic, Historic	Open campsite, "Rough Riders" movie set	1994	Not Eligible (both components)
41BX1049	Early Archaic	Open campsite	1994	Not Eligible
41BX1050	WWII era	Military concrete structure	1994	Not Eligible
41BX1051	Prehistoric, Historic	Open campsite, ranch	1994	Not Eligible
41BX1052	Prehistoric	Lithic scatter	1994	Not Eligible
41BX1053	Late Paleoindian	Lithic scatter	1994	Not Eligible
41BX1132	Prehistoric	Quarry	1995	None
41BX1133	Prehistoric	Quarry	1995	Not Eligible
41BX1134	Prehistoric	Lithic scatter	1995	Not Eligible
41BX1135	Prehistoric	Quarry	1995	Not Eligible
41BX1136	Prehistoric	Campsite	1995	Not Eligible
41BX1137	Prehistoric	Quarry	1995	Not Eligible
41BX1153	Prehistoric	Lithic scatter	1997	Not Eligible
41BX1154	Prehistoric	Lithic scatter	1997	Not Eligible
41BX1155	Prehistoric	Lithic scatter	1997	Not Eligible
41BX1210	Historic	Well in cave	1998	Not Eligible
41BX1211	Prehistoric, Historic	Lithic scatter, rock wall/ farmstead	1998	Eligible (both components)
41BX1212	Middle Archaic, Late Prehistoric/Neo-American	Lithic scatter	1998	Not Eligible
41BX1213	Early Archaic	Open campsite	1994	Not Eligible
41BX1214	Prehistoric	Campsite	1998	Not Eligible

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1215	Prehistoric	Campsite	1998	Not Eligible
41BX1216	Early Archaic	Campsite	1994	Not Eligible
41BX1217	Prehistoric		1998	Not Eligible
41BX1218	Prehistoric		1998	Not Eligible
41BX1219	Prehistoric		1998	Not Eligible
41BX1220	Prehistoric		1998	Undetermined
41BX1221	Prehistoric		1998	Not Eligible
41BX1222	Historic		1998	Not Eligible
41BX1223	Historic		1998	Not Eligible
41BX1224	Prehistoric		1998	Not Eligible
41BX1225	Prehistoric		1998	Not Eligible
41BX1226	Prehistoric		1998	Not Eligible
41BX1227	Prehistoric		1998	Not Eligible
41BX1228	Prehistoric		1998	Not Eligible
41BX1229	Prehistoric		1998	Not Eligible
41BX1230	Prehistoric		1998	Not Eligible
41BX1231	Prehistoric		1998	Not Eligible
41BX1242	Historic	Military observation bunker	1998	Not Eligible
41BX1243	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1244	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1245	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1246	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1247	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1248	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1249	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1251	Prehistoric	Cave burial, lithic procurement	2000	Eligible
41BX1252	Prehistoric	Lithic procurement	2000	None
41BX1253	Caddo	Cave site	2000	None
41BX1254	Early 20th century, Middle Archaic	Historic trash dump, isolated lithics	2000	Not Eligible
41BX1255	Early 20th century	Historic trash dump	2000	None
41BX1260	Historic	Historic military training facility	1998	Not Eligible
41BX1261	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1276	ca. 1938-1940	Historic military bunker	1998	Eligible
41BX1277	ca. 1938-1940	Historic military bunker	1998	Eligible
41BX1278	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1279	Late Prehistoric/Native American	Lithic scatter	1998	Not Eligible
41BX1280	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1281	Early/Middle/Late Archaic	Lithic scatter/possible lithic procurement	1998	Not Eligible

