Excavation of Historic Human Remains from 41BX2397 at the Children's Hospital of San Antonio, Bexar County, Texas

by
Cynthia Moore Munoz

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Principal Investigator
Raymond Mauldin

Original Principal Investigator
Paul Shawn Marceaux

Prepared for:
The Children's Hospital of San Antonio
CHRISTUS Health
333 N. Santa Rosa Street
San Antonio, Texas 78207

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Center for Archaeological Research
The University of Texas at San Antonio
One UTSA Circle
San Antonio, Texas 78249-1644
Archaeological Report, No. 488

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Abstract:

From November 4, 2016 through September 30, 2020, the University of Texas at San Antonio Center for Archaeological Research (CAR) conducted archaeological monitoring and excavations on the grounds of the Children's Hospital of San Antonio in downtown San Antonio, Texas. The original hospital building was constructed in 1874 over the Old Campo Santo of San Fernando Cathedral (0.51 acres) and the Old Catholic Cemetery of San Antonio (3.72 acres). These cemeteries were in use between 1808 and 1855. The CAR was contracted by CHRISTUS Health to exhume human remains inadvertently exposed in September 2016 during the mechanical excavation of a utility trench in a proposed prayer garden, and to exhume all remaining burials in the Prayer Garden (0.35 acres) and in a proposed play garden (0.27 acres).

The hospital filed a petition in district court for removal of remains from an abandoned cemetery and for removal of dedication for cemetery purposes. The court ruled that the hospital make a good faith effort to locate and remove all remains on the property. Test Unit excavations and backdirt screening from the utility trench resulted in the recovery of a minimum of 11 individuals. Subsequent mechanical trenching in the eastern half of the Prayer Garden (0.18 acres) to locate additional burials revealed a minimum of 83 additional individuals. Based on the large number of burials and the wishes of various descendent groups, CHRISTUS Health decided to retain the cemetery dedication for the property. On September 6, 2017, the 11 individuals from the utility trench were reburied in their original locations. The additional burials from the exploratory trenches were left in place and covered with a layer of sand and backdirt. The Prayer Garden was redesigned and renamed the Memorial Garden in order to avoid impacting burials.

Throughout the duration of the project, CAR archaeologists monitored mechanical and hand-excavated trenches for electrical, drainage and irrigation, utility placement and renovation, basement waterproofing, wall replacement, bench and marker foundations, and tree plantings. In October 2017, seven shovel tests (all negative) were hand-excavated by CAR on the locations of seven proposed piers. While monitoring waterproofing excavations around the basement of the hospital in December 2017, a CAR archaeologist noted that a new trench had been excavated in the Memorial Garden. The trench was not monitored by archaeologists. Cleanup of the trench walls and floor recovered the remains of a minimum of two individuals. In June 2020, human remains were encountered during monitoring of a hand-excavated utility trench. The burial was not removed, but was covered with linen, geocloth, sand, and backdirt. Three isolated human bone fragments were recovered from the relocated utility trench. In August 2020, one isolated human skull fragment was collected during monitoring of a hand-excavated irrigation trench. On September 30, 2020, the remains exhumed from the December 2017, June 2020, and August 2020 trenches were reinterred in the Memorial Garden.

Because the project area was on private property, the archaeological investigation did not require a Texas Antiquities Permit. However, the City of San Antonio (COSA) Office of Historic Preservation (OHP) has review authority as the project area falls under the purview of the Historic and Design Review Commission (HDRC). The hospital site and landscaping work was approved by the HDRC on October 16, 2019 (HDRC Case No. 2019-568). The project adhered to the COSA Unified Development Code (Article 6 35-630 to 35-634). The Children's Hospital retained control over the human remains. As an institution acting as a "museum", per the Native American Graves Protection and Repatriation Act (NAGPRA), the hospital does not receive federal funds through any grant, loan, or contract (other than a procurement contract). Because the Hospital has control, but does not receive Federal funds, NAGPRA compliance was not required. Dr. Paul Shawn Marceaux served as the Principal Investigator until November 2019 at which point Dr. Raymond Mauldin assumed the role. Cynthia Moore Munoz served as the Project Archaeologist.

The CAR's excavations on the project area revealed that areas still contain the human remains buried in the Old Campo Santo of San Fernando and the Old Catholic Cemetery. The cemeteries were recorded as archaeological site 41BX2397. CAR recommends that any future excavations on the property be subject to archaeological testing and monitoring with the expectation of burial exposure.

All human remains and burial-associated artifacts were reinterred on the CHoSA property. Associated documents, notes, and photographs, were prepared for curation according to THC guidelines and are permanently curated at CAR as Accession 2343.

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Acknowledgements:

The successful completion of this project is owed in a large part to the hard-working field crew. They included the following individuals from the Center for Archaeological Research: Sarah Wigley, Karlee Jeffrey, Megan Brown, David Barron, Jason Perez, Lindy Martinez, Leonard Kemp, Peggy Wall, Matthew deGraffenried, Michelle Carpenter, Jose Zapata, Aaron Acosta, and Raymond Mauldin. Thank you all. Megan Brown prepared the human remains and grave items for analysis. Mikaela Razo prepared the paperwork for curation. Dr. Shawn Marceaux, CAR Director, served as principal investigator on the project from its inception through October 2019 at which point Dr. Raymond Mauldin, CAR Interim Director, took over the role. Dr. Mauldin offered invaluable advice on fieldwork strategy and offered comments on the report. The author would also like to thank Dr. Jessica Nowlin for her creation of project GIS layers and for editing the report and Peggy Wall for drafting the figures and producing the final manuscript. Dr. Blake Weissling of the University of Texas at San Antonio Geological Sciences department conducted the magnetometer survey. The author thanks Mark Stewart, Barbara Post, and Stephen Powell of CBRE Healthcare; Rhonda Thompson, Joann King, Patrick Meyerpeter, Will Bathe, Jon Bel, Dana Rohman, Melissa Krause, and Joe Conger of Christus Health; Chris Hasty, Allen Oller, Philip Lang and Don Coplen of Linbeck; Brady Dietart of Overland Partners; and Nathan LeRow and John Williams of Bartlett Cocke General Contractors for assistance with project logistics.

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Chapter 1: Introduction

This report discusses the exhumation of human remains from the Old Campo Santo of San Fernando and the Old Catholic Cemetery located on property currently owned by the Children's Hospital of San Antonio (CHoSA) in downtown San Antonio, Bexar County, Texas (Figure 1-1). Fieldwork, including monitoring, backhoe trenching, a magnetometer survey, and the hand-excavation of seven shovel tests, eight test units, and two exploratory pits occurred from November 4, 2016 through September 30, 2020.

The University of Texas at San Antonio (UTSA) Center for Archaeological Research (CAR) was contracted by the

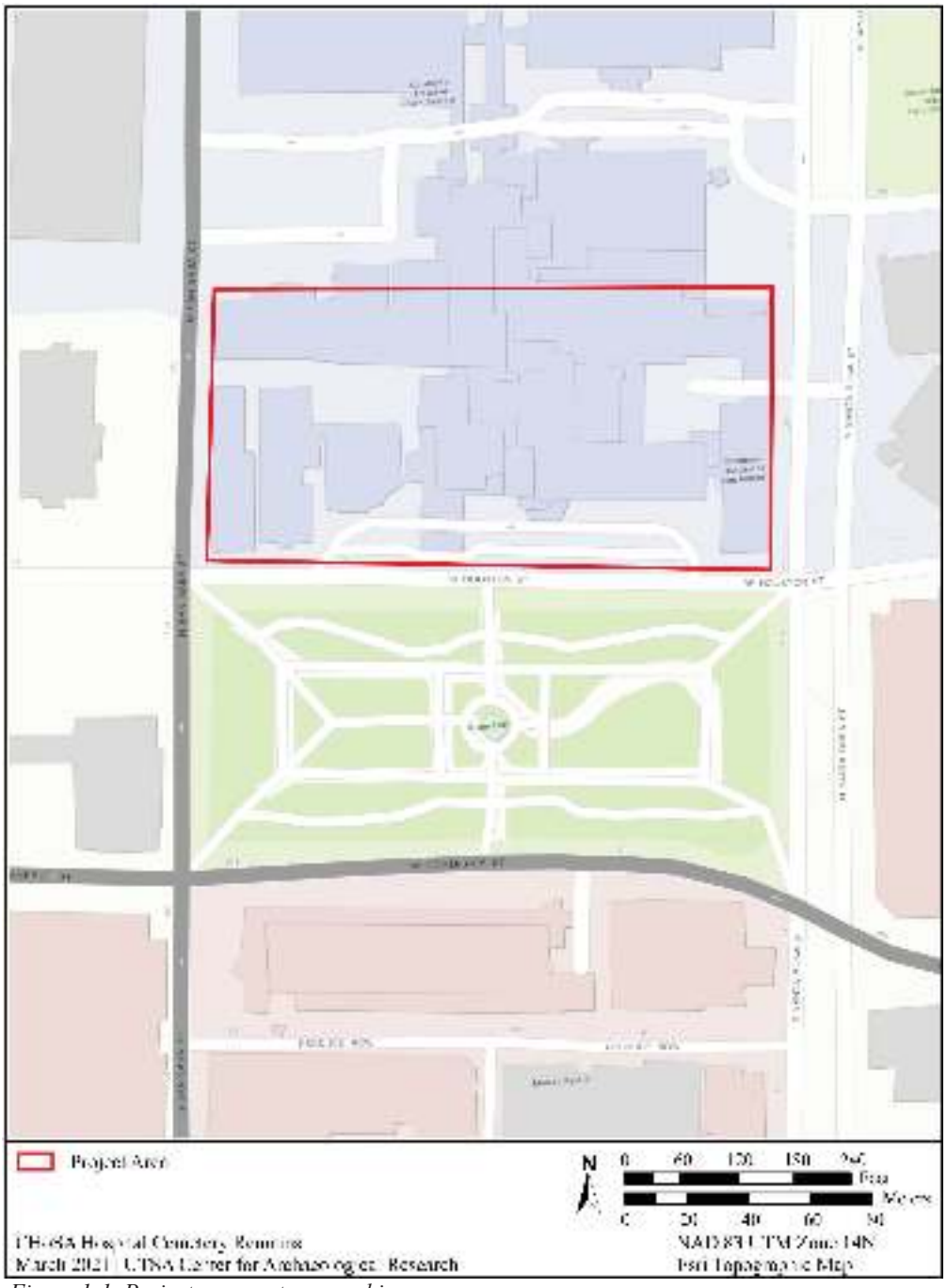

Figure 1-1. Project area on topographic map.

CHoSA to exhume human remains inadvertently exposed in September 2016 during the mechanical excavation of a linear utility trench in a proposed prayer garden. Upon the realization that bones from the trench appeared to be human, the CHoSA contacted the Bexar County Medical Examiner's Office, which determined the bones were human and were not part of a crime scene. The trench was approximately 58m (190 ft.) long, 0.8 m (2.6 ft.) wide, and 0.46-0.61 m (1.5-2 ft.) deep. Approximately 0.46-0.91 m (1.5-3 ft.) of overburden was removed from the Prayer Garden prior to the excavation of the trench. The trench uncovered at least three sets of remains, marked as Areas A, B, and C (Figure 1-2). Remains in Area A are within the boundary of the Campo Santo. The remains from Areas B and C area are outside the Campo Santo but within the boundaries of the Old Catholic Cemetery.

The original hospital building was constructed in 1874 over the Old Campo Santo of San Fernando Cathedral (0.51 acres) and the Old Catholic Cemetery of San Antonio (3.72 acres). The cemetery and Campo Santo are located on New City Block 14487 Lot 7. They are bordered by North San Saba Street on the west, by Santa Rosa Street on the east, by West Houston Street on the south, and by what was formerly Zavala Street on the north. Remains were interred in the Campo Santo from 1808-1848 and in the Old Catholic Cemetery from 1849-1855. The Old City Cemetery lies across West Houston Street in Milam Park (Figure 1-3). The hospital continued to grow over the years culminating in a 14.7 acre campus. Sources have stated that burials encountered during the construction of hospital buildings between 1906 and 1960 were removed and reinterred at either San Fernando Cemetery No. 1, 2, or 3 (Garcia and Loch 2005; Tennis 1995a). However, no documentation of the reburials has been located within the City or Catholic archives or verifiable secondary sources (see McKenzie et al. 2020).

The archeological services provided by the CAR consisted of seven principal activities: 1) exhumation by hand-excavation of the human remains and associated grave goods revealed in a construction utility trench in a proposed prayer garden, 2) return of the remains to CAR for analysis, 3) return of the remains to CHoSA for reburial on site, 4) exploration of portions of CHoSA property for additional human remains, 5) monitoring of additional subsurface construction impacts, 6) completion of an archival report (see McKenzie et al. 2020), and 7) completion of a report on CAR's findings. Because the services were limited to the recovery and recording of human burials, CAR did not explore features or artifacts unrelated to interments.

Because the project area was on private property, the archaeological investigation did not require a Texas Antiquities Permit. However, the City of San Antonio (COSA) Office of Historic Preservation (OHP) has review authority as the project area falls under the Unified Develop Code (UDC). The hospital site and landscaping work was approved by the HDRC on October 16, 2019 (HDRC Case No. 2019-568). The project adhered to the COSA Unified Development Code (Article 6 35-630 to 35-634). As the project involved human remains, the Center for Archaeological Research (CAR) reached out to the National Native American Graves Protection and Repatriation Act (NAGPRA) Program to discuss CAR's legal responsibilities regarding any disinterred burials. Per David Tarler, Director of NAGPRA Training, Civil Enforcement and Regulations, CHoSA retained control over the human remains. As an institution acting as a "museum", per NAGPRA, the hospital does not receive federal funds through any grant, loan, or contract (other than a procurement contract). Because the Hospital has control, but does not receive Federal funds, NAGPRA compliance was not required. Dr. Paul Shawn Marceaux served as the Principal Investigator until November 2019 at which point Dr. Raymond Mauldin assumed the role. Cynthia Moore Munoz served as the Project Archaeologist.