*Appendix A: Summary of Bexar County Sites Previously Recorded at Camp Bullis**

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1282	Historic, Prehistoric	Historic military gun emplacement, lithic scatter, campsite	1998	Not Eligible (both components)
41BX1283	Historic	Historic military gun emplacement	1998	Not Eligible
41BX1284	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1285	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1286	Late Prehistoric/Neo-American	Lithic scatter, campsite	1998	Not Eligible
41BX1287	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1288	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1289	Late Archaic	Lithic scatter	1998	Not Eligible
41BX1290	Late Archaic	Lithic scatter	1998	Not Eligible
41BX1291	Prehistoric	Lithic scatter, campsite	1998	Not Eligible
41BX1292	Prehistoric	Lithic scatter, campsite	1998	Not Eligible
41BX1293	Late Prehistoric/Neo-American	Lithic scatter	1998	Not Eligible
41BX1294	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1295	Prehistoric	Lithic scatter	1998	Not Eligible
41BX1304	Late archaic, late Prehistoric/ Neo-American	Campsite	1998	Not Eligible
41BX1309	Historic	Historic refuse site/cave	1999	None
41BX1338	Early/Middle/Late Archaic	Burned rock midden, campsite, lithic scatter	1999	Not Eligible
41BX1349	Prehistoric	Lithic scatter	2000	Not Eligible
41BX1351	Prehistoric	Lithic scatter, burned rock midden	2000	Not Eligible
41BX1352	Prehistoric	Lithic scatter	2000	Not Eligible
41BX1353	Prehistoric	Lithic scatter	2000	Not Eligible
41BX1468	Historic/Prehistoric	Cave sitek, human remains and modern trash	2002	Undetermined
41BX1469	Prehistoric	Rock shelter	2002	Not Eligible
41BX1470	Prehistoric	Cave site with human remains	2002	Undetermined
41BX1471	Prehistoric	Cave site with human remains	2002	Undetermined
41BX1472	Late Archaic	Sinkhole	2002	None
41BX1539	Prehistoric	Lithic scatter	2003	Not Eligible
41BX1540	Prehistoric	Lithic scatter	2003	Not Eligible
41BX1541	Historic	Historic trash dump	2003	None
41BX1542	Prehistoric	Lithic scatter	2003	Not Eligible
41BX1543	Prehistoric	Lithic scatter	2003	Not Eligible
41BX1635	Prehistoric	Lithic scatter	2006	Undetermined
41BX1636	Prehistoric	Lithic scatter	2006	Undetermined
41BX1637	Prehistoric	Lithic scatter	2006	Undetermined
41BX1638	Prehistoric	Lithic scatter	2006	Undetermined
41BX1639	Prehistoric	Lithic scatter	2006	Undetermined
41BX1640	Prehistoric	Lithic scatter	2006	Undetermined

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1641	Prehistoric	Lithic scatter	2006	Undetermined
41BX1642	Prehistoric	Lithic scatter	2006	Undetermined
41BX1643	Prehistoric	Lithic scatter	2006	Undetermined
41BX1644	Prehistoric	Lithic scatter	2006	Undetermined
41BX1645	Prehistoric	Lithic scatter	2006	Undetermined
41BX1646	Prehistoric	Lithic scatter	2006	Undetermined
41BX1647	Prehistoric	Lithic scatter	2006	Undetermined
41BX1648	Prehistoric	Lithic scatter	2006	Undetermined
41BX1649	Prehistoric	Lithic scatter	2006	Undetermined
41BX1650	Prehistoric	Lithic scatter	2006	Undetermined
41BX1651	Prehistoric	Lithic scatter	2006	Undetermined
41BX1652	Prehistoric	Lithic scatter	2006	Undetermined
41BX1653	Prehistoric	Lithic scatter	2006	Undetermined
41BX1654	Prehistoric	Lithic scatter	2006	Undetermined
41BX1655	Prehistoric	Lithic scatter	2006	Undetermined

*Data from Texas Archaeological Sites Atlas (THC 2020)

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Appendix B: Summary of Previously Recorded Sites at Lackland AFB*

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1001	Early Archaic	Open campsite/lithic procurement	1993	Eligible
41BX1002	Archaic, late 19th to 20th century	Open campsite/lithic procurement, Historic homestead	1993	None
41BX1006	Prehistoric	Lithic quarry	1993	Undetermined
41BX1055	Prehistoric	Lithic quarry	1994	None
41BX1056	Prehistoric	Lithic quarry	1995	None
41BX1057	Prehistoric	Lithic quarry	1995	None
41BX1058	Prehistoric	Lithic quarry	1995	None
41BX1059	Prehistoric	Lithic quarry	1995	None
41BX1060	Early Archaic	Prehistoric campsite	1997	Not Eligible
41BX1061	Historic	Historic sewer line	1997	Not Eligible
41BX1065	Middle to Transitional Archaic	Campsite	1997	Undetermined
41BX1066	Prehistoric	Campsite	1997	Undetermined
41BX1069	Prehistoric	Campsite, lithic quarry	1997	Undetermined
41BX1070	Prehistoric	Lithic quarry	1997	None
41BX1071	Early Archaic	Open campsite, lithic quarry	1995	None
41BX1072	Early Archaic	Open campsite, lithic quarry	1995	None
41BX1073	Prehistoric	Lithic quarry, open campsite	1995	None
41BX1074	Prehistoric, Historic	Open campsite, historic dump	1995	None
41BX1075	Prehistoric	Lithic quarry	1997	None
41BX1076	Prehistoric	Open campsite, lithic quarry	1995	None
41BX1078	Prehistoric	Lithic quarry	1995	None
41BX1079	Prehistoric	Lithic quarry	1995	None
41BX1080	Prehistoric	Lithic quarry	1995	None
41BX1081	Prehistoric	Lithic quarry	1995	Not Eligible
41BX1082	Prehistoric	Lithic quarry, campsite	1995	Not Eligible
41BX1083	Prehistoric	Lithic quarry	1995	None
41BX1084	Prehistoric	Lithic quarry	1995	None
41BX1085	Prehistoric	Lithic quarry	1995	None
41BX1086	Prehistoric	Lithic quarry, campsite	1995	None
41BX1087	Late Archaic	Open campsite	1995	Not Eligible
41BX1088	Early/Middle/Late Archaic	Open campsite, lithic quarry	1995	None
41BX1089	Prehistoric	Lithic quarry	1995	None
41BX1090	Prehistoric	Lithic quarry	1997	None
41BX1091	Prehistoric	Lithic quarry	1997	None
41BX1092	Prehistoric	Open campsite	1997	Undetermined
41BX1093	Prehistoric	Open campsite	1995	Undetermined

Trinomial	Time Period	Site Type	When First Recorded	NRHP Eligibility Assessment
41BX1094	Prehistoric	Lithic quarry	1997	None
41BX1095	Prehistoric	Lithic quarry	1995	None
41BX1096	Prehistoric	Lithic quarry	1995	None
41BX1097	Prehistoric	Open campsite, lithic quarry	1995	None
41BX1098	Prehistoric	Lithic quarry	1995	None
41BX1099	Prehistoric	Lithic quarry	1995	None
41BX1100	Prehistoric	Open campsite, lithic quarry	1995	Not Eligible
41BX1101	Middle/Late Archaic	Open campsite, lithic quarry	1995	Not Eligible
41BX1102	Middle Archaic	Open campsite	1995	None
41BX1103	Transitional Archaic	Open campsite	1995	None
41BX1104	Early Archaic to Late Prehistoric	Lithic quarry, open campsite	1995	Undetermined
41BX1105	Prehistoric	Lithic quarry	1995	Not Eligible within ROW
41BX1106	Prehistoric	Lithic quarry	1995	Not Eligible within ROW
41BX1107	Early Archaic, Transitional Archaic	Lithic quarry	1995	Undetermined
41BX1108	Prehistoric	Open campsite	1995	Eligible
41BX1109	Prehistoric	Open campsite	1995	None
41BX1110	Prehistoric	Lithic quarry	1995	None
41BX1111	Prehistoric	Lithic quarry	1995	None
41BX1112	Prehistoric	Lithic quarry	1995	None
41BX1113	Prehistoric	Lithic quarry	1995	None
41BX1114	Paleo-Indian, Early Archaic	Lithic quarry	1995	None
41BX1115	Prehistoric	Open campsite	1995	None
41BX1116	Prehistoric	Lithic quarry	1995	None
41BX1117	Prehistoric	Lithic quarry	1995	None
41BX1118	Prehistoric	Lithic quarry	1995	None
41BX1119	Prehistoric	Lithic quarry	1995	None
41BX1120	Prehistoric	Open campsite	1995	Not Eligible
41BX1121	Middle Archaic, Historic	Campsite, lithic quarry, historic line camp	1995	Not Eligible (both components)
41BX1122	Late Prehistoric	Open campsite	1995	Undetermined
41BX1123	Prehistoric	Lithic quarry	1995	None
41BX1124	Prehistoric, Historic	Open campsite, historic dump	1997	Not Eligible
41BX1125	Prehistoric	Open campsite	1995	Undetermined
41BX1126	Prehistoric	Open campsite	1995	Eligible
41BX1127	Prehistoric	Open campsite	1995	Undetermined
41BX1128	Historic	Structural debris	1995	Not Eligible
41BX1129	Historic	Farmstead	1995	None
41BX1130	Prehistoric, early 20th century	Open campsite, lithic quarry, historic dump	1995	Undetermined
41BX1208	Prehistoric	Lithic scatter	1996	None