Prior to the start of CAR's fieldwork, the hospital filed a petition with the 408th District Court for removal of

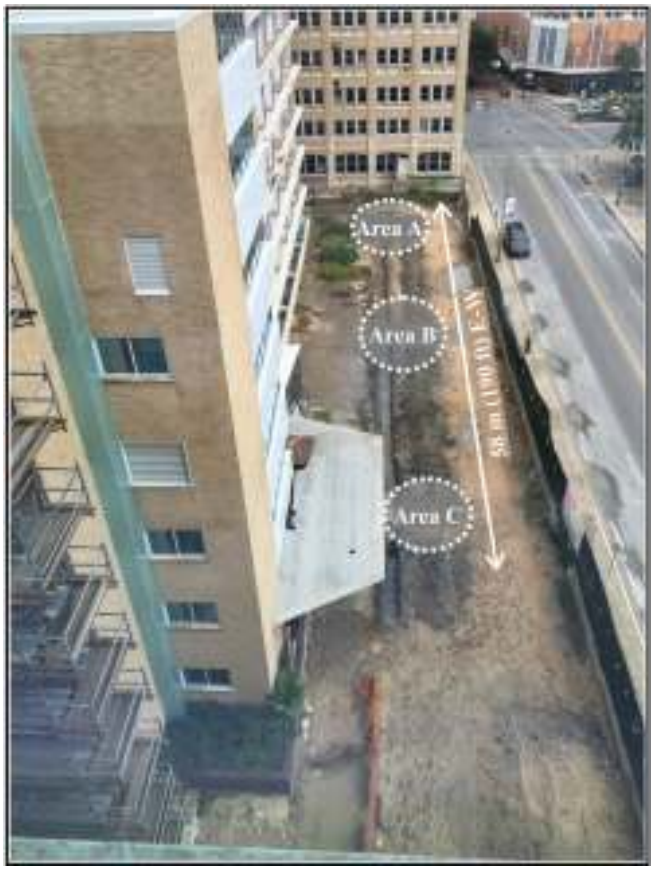

Figure 1-2. Aerial view of utility trench facing east, Areas A, B, and C noted.

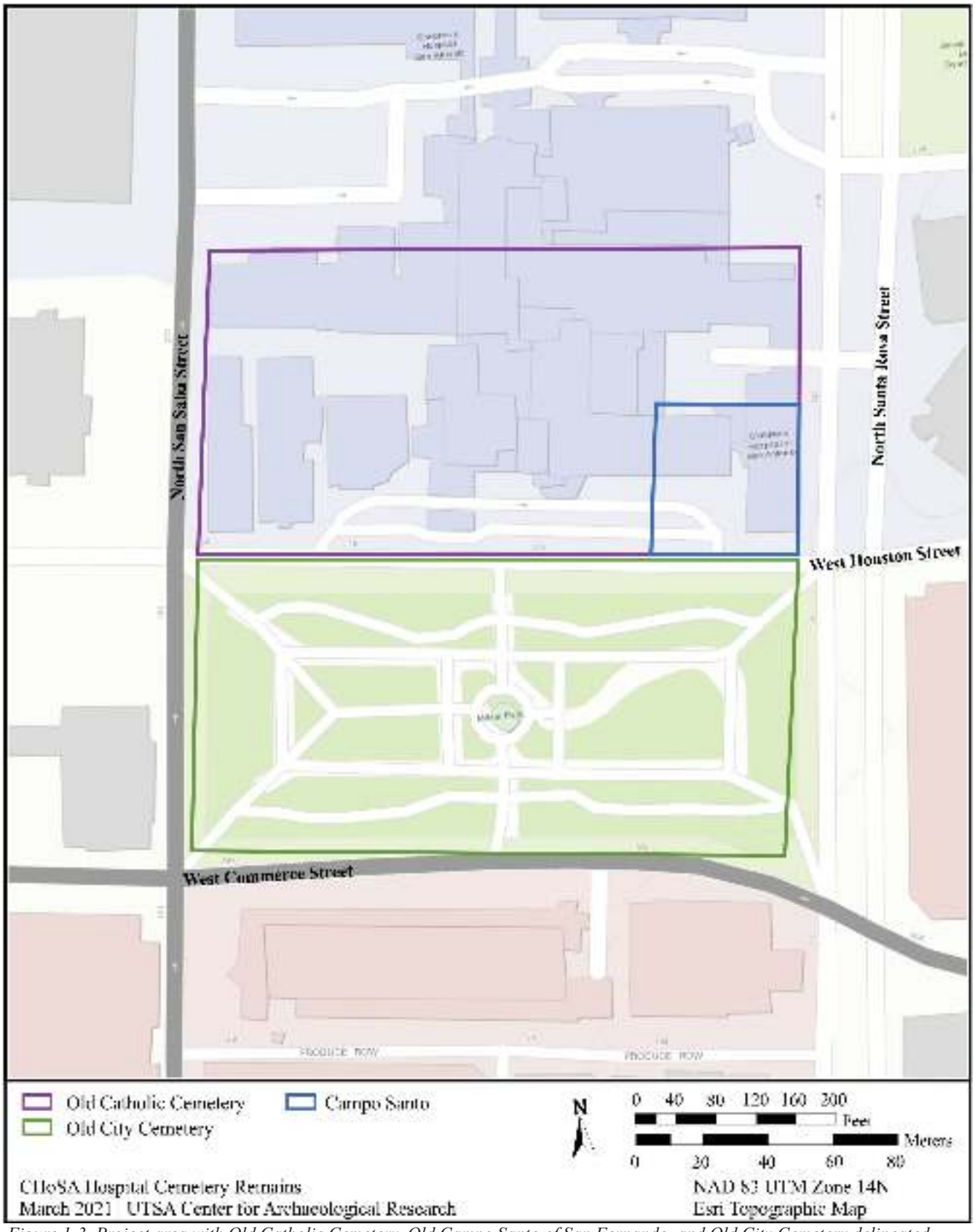

Figure 1-3. Project area with Old Catholic Cemetery, Old Campo Santo of San Fernando, and Old City Cemetery delineated (cemetery projection based on 1848 Francois Giraud Survey (CESB 1:10)).

remains from an abandoned cemetery and for removal of dedication for cemetery purposes. On February 22, 2017 the court ruled that the hospital provide notice to any descendants via a published notice of reburial in the San Antonio Express News once a week for three consecutive weeks, and that CAR, on behalf of CHoSA, obtain a Disinterment Permit from the Vital Statistics Unit of the Department of State Health Services (see Appendix A). It was also ruled that CHoSA make a good faith effort to remove all the remains from the abandoned cemetery. The court signed the petition on March 22, 2017 allowing excavations of human remains to begin (see Appendix B). On March 23, 2017 CAR was granted a Disinterment Permit allowing disinterment and reburial at Sunset Memorial Park (see Appendix C).

To comply with the court order, CHoSA supplemented the original task of removing human remains uncovered in the utility trench with excavations to exhume all remaining burials in the Campo Santo and Old Catholic Cemetery. CAR determined that in addition to the Prayer Garden two areas on the CHoSA property did not appear to have any evidence of earlier construction impacts from hospital buildings, and therefore, had the potential for additional human remains. Figure 1-4 delineates the proposed Prayer Garden (0.35 acres), and the southern and northern extents of a proposed play garden (0.27 acres). A chapel, built in 1953 and located between the two highlighted areas, was, at this point of the project, determined to have a basement that would have removed any burials in its footprint. Later research revealed that it was built without a basement.

In April 2017, eight test units and two exploratory pits were excavated adjacent to the Prayer Garden utility trench to explore and then remove human remains evident in the trench walls. Archaeologists walked the area and collected any human remains noted on the surface. All backdirt piles from the utility trench excavation that were in the proximity of the test units were screened for human remains. A minimum of 11 individuals, seven removed from the trench walls and four identified in the backdirt, were recovered. To locate additional burials in the Prayer Garden, the area was systematically trenched with a mini-excavator. Prior to the exploratory trenching (November 2016), a soil magnetometer survey was conducted over the eastern quarter of the Prayer Garden. Due to the heavy clay consistency of the sediments and continual utility disturbances to the area over the years, the survey was inconclusive. Eleven exploratory trenches in the eastern half of the Prayer Garden (0.18 acres) revealed 147 locations with human bone. The distribution and elements exposed suggested a minimum of 83 individuals remained in this area.

Based on the large number of burials and the wishes of various descendent groups, the CHoSA made the decision to retain the cemetery dedication for the property. The hospital filed a new petition with the 408th District Court to reverse the previous petition (Appendix D). The boundaries of the cemetery dedication in the legal documents are vague (see Appendices A-D). The cemetery is described as "Abandoned Cemeteries-Campo Santo & Old Catholic Cemetery: New City Block 14487, Lot 7." The status of the cemetery designation is currently unknown. On September 6, 2017, the 11 individuals from the utility trench and two individuals exhumed from the CHoSA campus in 1997 (see Lyle 1999) were reburied in the Prayer Garden. The additional burials uncovered in the exploratory trenches were left in place and covered with a layer of sand followed by backdirt. The Prayer Garden was redesigned in order to avoid impacting burials and the name was changed to the Memorial Garden (Figure 1-5). The redesign included the addition of fill in an effort to avoid impacts to burials from new construction. The area designations in Figure 1-5 are used in the remainder of the report.

In October 2017, seven shovel tests were excavated on the location of proposed piers to support an observation terrace in the Memorial Garden. All were negative for human remains. A CAR archaeologist monitored the subsequent mechanical drilling of the piers. While monitoring waterproofing excavations in previously disturbed sediments around the basement of the hospital in December 2017, a CAR archaeologist noted that a new trench had been excavated adjacent to the previously mentioned pier locations. The trench excavation was not monitored by archaeologists. Upon inspection of the trench wall, human bone was noted. CAR staff cleaned up the trench walls and floor and screened the associated sediments. Isolated human remains were collected. A minimum of two individuals were recovered from the observation terrace construction excavations. The minimum number of individuals (MNI) is calculated by sorting skeletal remains into right and left elements and counting the most abundantly represented element.

From April 2018 through May 2020, CAR archaeologists monitored mechanical and hand-excavated trenches for electrical, drainage and irrigation, utility placement and renovation, basement waterproofing, wall replacement, bench and marker foundations, and tree and bush plantings in the Memorial, Prayer, and Play Gardens. No human remains were encountered during this period. In June 2020, during archaeological monitoring of a hand-excavated utility trench, human remains were exposed just east of the Play Garden. The backdirt associated with the trench was screened for human remains. After notifying the hospital, the Medical Examiner's office, and the COSA OHP, the burial and bone removed from the backdirt were covered with linen, geocloth, sand, and backdirt. Three isolated human bone fragments were recovered from disturbed sediments during monitoring of the relocated utility trench. In August 2020, during monitoring of the installation of a hand-excavated irrigation trench, one human skull fragment was recovered from the Memorial Garden. The isolated fragment was

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Figure 1-4. Portions of the CHoSA property with potential for human remains include the Prayer Garden and the highlighted areas.

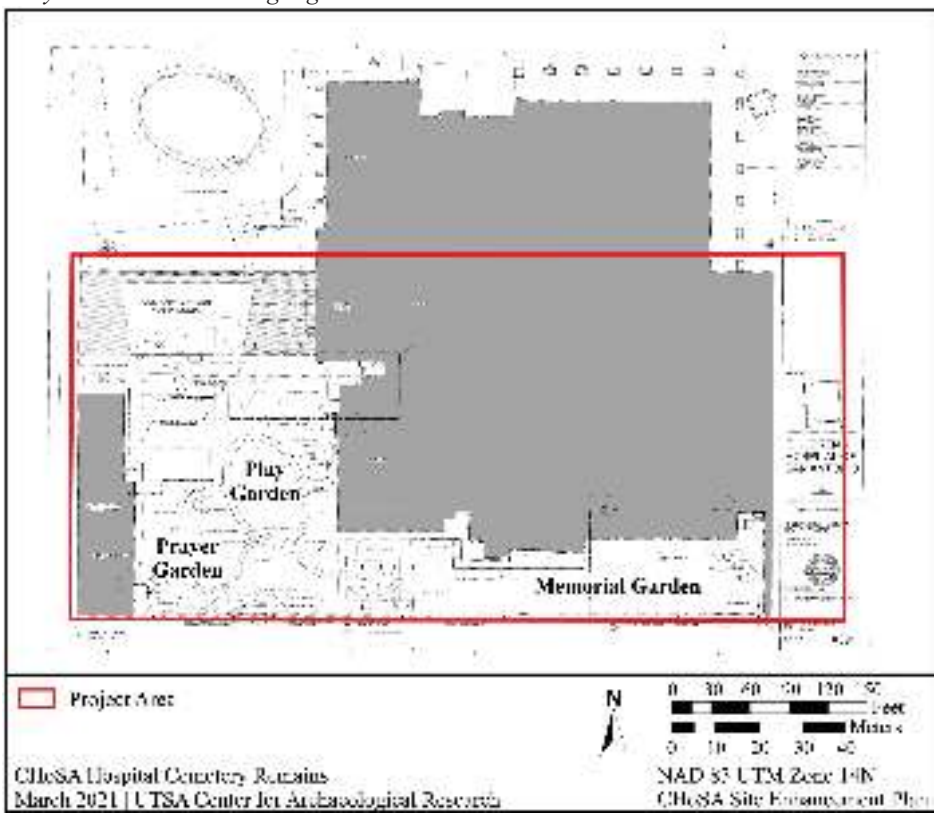

Figure 1-5. CHoSA grounds redesign (note the prayer, memorial, and play gardens).

not part of an articulated burial. On September 30, 2020, a ceremony including descendant groups, and CHoSA and Catholic church representatives was held at the CHoSA to reinter the remains exhumed from the observation terrace trench, the June 2020 utility trench, and the August 2020 irrigation trench in the Memorial Garden. The Old Campo Santo of San Fernando and Old Catholic Cemetery were recorded as archaeological site 41BX2397 (Figure 1-6).

Figure 1-6. Archaeological site 41BX2397 polygon.

This document summarizes the results of the fieldwork on the CHoSA project area. The report is organized into five chapters. Chapter 2 discusses the environment of the project area, provides an overview of the cultural chronology of the area, and presents a summary of previous archaeological investigations near the CHoSA property. Chapter 3 discusses the fieldwork and laboratory methodology used during the excavations. The results of the fieldwork and an analysis of the human remains are presented in detail in Chapter 4. Chapter 5 summarizes the fieldwork and presents recommendations for future work on the hospital property.

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Chapter 2: Project Overview

This chapter contains a description of the environmental setting of the project area, including vegetation, soils, geology, and climate. Because site 41BX2397 dates from 1808-1855, the chapter limits the discussion of the prehistoric culture history of south and central Texas to a brief summary. The historic period in San Antonio is also touched upon in a concise manner since a detailed archival report, including an extensive review of the historical archives and family histories of descendant groups was produced as a separate report (see McKenzie et al. 2020). The chapter concludes with a summary of previous archaeological work conducted in the vicinity of the project area.

Project Environs

The project area is located on the San Antonio East, Texas USGS 7.5' quadrangle map roughly 0.62 km (0.38 mi.) west of the San Antonio River in central Bexar County (see Figure 1-1). The cemeteries (Campo Santo and Catholic) measure approximately 95 m (312 ft.) from north to south and 195 m (640 ft.) from east to west. Elevation on the site is 200 m (656 ft.) above mean sea level (amsl). Site 41BX2397 lies on the Gulf Coastal Plains at the boundary of the Blackland Prairies and the Interior Coastal Plains physiographic provinces. The Blackland Prairies province is comprised of chalks and marls in beds that are tilted to the south and east. This low rolling terrain has elevations ranging from approximately 137-305 m (449-1001 ft.) amsl. The Interior Coastal Plains province contains alternating bands of uncemented sands among weaker shales that erode into long sandy ridges. Elevations range from roughly 91-244 m (299-801 ft.) amsl (Wermund 1996). The immediate project area is contained within Pliocene/Pleistocene age deposits of Quaternary fluviatile terrace deposits (Qt). This formation is characterized by limestone and dolomite gravel (U.S. Geological Survey 2015).

Site 41BX2397 is located at the boundary of the Tamaulipan and Balconian biotic provinces (Blair 1950; TPWD 2017). The Tamaulipan province, ranging from the east-west portion of the Balcones Escarpment in southern Texas to the east of the eastern Sierra Madre in northeastern Mexico, includes a mix of plants and animals typical of neotropical Mexico, the semiarid southern Plains, and the humid southeastern United States. Presently this subhumid to semi-arid land is dominated by thorny brush. The Balconian province covers most of the Edwards Plateau, an uplifted, limestone-dominated region, and is characterized by a semi-arid climatic regime and relatively denser vegetation. The province is dominated by oak, juniper, and mesquite often underlain by a variety of grasses (Blair 1950). Although the project area lies in a setting where these two very different biotic provinces merge, it is in downtown San Antonio and thus, is completely urbanized. Currently, Live Oak-Ashe Juniper Woods, distributed chiefly on shallow limestone soils on the hills and escarpment of the Edwards Plateau, and Live Oak-Mesquite-Ashe Juniper Parks and Live Oak-Ashe Juniper Parks, found on level to gently rolling uplands and ridge tops of the Edwards Plateau, dominate the landscape to the north of San Antonio. Cropland with pockets of Mesquite-Live Oak-Bluewood Parks, primarily located in Uvalde, Medina and Bee Counties on the South Texas Plains, and Post Oak Woods/Forest and Post Oak Woods Forest with Grassland Mosaic, distributed mostly on the sandy soils of the Post Oak Savannah, covers most of the areas to the south, east and west (Figure 2-1; TPWD 1984). It is likely that prior to European settlement of the region in the mid-1800s, grassland was much more common and the juniper, mesquite, woody brush and shrubs that dominate the region today had a much more restricted distribution.

Present day fauna occupying Bexar County include white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), fox squirrel (*Sciurus niger*), eastern cottontail rabbit (*Sylvilagus floridanus*), and turkey (*Meleagris gallopavo*), in addition to other mammals, snakes, and reptiles (Blair 1950). Prehistorically, important economic species in the area included bison (*Bison bison*), pronghorn antelope (*Antilocapra americana*), and black bear (*Ursus americanus*; Gerstle et al. 1978).

The edge of the Balcones Escarpment contains numerous springs, seeps, and drainages. The major river system in Bexar County is the San Antonio system consisting of the San Antonio River and a number of smaller streams that flow into it, including the Medina River and Medio, Leon, Helotes, Olmos, Salado, and Calaveras creeks (Long 2017). The San Antonio River originates from a group of springs, the "blue hole", located roughly 5.4 km (3.4 mi.) northeast of the project area. It flows approximately 386 km (240 mi.) to the southeast where it merges into the Guadalupe River, then empties into the Gulf of Mexico at San Antonio Bay (Donecker 2010). A series of devastating flood events from the river have impacted San Antonio since its founding. Major floods were recorded in 1724, 1819, 1865, 1880, 1899, 1913, 1921, 1946, 1998, and 2002.

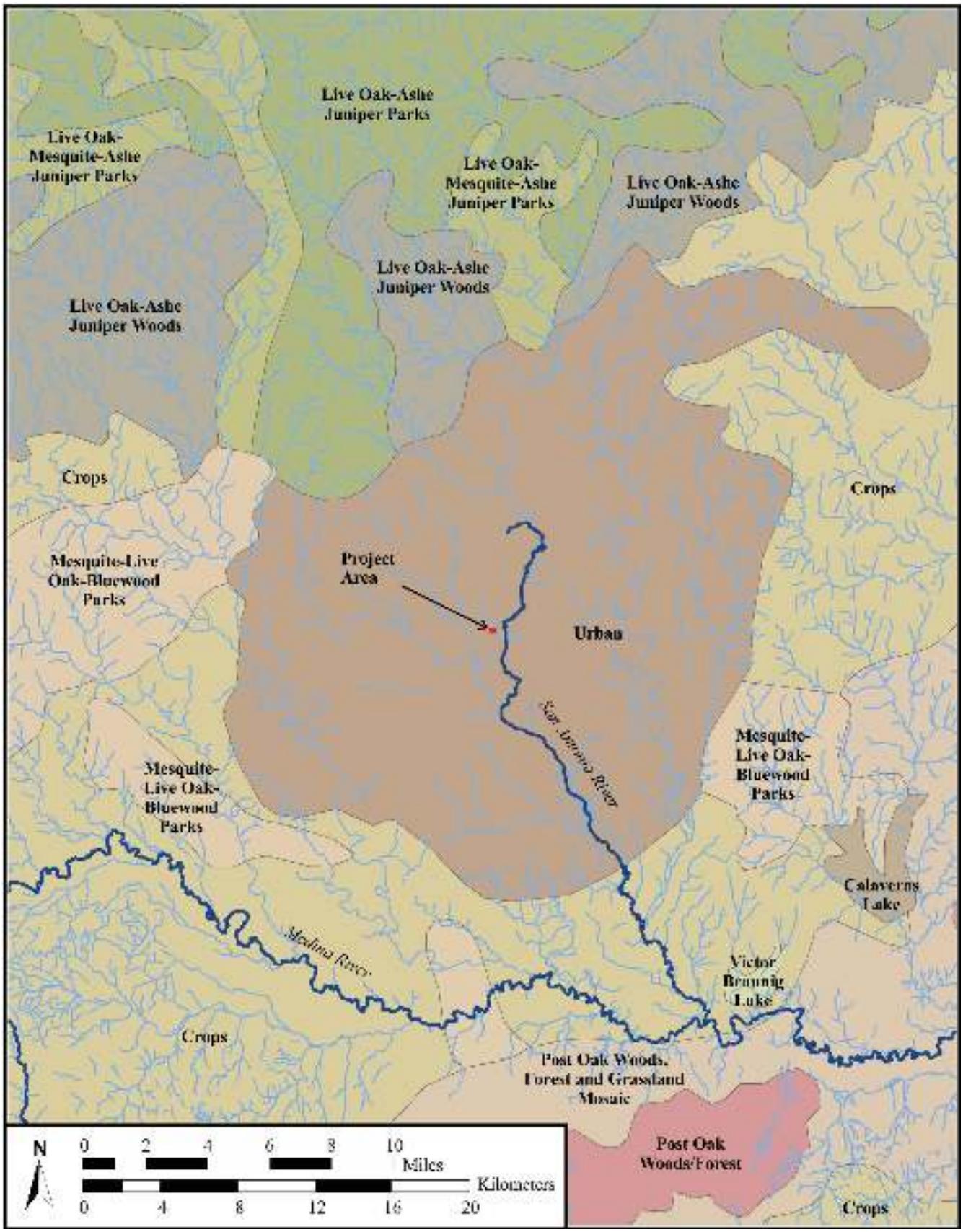

Figure 2-1. Modern vegetation on the project area.

Climate

Climate in this general area is classified as humid subtropical with humid, hot summers and dry, mild, winters. The mean annual temperature for the region is 70°F (21°C). The length of the growing season in Bexar County is roughly 270 days per year. Rainfall averages approximately 30 in. (76 cm) a year. Figure 2-2 presents the average minimum and maximum monthly temperatures in San Antonio, Texas between 1971 and 2000. Throughout these three decades the coolest months occurred in December and January and the warmest in July and August (Southern Regional Climate Center 2017).

Between 1971 and 2000 the average annual precipitation in San Antonio was 32.9 in. (83.6 cm). Rainfall peaks in May and June with a smaller peak in October, indicating a bimodal pattern (Figure 2-3). The driest periods fall in the winter to early spring with December, January, February and March having an average of 1.8 in. of rain (4.6 cm) each (Southern Regional Climate Center 2017). Because of this region's proximity to the Gulf of Mexico moisture source and the effects of easterly waves and tropical storms, it is prone to intensive rainfall resulting in severe flooding. Another factor contributing to heavy rain events is the convergence of polar air masses with tropical storms or easterly waves off the Gulf of Mexico (Holliday et al. 2001; Thoms and Mandel 2007b). Intensive rainfall in the region has contributed to periodic flooding of the San Antonio River basin. Figure 2-4 illustrates annual rainfall totals over 138 years (1871-2012). The driest year was 1917, with less than 10.11 in. (25.7 cm) of precipitation, while the wettest year during this period was 1973, with over 52.28 inches (132.8 cm) of precipitation recorded (Mauldin et al. 2015; National Oceanic and Atmospheric Administration 2013).

USGS river gauge data from 1940-1997, gathered from gauge 08178000 in the San Antonio River located roughly 1.5 km (0.93 mi.) south/southeast of 41BX2397, demonstrates variation in river flow (cubic feet per second) associated with rain events (Figure 2-5; U.S. Geological Survey 2017).

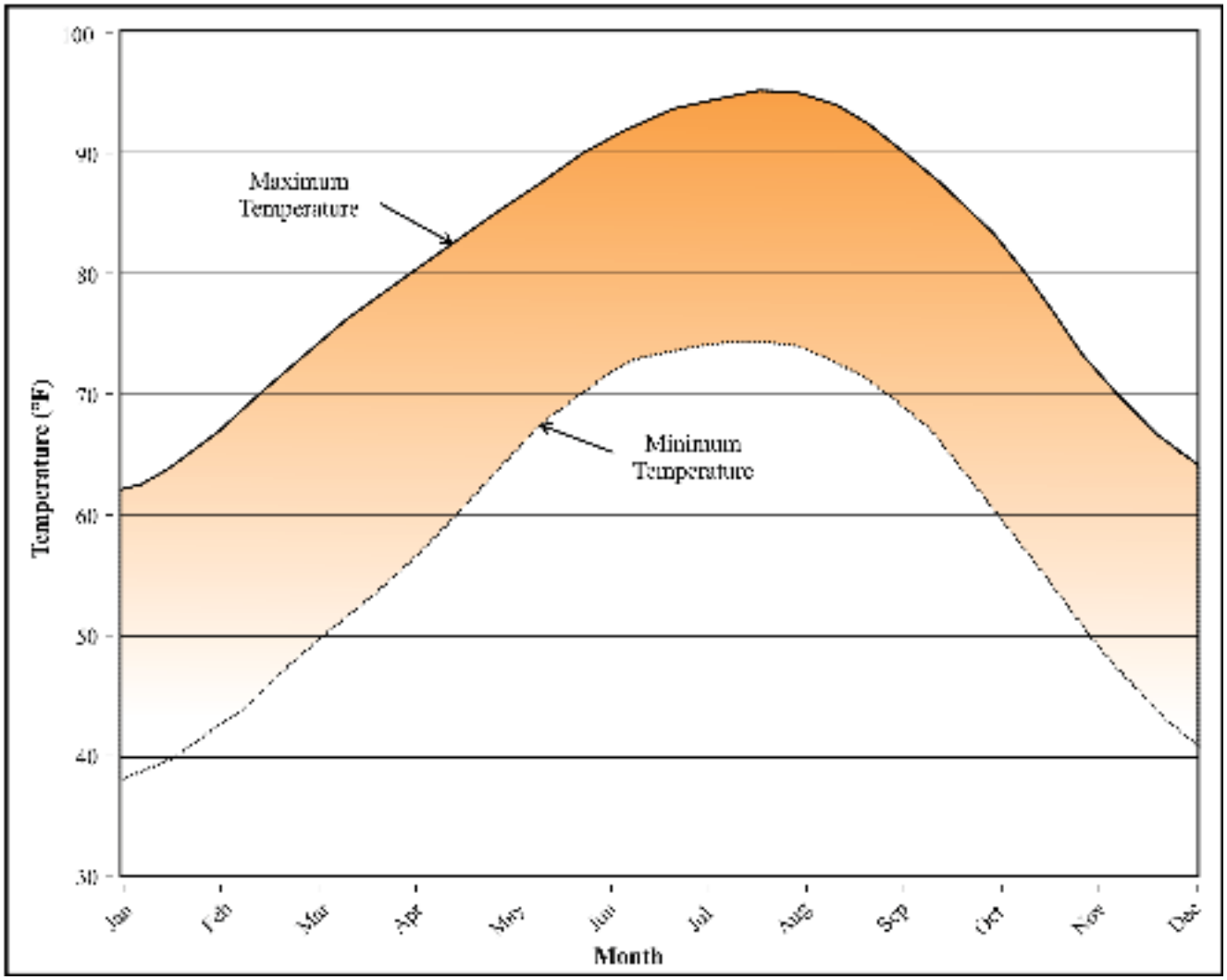

Figure 2-2. Average maximum and minimum temperatures for San Antonio, Texas (1971-2000).

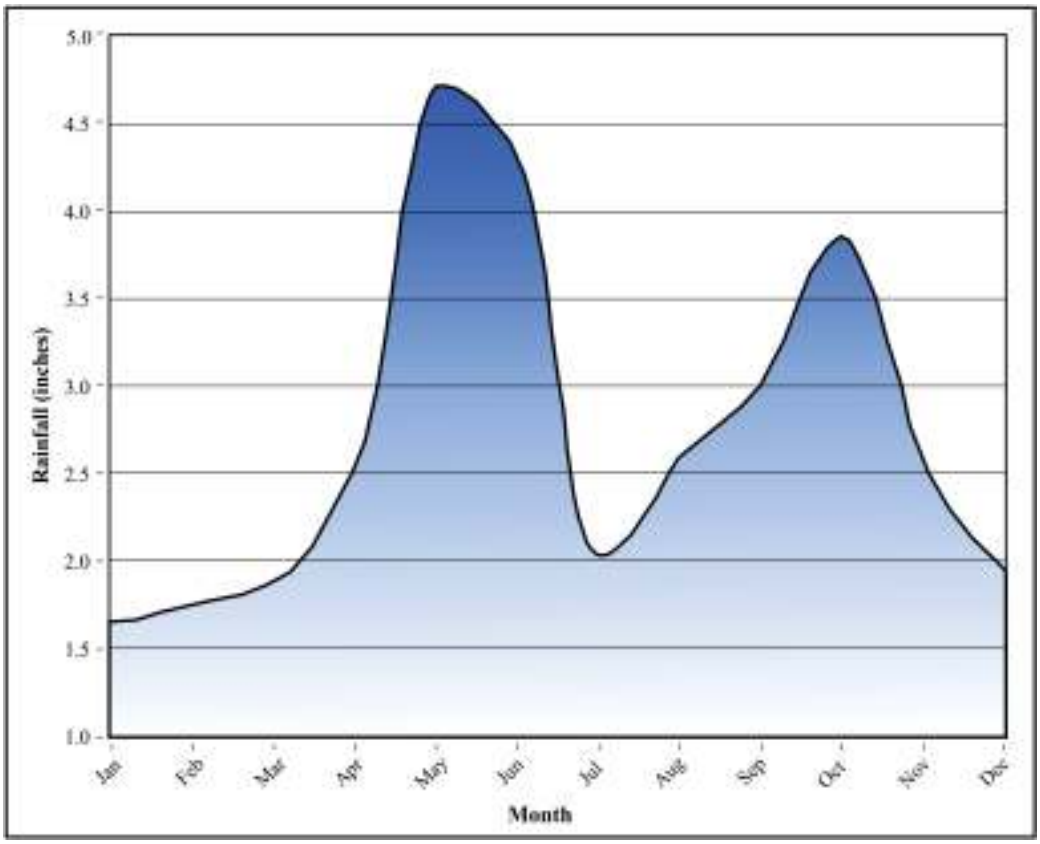

Figure 2-3. Average monthly rainfall for San Antonio, Texas (1971-2000).