*Data from Texas Archaeological Sites Atlas (THC 2020)

Appendix C: Geoarchaeological Assessment Report by Terracon

Geoarchaeological Assessment Report

JBSA NRHP ELIGIBILITY TESTING: GEOARCHAEOLOGICAL ASSESSMENT OF NINE PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES ALONG LEON AND MEDIO CREEKS

SAN ANTONIO, BEXAR COUNTY, TEXAS

October 1, 2020

Terracon Project No. 90197116

Prepared for:
Center for Archaeological Research
University of Texas – San Antonio
San Antonio, Texas

Prepared by:

Victoria C. Pagano, M.A., RPA
Terracon Consultants, Inc.
San Antonio, Texas

October 2, 2020

University of Texas – San Antonio
Center for Archaeological Research
One UTSA Circle
San Antonio, TX 78249

Attention: Ms. Sarah Wigley
E-mail: Sarah.Wigley@utsa.edu

RE: **Geoarchaeological Assessment Report**
JBSA NRHP Eligibility Testing: Geoarchaeological Assessment of Nine Previously Recorded Archaeological Sites Along Leon and Medio Creeks
San Antonio, Bexar County, Texas
Terracon Project No. 90197116

Dear Ms. Wigley:

Terracon is pleased to submit this report of findings from geoarchaeological assessment of nine previously recorded archaeological sites located inside the Joint Base San Antonio complex in southwest San Antonio, Bexar County, Texas. Archaeological investigations were conducted in compliance with federal and state accepted standards.

The University of Texas at San Antonio (UTSA) retained the services of Terracon Consultants, Inc. (Terracon) to make observations of geomorphological and soil contexts of a suite of nine archaeological sites being investigated at Joint Base San Antonio (JBSA). The overall archaeological project was designed to test the archaeological sites for their eligibility to meet criteria for listing on the National Register of Historic Places (NRHP). Terracon's role was intended to examine the physical context of archaeological deposits and approach an understanding of integrity, which is a component of NRHP eligibility determination. David M. Yelacic took part in the initial investigations and assisted in the interpretation of those sites, however, assessment of the final sites visited, and reporting was completed after Mr. Yelacic left Terracon.

Sincerely,
Terracon Consultants, Inc.

Pagano, Victoria C
Digitally signed by Pagano, Victoria C
DN: cn=Pagano, Victoria C, ou=General Users, email=Victoria.Pagano@terracon.com
Date: 2020.10.02 13:41:57 -05'00'

Victoria C. Pagano, MA, RPA
Project Archaeologist

Victoria Pagano on behalf of Jon Lohse:
Pagano, Victoria C
Digitally signed by Pagano, Victoria C
DN: cn=Pagano, Victoria C, ou=General Users, email=Victoria.Pagano@terracon.com
Date: 2020.10.02 13:41:45 -05'00'

Jon C. Lohse, PhD
Manager, Environmental Planning

Attachments: Detailed profile descriptions; illustrated profiles; photos

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Geoarchaeological Assessment Report:

JBSA NRHP Eligibility Testing: Geoarchaeological Assessment of Nine Previously Recorded Archaeological Sites Along Medio Creek

San Antonio, Bexar County, Texas
Terracon Project No. 90197116

1.0 INTRODUCTION

The University of Texas at San Antonio (UTSA) retained the services of Terracon Consultants, Inc. (Terracon) to make observations of geomorphological and soil contexts of a suite of nine archaeological sites being investigated at Joint Base San Antonio (JBSA). The overall archaeological project was designed to test the archaeological sites for their eligibility to meet criteria for listing on the National Register of Historic Places (NRHP). Terracon's role was intended to examine the physical context of archaeological deposits and approach an understanding of integrity, which is a component of NRHP eligibility determination.