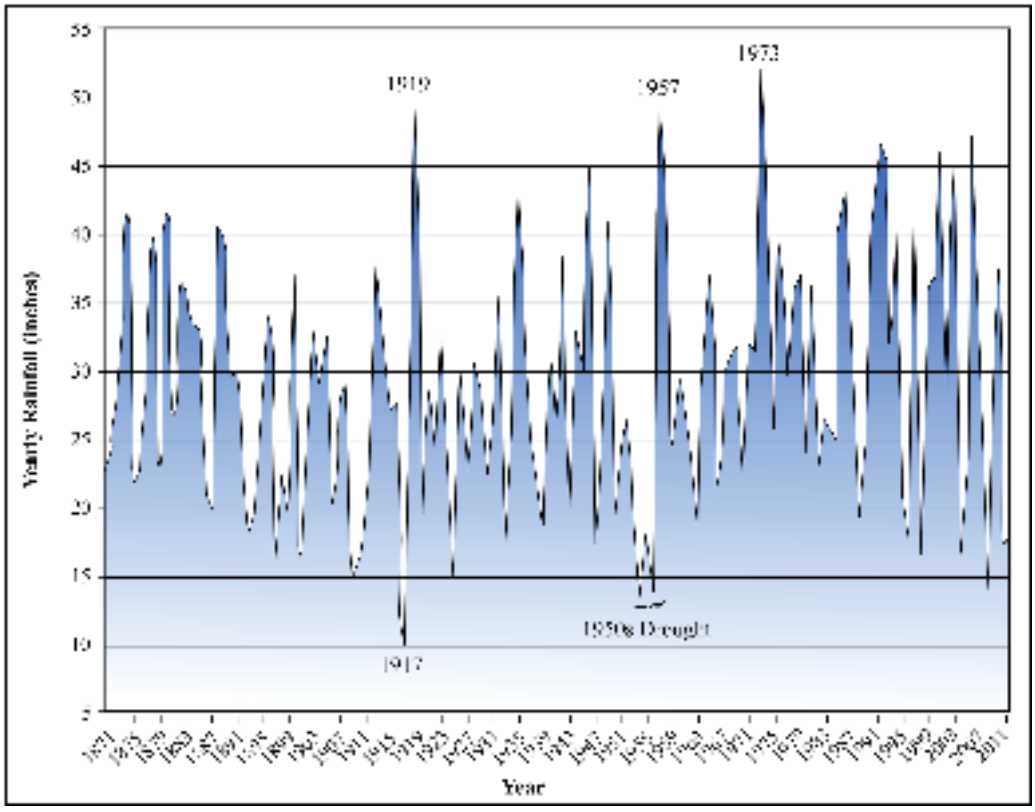

Figure 2-4. Annual Precipitation in San Antonio, 1871-2011 with estimates for 1876, 1883, and 1884 (after Mauldin et al. 2015).

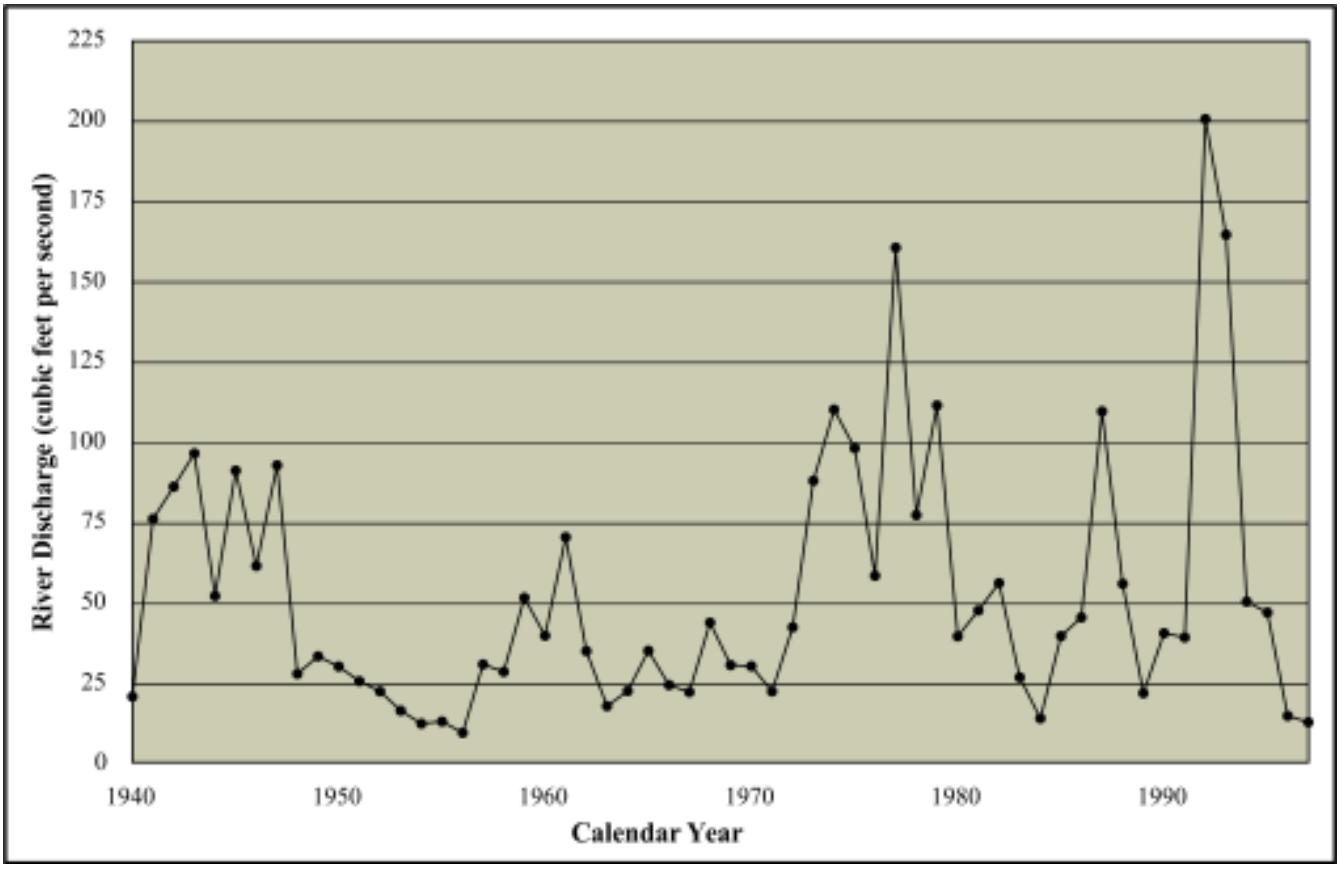

Figure 2-5. Average yearly river flow of the San Antonio River near the project area.

Although rainfall directly impacts river flow, it should be noted that other factors including dams, irrigation, and water supplementation from the Edward's Aquifer also affect the data. By 1890, the drilling of a large number of artesian wells caused a substantial decrease in spring flow resulting in the rapid decline of the San Antonio River (Eckhardt 2017; Hill and Vaughan 1896). To restore the river, pumps were installed on artesian wells to supplement the flow (Eckhardt 2017; Fisher 1997). To protect downtown San Antonio from flood waters Olmos Dam was completed in 1926, a cutoff channel was built to bypass floodwaters from downtown, and a three mile long river tunnel diverting flood waters underneath the city was completed in 1997. These twentieth century improvements have affected the flow of the San Antonio River (Eckhardt 2017). A comparison of river flow averaged by month from 1940-1997 (Figure 2-6) to mean annual precipitation in the area (see Figure 2-3) suggests that increases in precipitation are followed by increased river flow. The data suggest that rainfall is bimodal with peaks in May and again in October. River flow peaks in May and again in October.

An additional indicator of rainfall events, the Palmer Drought Severity Index (PDSI), relies on tree-ring based measures (summer values) of drought (see Cleaveland et al. 2011; Mauldin 2003). The PDSI was developed using a point-by-point regression method with 835 tree-ring chronologies spread across North America (Cook and Krusic 2004). Developed in the early 1960s, the PDSI is a relative measure of soil moisture calculated from rainfall, temperature, transpiration, potential evaporation, soil type, and runoff values (Alley 1984; Karl 1986). The index usually ranges from a value of four (severe wet spell) to negative four (severe drought). A value of zero indicates a normal year. Cook and Krusic (2004) established a grid, 2.5 degree latitude by 2.5 degree longitude, consisting of 286 stations in the United States, Mexico, and Canada.

The CHoSA project area is located near the center of four of these grid points: point 166 (100 degree west/ 30 degrees north), point 167 (100 degrees west/ 27.5 degrees north), point 181 (97.5 degrees west/ 30 degrees north), and point 182 (97.5 degrees west/ 267.5 degrees north; Cook and Krusic 2004). Because this central location, and as a comparison of the data from the four grid points show minimal variation, an average value from the four points was calculated for each year. Figures 2-7 and 2-8 present the average values of the four data stations from AD 1800-1900 and AD 1900-2000, respectively. A comparison of the data in Figure 2-8 with Figure 2-5 shows similar peaks with extremely wet weather and high river discharge in the mid-1940s, the mid 1970s, and in 1987 and 1992, as well as low points with extreme drought and low river flow in the 1950s. PDSI, flow rate, and precipitation values correlate for the most part. Therefore, although there is

no consistent data on the San Antonio River flow rates near the project area prior to 1940, the correspondence between river flow and the PDSI shown above suggests several flood events during the years the Campo Santo and Old Catholic Cemetery were active (1808-1855).

Figure 2-7 points to flood conditions in 1814, 1815, 1816, 1833, 1834, 1849, 1850, and 1855. This periodic flooding of the river suggests that San Antonio residents were subject to weather events that would have affected health and mortality rates via drowning, trauma, and disease from drinking-water supply and sanitation system failures, e.g. diarrhea, cholera, dysentery, and typhoid (Minamiguchi 2005). An analysis of burial patterns within the Campo Santo from 1809-1839, based on John Leal's (1975, 1976) translations of the San Fernando Burial Registry, supports this supposition in that gastrointestinal ailments accounted for 18.6 percent of deaths from disease and drowning accounted for 54.6 percent of deaths from accidents (Munoz and Mauldin 2020).

Soils

The terrace deposit comprising the cemeteries is composed of Branyon clay (HtA; Figure 2-9). This series consists of very deep, nearly level, moderately well drained soils that are found on stream terraces. These soils formed in calcareous silty alluvium derived from mudstone of Pleistocene age. HtA soils have a surface layer, roughly 112 cm (44.1 in.) thick, of dark gray (10YR 4/1) and very dark clay (10YR 3/1) resting on 71 cm (28.0 in.) of gray (10YR 5/1), dark gray (10YR 4/1), and very dark clay (10YR 3/1). The terminal soils consist of 20 cm (7.9 in.) of light gray (10YR 7/2), light brownish gray (10YR 6/2), and very dark gray clay (10YR 3/1; Soil Survey Staff 2017).

Cultural History

The CHoSA project area is located at the intersection of two broad archaeological regions, Central Texas and South Texas. Four major time-periods define the Prehistoric period in South Central Texas: Paleoindian, Archaic, Late Prehistoric, and Historic. These periods are further divided into sub-periods that are based on particular subsistence strategies and material culture. Table 2-1 presents a brief summary of the Prehistoric periods.

While Europeans first came in contact with Native Americans in Texas in 1528 with the shipwreck of the Narváez expedition along the coast, it was not until the late eighteenth century that

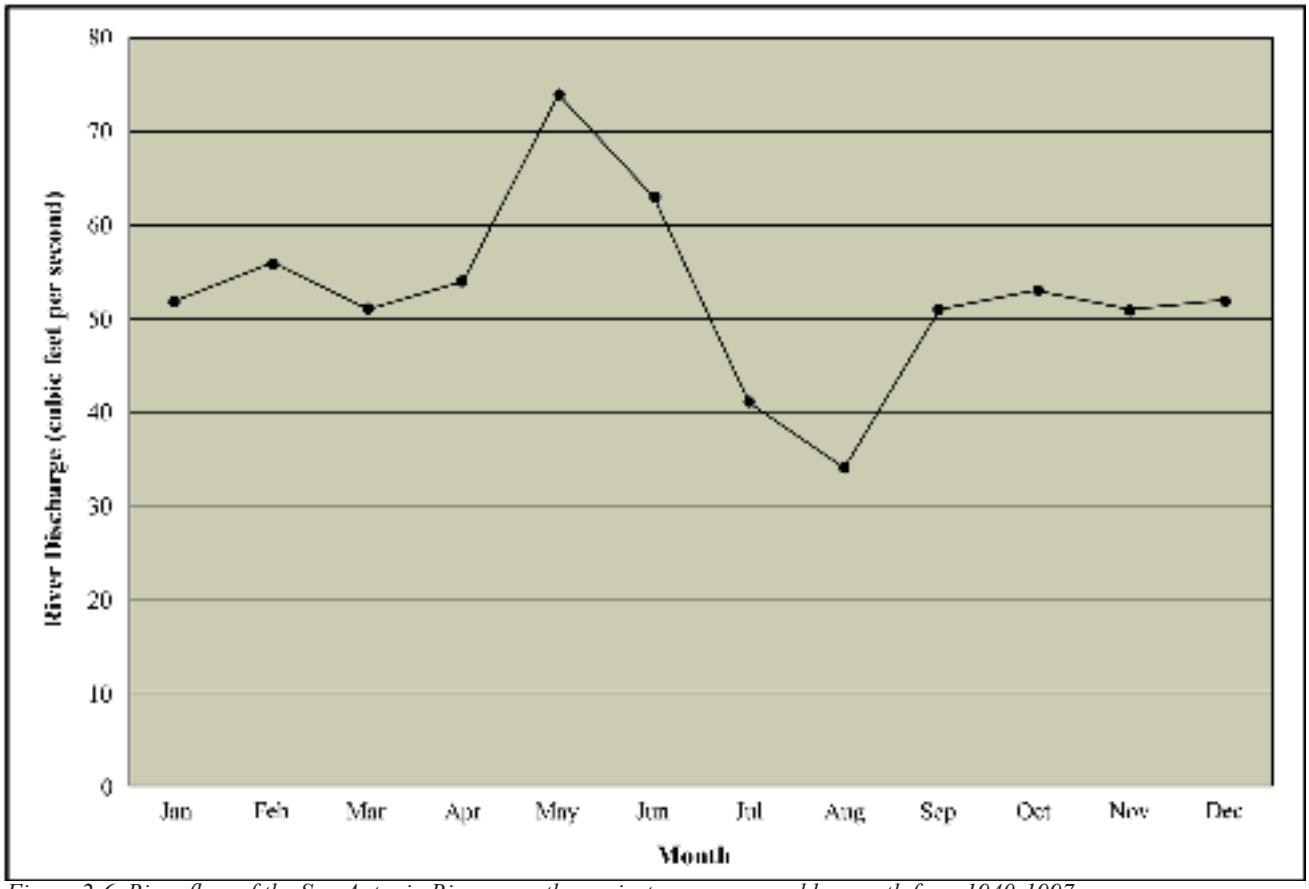

Figure 2-6. River flow of the San Antonio River near the project area averaged by month from 1940-1997.