Because of budget and schedule constraints among UTSA, JBSA, and Terracon, Terracon geoarchaeologists, primarily David Yelacic with assistance from Victoria Pagano, made pointed visits to archaeological sites once work had started at each. From the beginning of the project, archaeological investigations could only take place on weekends, and beginning in the spring of 2020, fieldwork was limited to Sundays. Therefore, Terracon geoarchaeological excursions were scattered across the calendar between December of 2019 and August of 2020. David M. Yelacic took part in the initial investigations and assisted in the interpretation of those sites, however, assessment of the final sites visited, and reporting was completed after Mr. Yelacic left Terracon.

2.0 PROJECT AREA DESCRIPTION

Specific to this phase of the work conducted by CAR, each project area was defined as nine previously recorded archaeological sites which are along sections of Medio Creek within the JBSA compound. Two sites, 41BX1092 and 41BX1093) were located near the northern boundary of the defined overall area of potential effect (APE), both on the eastern side of Medio Creek. The remaining six sites (41BX1069, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130) were located on both the eastern and western sides of the creek and were clustered near the central and southern portions of the creek within the APE boundary.

As seen on aerial imagery and confirmed by visual inspection, the sites have different geographic and geomorphic settings which influence the natural and cultural deposits of the sites. Generally, the sites were located on terraces, floodplains, and the abandoned channel bed. Exact local topography and setting of the trenches and site will be further described in later sections of this report.

3.0 METHODS

For each site, observations were made of the broader landscape at the location, as well as site-specific sediment and soil as seen in backhoe trenches. At the outset of the project, UTSA and Terracon met to discuss project parameters and backhoe trench placements in general, and from there, UTSA archaeologists guided and monitored backhoe excavations. Most often, at least one backhoe trench was excavated prior to Terracon arriving at a site, and in many cases, test units were completed as well.

Terracon documented the landscape and backhoe trench profile exposures through notes and photographs. Profile exposure notes were based on a combination of recording techniques that includes terminology and observation points from the fields of geology and soil science: soil color, texture, structure, inclusions, and lower boundary geometry, as well as miscellaneous notes, were made for each zone. Samples were not collected by Terracon geoarchaeologists.

4.0 RESULTS

A total of 15 backhoe trenches (BHT) were excavated and two excavation unit block profiles were documented across the nine sites. The following section describes the general geomorphic setting of each site, a general discussion of deposits observed in each trench or arroyo cut, and any cultural materials that were encountered. Detailed descriptions of deposits observed in trenches can be found in Appendix B following this report.

4.1 41BX1069 – Backhoe Trenches 1 and 2

Site 41BX1069 is prehistoric site on the western margin of the Medio Creek alluvial valley. The site is recorded on the shoulder of an ancient terrace above the modern T0/T1 floodplain. The terrace that the site is recorded on is discontinuous on the west/right side of the alluvial channel; it is dissected by erosional channels or gullies. The opposite side of the stream was not explored. The channel is greater than 15 meters below the site elevation. This relict terrace is also relatively narrow and situated at the base of adjacent uplands, which in modern times are cleared and actively eroding.

Two trenches (BHT 1 and BHT 2) excavated at the site reveal a consistent soil profile at the location. The modern topsoil has a thin root/plow zone overlying a relatively well-developed soil with shallow carbonates and illuvial clay within the upper meter. Additionally, matrix supported poorly sorted gravels situated within the upper meter of soil profile would suggest colluvial origin of the sediment matrix of the site. Colluvial site matrix may contain intact cultural deposits, but artifacts may also have been colluvially transported to their location.

Generally, the surficial and shallowly buried archaeological site, while close in distance to Medio Creek, is located at a position on the landscape that would likely not contain deeply buried, stratified archaeological materials. A possible relict terrace between the level of the modern

floodplain and site may have better potential for buried archaeological materials, and the margin of the floodplain may also have increased potential for intact buried archaeological materials at the location.

4.2 41BX1092 – Backhoe Trenches 3 and 4

Prehistoric site 41BX1092 is situated in a general lowland environment with dense (mostly young) woody vegetation and grasses where sunlight breaks through the canopy. Terrain surrounding the archaeological site is relatively flat compared to the high relief upland areas. Two backhoe trenches were excavated at the site, BHT 3 and 4. (Trenches were excavated in December and not visited until February, but 1 m columns of profile exposure were cleaned to make observations).

The first, southern backhoe trench included a developed soil above a gravel bed, which was lying atop olive brown fine-grained sediment. The gravel bed in the middle of the soil profile consisted of greater than 50-percent poorly sorted subround limestone and cherty gravels less than 10 cm diameter. This deposit would indicate that the channel once traversed the location, and it would apparently limit archaeological material to the upper 75 centimeters of the soil profile at this location. A small fragment of barbed wire fence and charcoal were the only cultural materials observed. The second trench, approximately 10 meters away, did not contain the gravel bed and instead exposed a typical intact soil profile. No cultural materials were observed in the second backhoe trench profile exposure.

Considering the location the site occupies on the landscape, the site would inherently contain greater potential for having stratified cultural deposits. Portions of the site, however, would have been impacted by high-energy stream flow.

4.3 41BX1093 – Backhoe Trenches 7 and 8

Site 41BX1093 is situated on the west side of Medio Creek on a shoulder slope of an upland area. The cobble-strewn surface is approximately 20 m west of the creek and approximately 3.5 meters above the channel. Two trenches were excavated at the site – BHT 7 and BHT 8.

The southern trench exposed a soil profile consisting of a well-developed soil above a very gravelly clay that began approximately 60 centimeters below the modern surface. The lowest-most unit, underlying the gravel bed, contained up to three centimeters calcium carbonate concretions. The second trench was excavated approximately seven meters from the slope break. This second, northern trench also encountered gravels by approximately 75 centimeters below the surface; the gravel bed of the second trench, however, continued to terminal depth.

Considering the abundant artifacts at the surface, and considering that the soil profiles were generally shallow, it is unlikely that deeply buried and stratified cultural resources would be present at the site.

4.4 41BX1107 – Backhoe Trenches 5 and 6

Prehistoric site 41BX1107 is situated just northwest of Hole 4 at the Gateway Hills Golf Course. The terrain surrounding the archaeological site slopes northwards toward an ephemeral drainage then continues sloping along the west and southwest towards Leon Creek which bows around the site's location. The slope is approximately consistent from the hill top to the low-lying stream, except for possibly one distinguishable terrace. It is clear, however, that development of the golf course and prior land use impacted the landscape greatly. Two trenches – BHT 5 and BHT 6-- were excavated within the site to explore for buried archaeological materials.

The first trench was excavated approximately 25 meters northwest of the fourth hole green. The trench profile exposure showed a disturbed zone on top of a stable soil bearing artifacts between 20-40 centimeters below the modern surface. The second trench, which was excavated approximately 15 meters to the south in the same general position on the landscape, did not expose an upper disturbed sediment, but it did also contain artifacts. Cultural materials in the second trench were observed near the surface down to approximately 75 centimeters below surface.

Considering the site's hilltop and shoulder slope location, it is understood that there is a relatively low probability of deeply buried, intact and stratified cultural resources located within the recorded portion of 41BX1107.

4.5 41BX1121 – Backhoe Trenches 9 and 10

Site 41BX1121 is a prehistoric site situated on the shoulder slope of a Pleistocene terrace above Medio Creek. Artifacts are scattered across the surface, but none were observed in the site profile exposures during geoarchaeological documentation. Subsurface archaeological deposits were explored by two backhoe trench excavations, BHT 9 and BHT 10.

The first trench was excavated into the slightly sloping shoulder of the landform approximately 30 meters south of Medio Creek. This trench revealed weathering limestone bedrock at approximately 120 centimeters below surface underlying a calcareous subsoil encountered by approximately 80 centimeters below the modern surface. The two-centimeter diameter calcium carbonate nodules. The second trench was excavated approximately 20 meters south away headed away from the stream. The landscape at this location was relatively level and approximately one meter higher than at the first trench. Here, the same soil stratigraphic zones were encountered as in the first trench, but slightly higher on the landscape, the soil profile was compressed; marly bedrock was discovered by approximately 75 centimeters below surface.