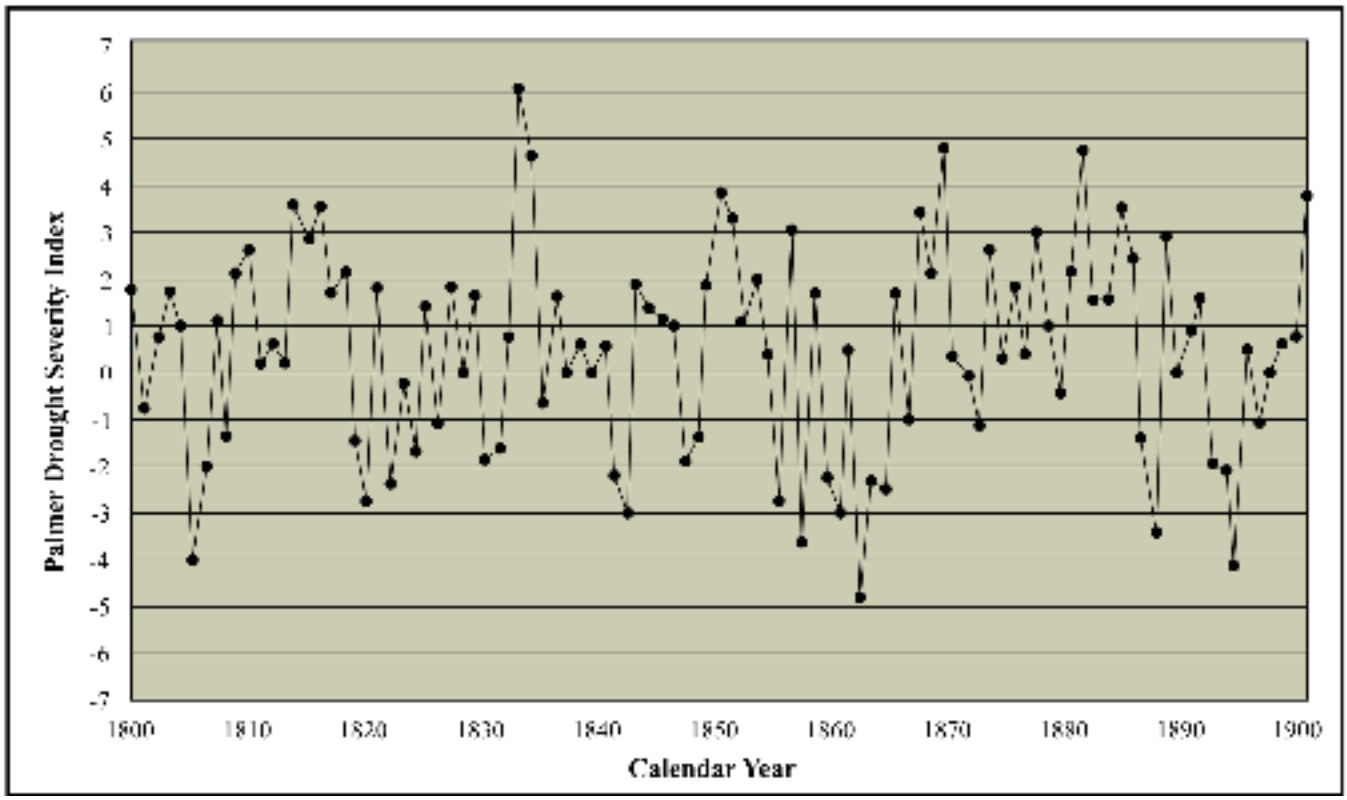

Figure 2-7. PDSI values from AD 1800-1900 based on an average of PDSI grid points 166, 167, 181, and 182.

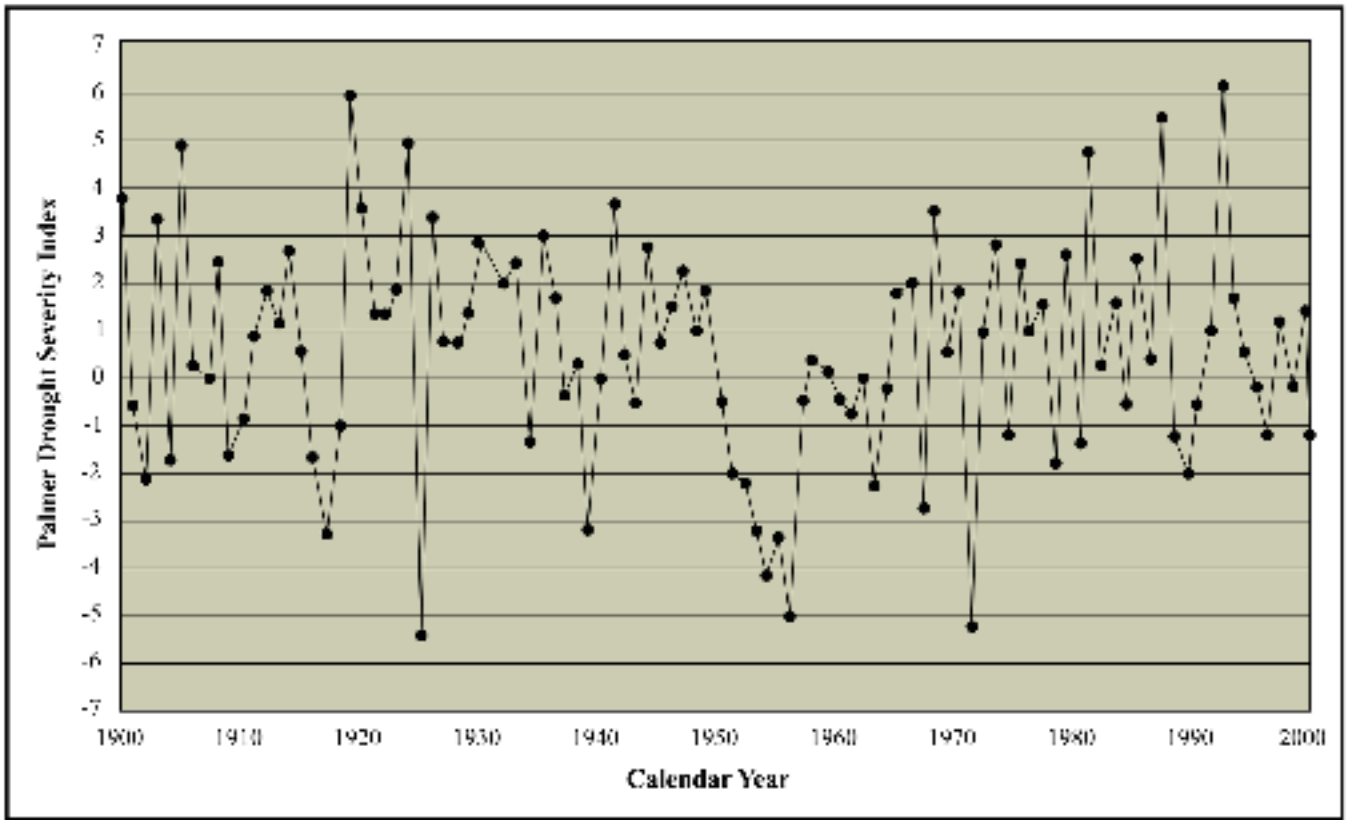

Figure 2-8. PDSI values from AD 1900-2000 based on an average of PDSI grid points 166, 167, 181, and 182.

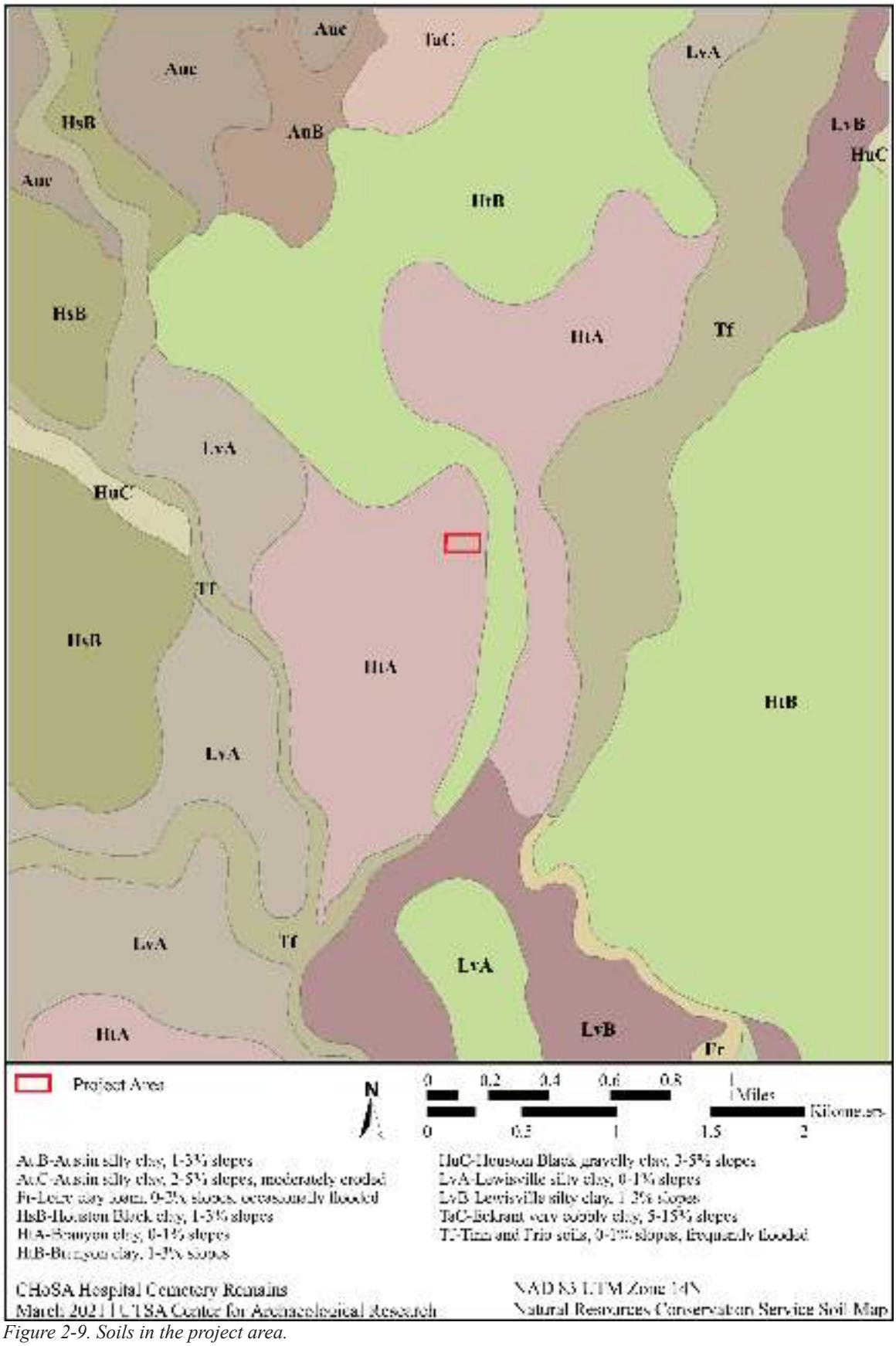

Figure 2-9. Soils in the project area.

Table 2-1. Prehistoric Periods in South-Central Texas (based on chronologies developed by Collins (1995, 2004), Johnson and Good (1994), Black (1989), and Hester (2004))

Time Period	Characteristics	Landforms	Sites	Sub-Period/ Phase	Diagnostics
Paleoindian	Generalized hunter-gatherers - mammoth, *Bison antiquus*, deer, Bison, turtles, alligators, rabbit, raccoon	High terraces, valley margins, and upland locations	Gault-41WM9[1,2], Pavo Real-41BX52[3,4], St. Mary's Hall-41BX229[5,6], Richard Beene-41BX831[7], River Mammoth-41BX1239[8]	Early (11,500-10,000 BP)	Clovis, Folsom, Plainview points, bifacial Clear Fork tools, finely flaked end scrapers
				Late (10,000-8800 BP)	Wilson, Golondrina, and St. Mary's Hall points
Archaic	Hunting and gathering intensifies, greater exploitation of local resources, broadening material culture, burn rock middens, small highly mobile groups	River terraces, hills overlooking valleys	Wilson-Leonard-41WM235[9], Richard Beene-41BX831[10], Hall's Cave-41KR474[11,12], 41BX1888[13], 41BX1396[14]	Early (8800-6000 BP)	Angostura, Early Split Stem, Martindale-Uvalde, Early Basal-Notched dart points, ground stone, Guadalupe bifaces, Clear Fork gouges
	Increasing populations, seasonal harvests, intensive plant gathering and processing, burned rock middens	Upland settings, floodplains, low terraces, natural levees	Granberg-41BX17/217[15], Gatlin-41KR621[16,17], Jonas Terrace-41ME29[18]	Middle (6000-4000 BP)	Bell, Andice, Calf Creek, Taylor, Nolan, Bulverde, and Travis dart points, triangular bifaces, tubular stone pipes
	Burned rock middens, large cemeteries, territoriality	All settings	Loma Sandia-41LK28[19], Ernest Witte-41AU36[20], Panther Springs-41BX228[21], Hitzfelder Cave-41BX26[22,23,24], Olmos Dam-41BX1[25]	Late (4000-1200 BP)	Pedernales, Kinney, Lange, Marshall, Marcos, Montell, Castroville, Ensor, Frio, and Darl dart points
Late Prehistoric	Shift to bow and arrow, burned rock midden use peaks, increasing subsistence complexity, very large populations	All settings	Loeve Fox-41WM230[26], Smith Rockshelter-41TV42[27], Scorpion Cave-41ME7[28]	Austin (1200-650 BP)	Scallorn and Edwards arrow points
	First occurrence of pottery, large populations	All settings	Hinijosa-41JW8[29], Rainey-41BN33[30], Biensenbach-41WN88[31], Toyah Bluff-41TV441[32], Coleman-41BX568[33,34]	Toyah (650-350 BP)	Perdiz and Cliffton arrow points, ceramics