The relatively shallow soil profile and landform would suggest that 41BX1121 has relatively low potential for containing deeply buried and stratified archaeological materials despite its proximity to the creek.

4.6 41BX1122 – Backhoe Trenches 11 and 12

Two trenches were excavated into a high terrace above Medio Creek on which site 41BX1122 is recorded. The floodplain is absent on the west side of the creek at this location, and the surface of the landform is approximately 5 meters above the modern channel. Additionally, the site is situated near the confluence of Medio Creek and an unnamed tributary. Heavy rains affected the landscape and creek shortly prior to observations.

The first trench (BHT 11) excavated at the location revealed a soil profile that consisted of a developing topsoil above a gravel bed containing poorly sorted subround limestone and cherty gravels. Below the gravel zone was a zone of calcium carbonate nodules approaching two centimeters in diameter. The second trench (BHT 12) revealed similar deposits to the previous trench, however, BHT12 lacked the gravel bed observed in BHT11. In the second trench, a burned rock feature was discovered at within the upper 50 centimeters of the profile.

The intact feature discovered in the profile of the second trench suggests relatively improved potential for there to be shallowly buried archaeological deposits elsewhere at the site. The site's position on the landscape suggests, however, that there is little potential for deeply buried or stratified cultural deposits.

4.7 41BX1125 – Test Units 1 and 2

Site 41BX1125 is situated approximately 1-meter west of Medio Creek and approximately 2 meters above the current channel on top of paleo-terrace deposits that have been cut through by the creek. Here, the woody vegetation is moderately dense with some grass where sunlight breaks through the canopy. This site location contrasts with the eastern side of the creek which is the low, wide creek bed/ flood-bank in which the current channel (approximately 3 meters at its widest) meanders across limestone gravel and cobble bed. A channel gravel is visible approximately 1.5 meters below surface in the cut-bank profile below the recorded site and extends down to the current channel. However, gravel beds are visibly eroding from the cut bank beginning at depths of 80 centimeters below surface.

One excavation unit block measuring 2 meters by 1-meter oriented east to west (Test Unit 1 and 2 respectively) was hand-excavated (trowel and shovels) to explore for buried artifacts. Generally, deposits observed across the unit profiles revealed a topsoil (Zone 1) over subsoil (Zones 2 and 3) over limestone channel gravels (Zone 4). Limestone gravel (rounded and sub-rounded) is dispersed throughout all zones observed at varying densities and sizes, but no distinctly bedded lens was observed. The lower boundary of Zone 3 over Zone 4 gravels was slightly wavy which likely reflects the topography of the old channel bed. Numerous burrows were observed within the excavation unit profiles, one of these was in the northern profile and extended from Zone 2 down to as deep as 95 centimeters below surface into Zone 4.

The position on the landscape, coupled with the results of the excavation unit, indicate that this site has potential for shallowly buried cultural materials but relatively little potential for deeply buried and stratified cultural materials. It is important to note that excavations at the site were limited to hand excavations due to access restricting the use of a backhoe for trenching.

4.8 41BX1127 – Test Units 8 and 9

Site 41BX1127 is located at in the old, broad floodplain of Medio Creek. The site is situated on a relatively flat surface with some undulating topography closer to the current creek path. Also noted on the landscape to the northwest of the site, is an artificial landform where the creek bed was built up for a road and bridge. The bridge however has been razed or destroyed by flooding and remnants of the bridge were observed in the creek and downstream from the original location. Here, the vegetation is moderate, primarily with young growth of woody vegetation and some more mature saplings of trees. Additionally, there is a lot of recent flood debris that has been caught in the vegetation and on the surface.