[1]Collins 1999a, [2]Collins 1999b, [3]Collins et al. 2003, [4]Figueroa and Frederick 2008, [5]Hester 1977, [6]Hester and Kohnitz 1975, [7]Thoms and Mandel 2007a, [8]Carpenter et al. 2013, [9]Collins 1998, [10]Thoms and Mandel 2007a, [11]Toomey 1993, [12]Toomey 1994, [13]Munoz and Devito 2012, [14]Thompson and Nichols 2016, [15]Munoz et al. 2011, [16]Houk et al. 2009, [17]Oksanen 2008, [18]Johnson 1995, [19]Taylor and Highley 1995, [20]Hall 1981, [21]Black and McGraw 1985, [22]Givens 1968, [23]Mauldin et al. 2013, [24]Munoz et al. 2013, [25]Lukowski 1988, [26]Prewitt 1974, [27]Suhm 1957, [28]Highley et al. 1978, [29]Black 1986, [30]Henderson 2001, [31]Nickels 2000, [32]Karbula 2003, [33]Mauldin et al. 2013, [34]Potter 2005

Europeans replaced Native Americans as the majority within the region (Favata and Fernandez 1993). In 1685, the coastal Karankawas encountered René Robert Cavelier, Sieur de La Salle, when Fort St. Louis was established along Matagorda Bay (Foster 1998). Hunger, disease, and escalating hostilities between the French and the Native Americans subsequently destroyed the colony. The southward incursion of the Comanche and Apache and the northward expansion of Spanish influence led to the displacement of many of the area's indigenous groups. Decimated by disease brought by Europeans (see Ramenofsky 1987), many of the remaining groups sought refuge in the numerous Spanish missions established early in the eighteenth century. The move to the missions significantly impacted the hunter-gatherer way of life and the material culture. Native artifacts from the Historic period reflect European influences and include metal, glass, and ceramics along with pre-Hispanic Goliad wares and lithic arrow points, tools, and gunflints (Taylor 1996).

Because a detailed archival report, including an extensive review of the historical archives and family histories of descendant groups was produced in 2020 (see McKenzie et al. 2020), the historic period in South Central Texas is touched upon in a concise manner. For more detailed summaries of the period see Mauldin et al. (2015; 2018) and McKenzie et al. (2016). For this report, the Historic period is divided into four subperiods consisting of the Proto-historic (AD 1528-1700), the Colonial/Mission period (AD 1700-1821), the Mexican period (AD 1821-1836), and the Republic of Texas/Early State period (AD 1836-1900). For information on the post AD 1900 period for Central and South Texas, see Campbell (2003), Jasinski (2018), and Ramsdell (1959).

Proto-historic (ca. 1528-1700)

The Proto-historic period in Texas begins with the arrival of Europeans in AD 1528 (Favata and Fernandez 1993; Krieger 2002) and ends with the establishment of sustained, regional European settlements around AD 1700 (Chipman and Joseph 2010; Weddle 1968). Most of the recorded data from this period comes from accounts of French and Spanish soldiers and Spanish missionaries. Archaeological evidence for this period in Central and South Texas is minimal (see Thoms and Ahr 1995).

Following the shipwreck of the Narváez on the Texas coast in 1528, Cabeza de Vaca and three other Spanish survivors lived as slaves in wretched conditions among the Texas inland and coastal Native Americans until 1535, at which point they escaped and returned to Mexico (Favata and Fernandez 1993; Krieger 2002). Little direct contact is documented in the Central Texas region between the Spanish and Native Americans over the next 150 years (Foster 2008; Wade 2003).

One of the earliest Spanish excursions into Central Texas occurred in 1675 when the Bosque-Larios expedition traveled from Monclova in Coahuila onto the Edwards Plateau (Wade 2003:24-54). In 1684 the Mendoza-Lopez expedition, explored the region from the El Paso area, to the Concho River and the San Saba River (Wade 2003:82). The following year, the French established Fort St. Louis, along Matagorda Bay on the Texas Gulf Coast. Disease and conflicts with coastal Native American groups resulted in the destruction of the colony in 1689 (Foster 1998).

As a response to the French settlement at Fort St. Louis, Spain sent General Alonzo de León to secure the region in 1689. The following year, the Terán de los Rios *entrada* was dispatched to secure East Texas (see Cox 2005b; de la Teja 1995; Hatcher 1932; McGraw and Hindes 1987). A diary entry made in 1691 by Terán de los Rios, described the San Antonio River area as "the most beautiful in New Spain…" (Chabot 1932:10). Another member of the expedition, Father Massanet, wrote "the country is very beautiful…. The river is bordered with many trees, cottonwoods, oaks, cedars, mulberries and many vines" (Hatcher 1932:54-55).

The Colonial/Mission Period (1700-1821)

The founding of Mission San Juan Bautista in 1700, near present day Eagle Pass/Piedras Negras along the Rio Grande, represented the first successful Spanish settlement in South Central Texas (Weddle 1968). Several additional missions were built in the early 1700s in east Texas to establish a permanent Spanish presence in response to real and perceived threats from the French (see Chipman 1992). To expand their influence in the region, a series of expeditions were launched by the Spanish including the Espinosa-Olivares-Aguirre Expedition of 1709 (Tous 1930a), the Domingo Ramón Expedition of 1716 (Tous 1930b), and the Alarcón Expedition of 1718-1719 (Hoffman 1938). All three excursions provided accounts of the San Antonio area. Father Isidro Felix de Espinosa of the 1709 expedition provided the first known description of the San Pedro Springs. The Alarcón Expedition established a permanent presence in the region with the founding of the Presidio San Antonio de Béxar, the Villa de Béxar, and Mission Valero (the Alamo; Cox 1997, 2005a, b; de la Teja 1995; Habig 1968; Hoffman 1938).

In May of 1719, the French seized Spanish Pensacola in present day Florida, then in June crossed the Sabine River from Louisiana into East Texas and captured Mission San Miguel de los Adaes (Chipman and Joseph 2010; Forrestal 1935:3-4). As a result, Spain abandoned their East Texas Missions and retreated to the Presidio San Antonio de Béxar. In 1721, an *entrada* out of Coahuila, under the command of Governor José de Azlor y Virto de Vera, Marqués de San Miguel de Aguayo, reestablished the East Texas missions and presidios (Forrestal 1935; Hackett 2010). By 1731, due to the high cost of maintenance and resupply, and the low rates of

Native American converts, several of the East Texas missions were shut down. Three, Missions Concepción, San Juan, and Espada were reestablished in the San Antonio area (Almaraz 1989; Habig 1968). In the same year, 15 families from the Canary Islands arrived at the Villa de Béxar. The settlers dominated much of the economic, political, and cultural life in the area throughout the 1700s (de la Teja 1995; Poyo 1991).

The second half of the eighteenth century concluded the French threat in Texas. The Seven Years War (1754-1763) between Great Britain and the allied forces of France and Spain resulted in the Treaty of Paris in 1763. With Britain as the victor, the treaty terminated the war and ended French involvement in Texas (Baugh 2011; Calloway 2006). By the end of the century, the declining status of the missions in San Antonio resulted in a 1794 decree that called for their secularization. By 1824 all missions in the area were secularized (Carlson 1994; Cox 1997).

Tensions at the close of the eighteenth century between Colonial Mexico, including what is now modern-day Texas, and Spain increased, and on September 16, 1810 a formal declaration of rebellion was issued by Father Hidalgo in Dolores, Mexico (Henderson 2009; Marley 2014). Several uprisings occurred in Texas including the Battle of Rosillo in 1813, and the Battles of the Alazán and the Medina, both encounters between loyalists and rebels associated with the Gutierrez-Magee expedition of 1812-1813 (Marley 2014; Schwarz and Thonhoff 1985; Thonhoff 2013a, b). The rebellions were successful, and in 1821 Mexico gained independence, ending Spanish rule (Henderson 2009).

The Mexican Period (1821-1835)

Subsequent to Spanish rule, Mexico adopted the constitution of 1824. The constitution merged Texas with the state of Coahuila, established the state capital in Saltillo, and enacted laws that enabled heads of households to claim land in Mexico (Cox 1997). After an influx of settlers from the United States into Texas, the laws were changed. By 1830, immigration into Texas was prohibited. The enforcement of the "Law of April 6, 1830" resulted in building hostility between Mexico City and Texas (Campbell 2003; Cox 1997; Fehrenbach 2000; Henson 1982:47-49; Weber 1982). The tension resulted in conflicts, with one of the earliest occurring in 1832 along the Brazos River at Fort Velasco (see Cox 1997).

In 1834, General Antonio López de Santa Anna took over the Mexican government, officially revoked the Constitution of 1824 (Weber 1982), and sent forces under the command of General Cos to suppress uprisings in Coahuila and Texas. Cos eventually occupied San Antonio, but withdrew his forces south after several battles with a rebel army led first by Stephen F. Austin, then by Ben Milam (Cox 1997; Marley 2014). In February of 1836, Santa Anna and a Mexican army of approximately 2,000 men arrived on the outskirts of San Antonio to reassert governmental control. Rebel forces of less than 200 men retreated to Mission San Antonio de Valero and after a short siege, were defeated on March 6, 1836. In late April, under the command of Sam Houston, the Texan forces defeated the Mexican troops at the battle of San Jacinto. The defeat and capture of Santa Anna, resulted in the establishment of the Republic of Texas (Campbell 2003; Cox 1997; Davis 2004).

The Republic of Texas and the Early Texas State (1836-1900)

The new Republic was not recognized by Mexico, and disputes, many centered on the establishment of a southern boundary with Mexico, continued into the 1840s (Fehrenbach 1983). San Antonio was occupied by 700 Mexican soldiers in March of 1842, and again in September by forces loyal to Mexico. An armistice was established in June of 1843 (Cox 1997).

Soon after the creation of the Republic, Texans began negotiations for annexation into the United States. Despite significant foreign debt and a proslavery stance, Texas was admitted as the 28th state on December 29, 1845 (Neu 2015; Texas State Library and Archivist Commission 2016). Following the annexation, Mexico cut diplomatic ties to Texas. Various battles occurred between Mexican and United States troops concerning disputed territories along the Rio Grande leading to a declaration of war on May 13, 1846 by the United States. The war, fought on Mexican soil, concluded in February of 1848 with the Treaty of Guadalupe-Hidalgo. The treaty ceded most of what is now Arizona, California, Colorado, Nevada, New Mexico, Texas, and Utah to the United States and established the Rio Grande as the southern boundary of Texas (Bauer 1992; Campbell 2003; Wallace 1965).

Following the war with Mexico, the population of Texas expanded rapidly, increasing from approximately 142,000 in 1847 to over 600,000 by 1860 (Campbell 2003). The dominant crop in East Texas, cotton, was supported, for the most part, by slave labor. By 1860 over 180,000 slaves were in the state (Campbell 1989, 2003). In 1861, with the commencement of the Civil War, Texas joined the Confederacy and seceded from the United States (Campbell 2003). Following the defeat of the Confederacy in 1865, the state was placed under military rule for roughly five years. In 1870, Texas was readmitted to the United States (Moneyhon 2017).

The population in Texas continued to expand from one million in the early 1870s to over three million in 1900 (Meinig 1969). Major industries in the state during this period consisted of cattle ranching and farming (Campbell 2003; Meinig 1969; Sonnichsen 1950). The railroads expanded into Texas in the 1870s, and by 1900 they crisscrossed the state connecting it to the rest of country (Meinig 1969; Reed 1941).

Previous Archaeological Investigations

Bexar County contains a plethora of historical archaeological sites dating from the founding and early days of the Villa de Béxar. The CHoSA is located on land that sits on the western edge of a concentration of these sites in downtown San Antonio. The property's 48 years of use as the Campo Santo (1808-1848) and Old Catholic Cemetery (1849-1855), spanning the end of the Colonial Mission period to the Early Statehood period, link it to a variety of archaeological sites associated with early San Antonio. This section provides a brief summary of archaeological sites within a roughly 0.5 km (0.3 mi.) radius of the CHoSA property (Figure 2-10). This includes projects completed at the Spanish Governor's Palace (41BX179), two Spanish Colonial middens and a possible presidio wall (41BX1598), the Plaza de Armas (41BX2088), the Menger Soap Works (41BX508), the Old San Antonio Cemetery in Milam Park (41BX992), the possible first location of Mission Valero (41BX1968), eight sites (41BX2252-2259) associated with the new Frost Bank Tower, seven residential sites (41BX302, 604, 611, 612, 613, 795, and 2092; Texas Historical Commission 2018c), and a previous burial investigation on CHoSA property (Lyle 1999).

Spanish Governor's Palace (41BX179)

The exact construction date of the Spanish Governor's Palace is unknown, but 1749 is carved into the keystone above its main entrance. Fox (1977:2) suggests that the keystone date likely refers to the building's final construction phase, as a *comandancia* was mentioned in 1733 as the home of Captain José de Urrutia and again in 1738 as being adjacent to the *cuerpo de guardia* on the north side of Military Plaza (Chabot 1929). The building was used to house various captains and at least one governor until 1780, when it was passed down to Captain Luis Antonio Menchaca's son José (Menchaca 1803). The building was owned by Ignacio Perez from 1804 to his death in 1852 (Chabot 1929; Fox 1977; Spanish Archives 1804). Subsequently the building housed small shops, offices, and bars (Fox 1977).

The Spanish Governor's Palace, located 0.38 km (0.24 mi.) southeast of the current Project Area (see Figure 2-10 southeast quadrant), has been investigated multiple times. Harvey P. Smith worked at the site during the structure's rehabilitation following the purchase of the property by the City in in 1928. He excavated to four feet below the surface to reveal what he determined to be the earliest walls of the building (Fox 1977). Fox (1977, 1997) conducted work in 1976 and 1996, and Ulrich (2010)/Nichols (2018) conducted monitoring and limited excavation at the site in 2009 and 2015 respectively.

Fox (1977) used a combination of shovel tests and test units to explore the northeast corner of the property in 1976. The work exposed two caliche floors, and recovered an infant burial and an assortment of early eighteenth and nineteenth-century artifacts. Artifacts included porcelain, stoneware, English earthenwares, Spanish Colonial wares, glass and metal objects, nails, debitage, and faunal bone (Fox 1977:4-10). In 1996, Fox excavated three test units along the eastern wall of the building to determine the depth and condition of its foundations. Recovered artifacts included Spanish Colonial ceramics, English earthenwares, porcelain, glass, metal, construction materials, shell, animal bone, debitage, and chert tools (Fox 1997:14). The CAR excavated five 50-x-50 cm test units in December 2009 and January 2010 in the courtyard of the Spanish Governor's Palace. The units were dug in advance of utility installations. Large quantities of artifacts were recovered ranging from the Colonial period through the twentieth century, including faunal bone, Spanish Colonial and English ceramics, debitage, glass, metal, and construction materials (Ulrich 2010). In 2015, Raba Kistner Environmental excavated exploratory trenches in front of the building in advance of the replacement of a water main. An intact deposit of Spanish Colonial artifacts was recovered approximately 80-100 cm below surface (cmbs; 31.5-39.4 in.; Nichols 2018).