One excavation unit block measuring 2 meters by 1 meter, oriented north to south (Test Units 8 and 9 respectively) was hand-excavated (trowel and shovels) to explore for buried artifacts at 41BX1127. The unit is approximately 100 meters northeast of the current channel. This site area is a direct contrast to 41BX1125 which was above the current creek and floodplain. No artifacts were encountered during geoarchaeological observation. Generally, the deposits revealed across the units consisted of a shallow topsoil (Zone 1) and subsoil (Zone 2) over fairly sorted, bedded limestone channel gravel (Zones 3 and 4) that represent the ancient floodplain and creek bed.

The position on the landscape, coupled with the results of the excavation unit, indicate that this site has potential for shallowly buried cultural materials but relatively little potential for deeply buried and stratified cultural materials. It is important to note that excavations at the site were limited to hand excavations due to access restricting the use of a backhoe for trenching.

4.9 41BX1130 – Backhoe Trenches 13, 14, and 15

Site 41BX1130 is located at the base of a broad upland area and near an extremely large earthen structure. The site is situated on a flat landscape approximately 100 meters west of Medio Creek. Here, the vegetation is dense, primarily with young growth woody vegetation and grass where sunlight breaks through the canopy. Three trenches, BHT 13, BHT 14, and BHT 15, were excavated to explore for buried artifacts at 41BX1130.

Generally, the three backhoe trenches exposed similar soil profiles with only depths of transitions between zones/horizons differing slightly. An isolated gravel lens was situated in the at the top of the Bk horizon in the middle trench. No artifacts were encountered during geoarchaeological observation.

The site's position on the landscape, coupled with the results of backhoe trenching, suggests that this site has relatively little potential for deeply buried and stratified cultural materials.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The University of Texas at San Antonio (UTSA) retained the services of Terracon Consultants, Inc. to make observations of geomorphological and soil contexts of a suite of nine archaeological sites being investigated at JBSA. The overall archaeological project was designed to test the archaeological sites for their eligibility to meet criteria for listing on the NRHP. Terracon's role was intended to examine the physical context of archaeological deposits and approach an understanding of integrity, which is a component of NRHP eligibility determination.

A total of 15 backhoe trenches and two excavation block profiles were documented for the nine archaeological sites. Recommendations for eligibility (Table 5-1) were based upon observations of the landscape and soils from excavations and were used to evaluate of these sites from a geoarchaeological perspective.

Of the nine sites tested, only one site (41BX1092) showed potential for deeply buried or stratified cultural deposits. The remaining six sites, 41BX1069, 41BX1093, 41BX1107, 41BX1121, 41BX1122, 41BX1125, 41BX1127, and 41BX1130, showed an increased potential for intact, shallowly buried (within the upper 1-meter) cultural deposits but little potential for deeply buried or stratified cultural deposits.

Table 5-1. Site recommendations for further work

Site Number	Potential for Deeply Buried Deposits	Recommendation
41BX1069	Little to none	No further deep testing recommended
41BX1092	Moderate	Further deep testing recommended
41BX1093	Little to none	No further deep testing recommended
41BX1107	Little to none	No further deep testing recommended
41BX1121	Little to none	No further deep testing recommended
41BX1122	Little to none	No further deep testing recommended
41BX1125	Little to none	No further deep testing recommended
41BX1127	Little to none	No further deep testing recommended
41BX1130	Little to none	No further deep testing recommended

Appendix D: Selected Acronyms

Acronym	Full
AFB	Air Force Base
ARPA	Archaeological Resources Protection Act
BHT	Backhoe trench
CAR	Center for Archaeological Research
CCC	Civilian Conservation Corps
CFR	Code of Federal Regulations
EOD	Explosive ordinance disposal
FCR	Fire-cracked rock
GPS	Global Positioning System
ICRMP	Integrated Cultural Resources Management Plan
JBSA	Joint Base San Antonio
JBSA-CRM	Joint Base San Antonio Cultural Resources Manager
MSS	Magnetic Soil Susceptibility
NRHP	National Register of Historic Places
PI	Principal Investigator
POW	Prisoner of war
RCYBP	Radiocarbon years before present
SDZ	Safety Danger Zone
ST	Shovel test
TCI	Terracon Consultants, Inc.
THC	Texas Historical Commission
TU	Test unit
US	United States
USGS	United States Geologic Survey
UTSA	University of Texas at San Antonio
WPA	Works Progress Administration
WWI	World War I
WWII	World War II