Site 41BX1598

Two midden deposits, one late Spanish Colonial and one post-Colonial, six post-Colonial pit features, a possible presidio wall, and walls associated with the Santa Rosa Charity Hospital/St. Joseph's Orphanage (1860s-early 1900s, and see McKenzie et al. 2020) were recorded by CAR during testing and monitoring of 41BX1598 in 2003. The work, completed in advance of construction of the San Fernando Community Center, consisted of six backhoe trenches, nine shovel tests, seven test units, and mechanical stripping. CAR recovered over 1,500 artifacts and 13,000 pieces of animal bone (Figueroa and Mauldin 2005). Figueroa and Mauldin (2005) concluded that the midden deposits represent use from before 1700 and that the Colonial-period wall may be the remains of the Presidio San Antonio de Béxar. The site is located approximately 0.40 km (0.25 mi.) to the southeast of the CHoSA (see Figure 2-10 southeast quadrant).

Figure 2-10. Archaeological sites within 0.5 km of the project area.

Plaza de Armas (41BX2088)

Plaza de Armas, the second location of the Presidio San Antonio de Béxar, was established in 1722 to protect the Villa de Bexar and the Mission San Antonio de Valero. The presidio was originally on the west side of the San Antonio River roughly 1.4 km (0.87 mi.) from the mission (Handbook of Texas Online 2018). The plaza functioned as the center for military, commercial, and civic activities during the Spanish Colonial period and throughout the nineteenth century (McKenzie et al. 2016). 41BX2088 lies roughly 0.42 km (0.26 mi.) to the southeast of the Children's Hospital (see Figure 2-10 southeast quadrant).

In 2011, Abasolo Archaeological Consultants monitored the excavation of two exploratory test pits to expose and inspect the condition of the foundation of the Plaza de Armas Buildings (Shafer and Hester 2011). Test Pit 1 was adjacent to the wall on the north side of Building 1 in the patio of the Spanish Governor's Palace and Test Pit 2 was against the wall on the west side of Building 1. A mixed deposit of ceramics, glass, metal, and faunal bone was recovered from Test Pit 1. Most of the artifacts dated to the nineteenth and early twentieth centuries. Although few artifacts were present, a feature, the buried wall base of a window well, was uncovered in Test Pit 2. The profile of the test pit revealed an intact deposit of dark brown sediment with bone and charcoal approximately 1.5 m (4.9 ft.) below the surface. Shafer and Hester (2011) concluded that the intact sediment may contain Spanish Colonial deposits.

The CAR conducted archaeological monitoring and testing at the Plaza de Armas Buildings (Vogel Belt Complex) from April 2013 to November 2014 in advance of renovations and improvements to City of San Antonio offices housed in the complex (McKenzie et al. 2016). CAR staff monitored five boreholes, five backhoe trenches, 10 test units, and nine shovel tests, and hand-excavated 34 auger tests, 41 test units, and six features. Four backhoe trenches and one borehole were located on the exterior of the Plaza de Armas Buildings. The remaining excavations were in the building basements. Artifacts recovered include Native American, Spanish Colonial, and European/English wares, construction materials, metal, glass, personal items, faunal bone, debitage, lithic tools, groundstone, and burned rock (McKenzie et al. 2016).

McKenzie et al. (2016) concluded that the project sampled deposits containing buried Spanish Colonial material from the 1722 Presidio San Antonio de Béxar, possibly including a portion of the Presidio wall itself, as well as later Spanish Colonial and post-Spanish Colonial occupations. A large Spanish Colonial-age sheet midden was documented in the western third of the building basements that likely extends towards San Pedro Creek.

Menger Soap Works (41BX508)

In July 1851, Simon Menger purchased the F. W. Klemcke soap business and started the Menger Soap Works. The original building was located approximately three blocks to the south of the present location of 41BX508. In September 1859, a flood destroyed the original location and the Soap Works was reestablished at its present site, roughly 0.33 km (0.21 mi.) to the northeast of the CHoSA (see Figure 2-10 northeast quadrant; Ivey and Assad 1982; Texas Historical Commission 2018c). Menger's soap making operation continued until 1911 at which point the building was used to house other businesses (Ivey and Assad 1982). Site 41BX508 is listed on the National Register of Historic Sites (Texas Historical Commission 2018c).

The CAR conducted archaeological investigations in advance of renovations of the surviving structure in February 1979 (Ivey and Assad 1982). Eight units were excavated revealing extensive foundations, brick and stone platforms, flagstone and brick floors, remnants of machinery, and artifacts including glass, ceramics, metal, personal items, and faunal bone. Ivey and Assad (1982) conclude that the artifacts are in mixed context and date from the 1840s to the mid-1900s.

Milam Park/Square (41BX992)

The land comprising Milam Park was platted in 1848 as the San Antonio city cemetery (City Council Minutes (CCM) 1848) and was used as such until 1853 (Tennis 1995a). The cemetery was immediately adjacent to the Old Catholic cemetery and Campo Santo located on the CHoSA property (see Figure 2-10 southwest quadrant). In 1884, the cemetery was repurposed as Milam Square or Park in honor of Ben Milam's gravesite (City Council Minutes (CCM) 1884; Tennis 1995a). Milam was fatally wounded on December 7, 1835 while leading the Battle of San Antonio de Béjar. He was buried where he died in the east yard of 41BX2164, the Veramendi Palace (Garver 2010; Nevin 1975; Tennis 1995b). Milam was exhumed and reinterred in the city cemetery (41BX992) in either 1846 or 1848 (Tennis 1995b).

The CAR conducted monitoring, backhoe trenching, shovel testing, and two burial exhumations in 1992 and 1993 at Milam Square. Recovered artifacts include post-1900s metal, faunal bone, personal items and earlier lead glazed ceramics (Tennis 1995a, b). In 2013, Atkins North America, Inc. conducted archaeological monitoring and excavated three test units in advance of renovations to the park's playground. Three potential grave markers were uncovered within and beneath modern fill deposits, but were determined not to be associated with the old city cemetery (Nichols 2013). Cox/McLain Environmental Consulting, Inc. monitored street, sidewalk

and storm sewer improvements along North San Saba Street in 2015 and 2016. The mechanical excavations on San Saba abutted the west side of 41BX992. No artifacts or burials were encountered (Dayton et al. 2016).

Site 41BX1968

According to the diary of Fr. Pedro de Mezquía, a missionary on the Alarcón expedition of 1718, Mission San Antonio de Valero was originally constructed as an impermanent hut of mud and brush on May 1, 1718 near what is believed to be San Pedro Springs (Cox 2005b; Hoffman 1938:318). Another account by Fr. Francisco de Celiz, the official diarist of the Alarcón expedition, places the mission's original location 3.2 km (2.0 mi.) south of San Pedro Springs on the west side of the San Antonio River along San Pedro Creek (Hoffman 1935:49). Mission Valero was moved to the east bank of the San Antonio River about a year later (Habig 1990), then to its final location, approximately 0.2 km (0.1 mi.) from the second site, in 1724 (Cox 2005b; Habig 1990).

In 2013, the CAR conducted archaeological investigations on Columbus Park and on adjacent land owned by the Christopher Columbus Italian Society to explore Spanish Colonial deposits possibly associated with the first location of the mission. Nichols (2015b), using the diary of Celiz (Hoffman 1935), posits that the mission was originally constructed on the landform currently owned by the Columbus Society (Nichols 2015b:8). Thirty-one shovel tests and three test units were excavated. Surface collections produced a small number of Spanish Colonial Period artifacts. No evidence of the mission was noted within Columbus Park. Spanish Colonial majolicas and lead-glazed Galera wares were recovered from the Columbus Society property (Nichols 2015b). The property, designated as site 41BX1968, is located approximately 0.45 km (0.28 mi.) to the north of the Children's Hospital property (see Figure 2-10 northwest quadrant; Texas Historical Commission 2018c).

Raba Kistner Environmental, Inc. completed additional excavations on the Columbus Society land in 2015 (Nichols 2015a). Eighteen auger bores, three test units, and four shovel tests revealed disturbed sediments containing artifacts from the late-nineteenth to the early-twentieth century including faunal bone, debitage, construction material, glass, metal, personal items, and European ceramics. Thirty-seven artifacts, possibly associated with the Spanish Colonial Period, were also uncovered in the mixed sediments. These consisted of Colonial ceramics, glass, and a gunflint. Nichols (2015a) concludes that the range of artifacts fit what would be expected to be associated with the first site of Mission Valero, but that no key temporal diagnostics were recovered that definitively link 41BX1968 to the original mission.

41BX2252-2259

In 2016, the CAR conducted archaeological investigations in advance of the construction of the Frost Bank Tower located approximately 0.33 km (0.21 mi.) to the east of the CHoSA project area (see Figure 2-10 northeast quadrant; Figueroa and McKenzie in press). The project's archaeological field work is complete, but, as of the production of this report, the analysis and reporting phase is ongoing. The Frost investigations, consisting of monitoring, the mechanical excavation of 12 backhoe trenches, and the hand excavation of two test units and one shovel test, uncovered 14 features and over 6,500 artifacts. Over 75 percent of the artifacts were recovered from Feature 25. The feature's artifacts include over 1,450 ceramic sherds with 99 percent identified as Native American wares. This feature is identified by Figueroa and McKenzie (in press) as a late Spanish Colonial trash deposit. Eight new sites, 41BX2252-2259, were recorded and are briefly summarized in Table 2-2.

Casa Navarro (41BX302)

Casa Navarro (41BX302) is 0.47 km (0.29 mi.) to the southeast of the Children's Hospital (see Figure 2-10). The house is listed on the National Register of Historic Places, and is a Texas Historic Landmark. The property includes a two-story office, a one-story house, and a one-story kitchen (Texas Historical Commission 2018c). José Antonio Navarro bought the land in 1832, but did not live full-time in the structure until it was completed in the mid-1850s. He occupied the building until his death in 1871 (Texas Historical Commission 2018b). Navarro was a merchant, rancher, land investor, politician, and one of the three Mexican signers of the Texas Declaration of Independence (Texas Historical Commission 2018a).

Ernest Steves House (41BX604), Marx House (41BX611), Callaghan/Navarro House (41BX612), and Navarro/Leal House (41BX613)

Four residential structures, located within 0.5 km (0.31 mi.) of the CHoSA project area, were investigated in the early 1980s as part of the Vista Verde South downtown revitalization project. The houses, all on New City Block (NCB) 301, were subject to a pedestrian reconnaissance survey by the CAR in 1983 (Texas Historical Commission 2018c) and were determined as eligible for nomination to the National Register of Historic Places (Labadie 1987:24 Figure 14).

The Ernest Steves House (41BX604) was a one-story 1890's Queen Anne style frame structure with ornate shingling and Victorian detailing (Labadie 1987:22 Figure 13), It was located at 208 South Leona Street, but was moved in the

Table 2-2. Archaeological Sites Associated with the Frost Bank Tower Project (Figueroa and McKenzie in press)

Site	Feature	Feature Description	Associated Artifacts
41BX2252	4	Stone foundation	No
	5	Brick foundation	No
41BX2253	8	Stone foundation	No
41BX2254	3	Privy/trash pit	Yes
41BX2255	14	Hand dug stone lined well	Yes
	24	Stone foundation	No
	27	Lithic scatter	Yes
41BX2256	2	Privy/trash pit	Yes
	9	Privy/trash deposit	Yes
	21	Stone foundation	No
	25	Late colonial pit	Yes
	28	Trash pit	Yes
41BX2257	1	Sheet midden	Yes
41BX2258	N/A	N/A	Yes
41BX2259	11	Stone foundation	No

early 1980s as part of the revitalization project (Labadie 1987:72). Ernest Steves was a son of Edward Steves (1829-1890), a prominent San Antonio lumberman and business owner (Everett 2016). The site is located 0.44 km (0.27 mi.) to the southwest of the CHoSA property (see Figure 2-10 southwest quadrant; Texas Historical Commission 2018c).

The Peter Marx House (41BX611), a Victorian style frame shotgun house (Labadie 1987:22 Figure 13) constructed within the Victorian Texas period from 1874-1901 (Labadie 1987:21 Figure 10; Texas Historical Commission 1979), was located at 209 South Pecos. The house was also moved during the revitalization project (Labadie 1987:73). The site is located 0.40 km (0.25 mi.) to the southwest of the CHoSA property (see Figure 2-10 southwest quadrant; Texas Historical Commission 2018c). Peter Marx was born in Germany in 1845 and died in San Antonio in 1897 (Ancestry.com 2018b). Per the 1880 United States Federal Census, he was married to Carolina and had two children, a daughter Adela and a son Peter Jr. Peter was a clerk and Carolina kept house (Ancestry.com 2018a).

The Callaghan/Navarro House (41BX612) was a Victorian style wood and stucco structure (Labadie 1987:22 Figure 13). It was located on 211 South Pecos Street, approximately 0.43 km (0.27 mi.) southwest of the Children's Hospital (see Figure 2-10 southwest quadrant; Texas Historical Commission 2018c). The Navarro/Leal House (41BX613), a Victorian stucco on stone structure (Labadie 1987:22 Figure 13), was on 213 South Pecos Street roughly 0.45 km (0.28 mi.) southwest of the hospital (see Figure 2-10 southwest quadrant; Texas Historical Commission 2018c). Both houses were demolished with the permission of the SHPO in 1983 (Labadie 1987:73-74). It is unknown when the two houses were built, but their construction style is similar to mid-nineteenth century houses in the area. They were constructed for Bryan Callaghan Sr., a prominent merchant and Mayor of San Antonio (1847), after he purchased NCB 301 in 1850. After Callaghan's death, his wife Concepcion married Angel Navarro, José Antonio Navarro's brother. Various members of the Callaghan and Navarro families resided in the houses until 1913 when they became rental properties (DeLara-Almond Architects and Bobbitt 1981:71-72).

Ruiz Property (41BX795)

Juan Manuel Ruiz, an immigrant from Queratarо, Spain, acquired the Ruiz property, consisting of a limestone house and 50 varas square (12.9 m^2) of land, sometime around 1760. The property was originally granted to Joseph Antonio Rodriguez in 1736 (Chabot 1937; Uecker et al. 1991). Upon the death of Ruiz in 1797, the property was passed to his son, José Francisco Antonio Ruiz. José Francisco (1790-1840) was educated in Spain and in 1803 became schoolmaster of the Villa de Béxar school which was run from the Ruiz home. In 1813, he fought at the Battle of Medina as a lieutenant in the Republican Army of the North under the command of Gutiérrez de Lara. The defeat of the Republican army by the Spanish forces forced the Ruiz family to flee and live in exile until 1822. José Francisco served as a Colonel in the Mexican

army from 1825 to 1832. In 1835, Ruiz joined the Texas Army and in 1836 he signed the Texas Declaration of Independence (Strong 2010; Uecker et al. 1991). Francisco Antonio Ruiz, the mayor of San Antonio during the 1836 siege of Mission Valero, inherited the property from his father, José Francisco, in 1840 (Chabot 1937; Uecker et al. 1991). Various members of the Ruiz family continued to reside on the property until 1910. In the 1940s, the Ruiz house was relocated to the grounds of the Witte Museum (San Antonio Light 1948; Uecker et al. 1991).

The Ruiz property is located 0.48 km (0.30 mi.) to the southeast of the Children's Hospital (see Figure 2-10 southeast quadrant). The site was recorded by Fox in 1989 during archaeological investigations conducted by the CAR in advance of utility construction on the property (Texas Historical Commission 2018c; Uecker et al. 1991). Monitoring and the excavation of three test units recovered Native American, Spanish Colonial, and European/English wares, glass, metal, personal items, construction material, lithic debitage, and faunal remains. The investigation recorded building footings and the remains of a brick-lined privy. Recovered artifacts from the eighteenth century Spanish Colonial era are consistent with the use of the property as early as the 1730s (Uecker et al. 1991).

41BX2092

In 2015, Terracon Consultants, Inc. conducted archaeological investigations in advance of the platting of property on Cattleman's Square. Site 41BX2092 is located approximately 0.27 km (0.17 mi.) to the south west of the Children's Hospital (see Figure 2-10 southwest quadrant). Backhoe trenching revealed domestic artifacts consistent with a late nineteenth to early twentieth century habitation (Texas Historical Commission 2018c).

CHoSA Property (41BX2397)

During the summer and fall of 1997, the CAR exhumed two burials uncovered during construction activities at the Children's Hospital (Lyle 1999.) The first burial, recorded approximately three feet below the surface in an unmonitored backhoe trench, consisted of a mostly complete young adult female. The coffin burial included a woman's wedding band, rosary beads, and two religious medals. The second burial, uncovered during installation of a drainage pipe, was previously disturbed by a sewer pipe. The pipe cut through the young adult male coffin burial. No grave items were recovered. No evidence of grave shafts or pits were noted for either burial (Lyle 1999.)

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Chapter 3: Field and Laboratory Methods

The construction of Memorial, Prayer, and Play Gardens on the grounds of the CHoSA had a high probability of impacting human remains interred from 1808-1855 in the Old Campo Santo of San Fernando and Old Catholic Cemetery. Previous investigations on the hospital property (Lyle 1999) and construction finds under Houston Street adjacent to the hospital property indicate that human burials remain on the property (see McKenzie et al. 2020). The CAR, under contract with CHRISTUS Health, conducted archaeological investigations on the project area to exhume human remains inadvertently exposed during utility trenching prior to CAR's involvement, to explore the property for additional burials, to monitor all subsurface construction impacts, and to analyze and prepare any exhumed human remains for reburial on the CHoSA property. This chapter presents the field and laboratory methods used during the archaeological investigations of 41BX2397.

Field Methodology

Phase I of the investigations consisted of the cleanup of a mechanically excavated utility trench, the screening of associated backdirt, and the hand-excavation of eight 1-x-1 m units and two test pits to explore and exhume exposed human remains. CAR archaeologists, under the direction of the CAR Physical Anthropologist, Cynthia Munoz, thoroughly inspected the surface of the Memorial Garden for displaced human remains and burial artifacts. The crew carefully cleaned the walls and floor of the utility trench by shovel and trowel scraping. Each disassociated skeletal element and burial artifact on the surface and in the trench was flagged, numbered, mapped in with a SOKKIA Total Data Station (TDS), and collected for transport back to the CAR laboratory. Each evening, the excavations were covered with heavy plastic tarps for protection. The project area was completely fenced in and locked at the end of the workday by CHoSA. The containers were removed from the excavation site daily and secured at the CAR laboratory.

Locations in the trench walls with indications of a burial were explored with hand-excavated test units. One by one meter units were placed over the locations of the remains to allow for controlled hand excavation to expose and document the vertical and horizontal location of the burials. The units were expanded as necessary to encompass the complete skeleton. The test units were excavated in 10 cm (3.9 in.) levels and all matrix removed from each level was screened through 1/8-inch (0.32 cm) hardware cloth. All artifacts collected from the fill dirt were labeled to correspond with the respective burial. Each set of remains was pedestalled before recording. Wooden skewers were used to expose the burials to minimize any further damage to the remains. Each burial was mapped with the TDS and recorded on a burial form and a master burial log. The burial form included burial number, horizontal and vertical provenience, position of the skeleton, and orientation/direction of the skull. Evidence of post-interment disturbances, grave dimensions, grave fill, and fill into which the grave was excavated were also recorded on the form. Color of the skeletal elements was only recorded when indicative of groundwater or soil staining, burning, copper exposure, etc. Burials were mapped to scale onto a plan map. A photographic record and a photo log with the date and description was made for the test unit excavations. After the recording procedure was completed, elements were carefully removed and individually bagged. Burial sediments were removed and bagged from under the remains and returned to CAR for water screening. The bags were labeled with the element identification, the burial number, the excavator's initials, and the date (e.g. Burial 4, left calcaneous, S. Wigley, 4-12-17). These individual packages were placed in temporary curation containers labeled with the burial number and the date.

Upon completion of the utility trench burial exhumations, CAR archaeologists screened the backdirt from the utility trench for human remains and burial artifacts. Each backdirt pile along the sides of the trench was numbered and mapped with the TDS. Recovered remains were bagged and labeled with the backdirt pile number. Upon completion of the excavation all artifacts and human remains were returned to the CAR laboratory for processing and detailed analysis.

The second phase of the project entailed explorations of the CHoSA property to locate additional burials. To attempt to locate burials without exploratory excavations, ground penetrating radar (GPR) and a soil magnetometer survey was conducted on a portion of the Memorial Garden. Due to the heavy clay contents of the sediments, the GPR survey was unsuccessful. Soil magnetometry results indicated 16 anomalies. Because the project area has a history of disturbance, including parking lot construction, signage, building construction, and utility placement, it was unclear if the anomalies were burials or utilities. To supplement the results, the eastern two-thirds of the Memorial Garden was systematically trenched with a mini-excavator. The trenching consisted of scraping approximately 7 cm (2.8 in) of sediment at a time with a smooth excavator bucket. Archaeological monitors halted the excavator upon any indication of remains. The trench excavations terminated approximately 80-90 cmbs (31.5-35.4 inbs) when no remains were recorded. Exposed elements were flagged; identified, recorded, and photographed by CAR's Physical Anthropologist; and

mapped in with a Total Data Station. Other than the initial identification, the remains were not excavated, exhumed, or further explored. Because a minimum of 83 individuals were exposed in 11 exploratory trenches, CHoSA made the decision not to exhume the remains. The burials in the exploratory trenches were covered with a layer of sand followed by backdirt.

The final phase involved monitoring of all subsurface construction activities on the CHoSA property including mechanical and hand-excavated trenches for electrical lines and connectors, drainage and irrigation, utility placement and renovation, basement waterproofing, boiler room lateral pipe repair, terrace footers, wall replacement, bench and marker foundations, and tree plantings. In advance of mechanical pier drilling to support an observation/coffee terrace addition to the hospital over a portion of the Memorial Garden, CAR archaeologists hand-excavated seven shovel tests to ensure that the locations were negative for human remains. Shovel tests were 40 cm (15.7 in.) in diameter and extended to a depth of 70 cmbs (27.6 inbs). They were not excavated in specific increments, as the goal was to look for human burials. All soil from the shovel tests was screened through 1/8-inch hardware cloth. A large trench for terrace footers was mechanically excavated without notifying CAR monitors. Because the backdirt from the trench had been redistributed and smoothed out across the property before the archaeologist's discovery of the excavation, it could not be screened for human remains. CAR staff cleaned up the trench walls and floor and screened the associated sediments. Isolated human remains were collected. In advance of the installation of an additional pier for the terrace construction, CAR archaeologists hand-excavated the proposed area. The same excavation methods described above in Phase 1 were followed. Upon completion of the excavation all recovered artifacts and human remains were returned to the CAR laboratory for processing and detailed analysis.

Laboratory Methodology

Cultural materials recovered from the exhumation outlined above were inventoried and processed at the CAR laboratory at UTSA. All recovered human remains and associated artifacts were identified and analyzed. Proveniences for the materials were double checked through the use of a field sack number that was recorded on a field log form. Field sack numbers were assigned to artifact bags in the field. At the CAR, all artifacts and samples were separated by type and recovery context to facilitate analysis. Processing of recovered artifacts began with washing and sorting into appropriate categories (e.g., points, buttons, and nails). Depending on the condition of the skeletal elements, they were either gently washed or dry brushed. Individual categories were then analyzed by specific attributes designed for each group. Data was entered into Excel spreadsheets. All human remains and burial artifacts were reinterred on the CHoSA property.

Records generated during the project were prepared in accordance with federal regulation 36 CFR part 79, and THC requirements for State Held-in-Trust collections. Digital photographs were printed on acid-free paper, labeled with archivally appropriate materials, and placed in archival-quality sleeves. All field forms were completed with pencil. Field notes, forms, photographs, and drawings were printed on acid-free paper and placed in archival folders. Upon completion of the project, all records were permanently curated at the CAR facility.

Chapter 4: Results of Phases 1, 2, and 3

In September 2016, during the mechanical excavation of a linear utility trench in a proposed Memorial Garden, the CHoSA inadvertently exposed probable human remains. The hospital contacted the Bexar County Medical Examiner's Office and the CAR who both concurred that the remains were human and were not part of a crime scene. To comply with the ruling of the 408th District Court, the CHoSA contracted CAR to exhume all the burials on the property, which was deemed an abandoned cemetery under state law.

Fieldwork occurred on the project area from November 4, 2016 through September 30, 2020 in three phases. Phase 1 included a magnetometer survey and the hand-excavation of eight test units and two test pits. Phase 2 consisted of exploratory backhoe trenching. The final phase entailed the hand-excavation of seven shovel tests, the hand-excavation of a footer trench, and monitoring of all subsurface construction impacts on the hospital property. This included the monitoring of mechanical and hand-excavated trenches for electrical lines and connectors, utility placement and renovation, drainage and irrigation, basement waterproofing, boiler room lateral pipe repair, wall replacement, terrace footer installation, bench and marker foundations, and tree plantings. Construction plans were redesigned several times over the four years to reflect changes in design and to be as noninvasive to the human burials remaining on the property as possible. Figure 4-1 shows the final construction plan with the locations of the Old Catholic Cemetery and Campo Santo.

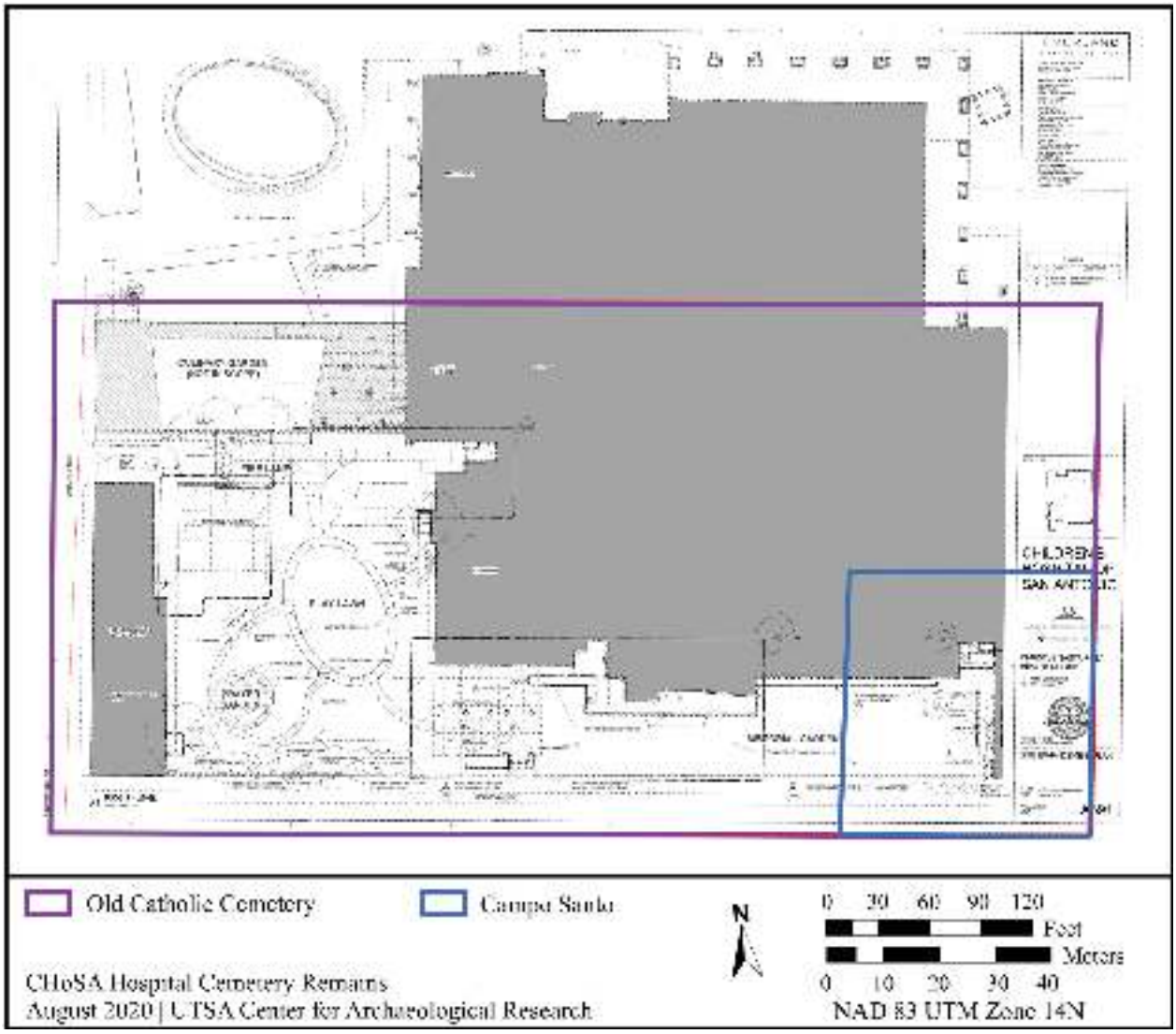

Figure 4-1. CHoSA renovations with the locations of the Campo Santo in blue and the Old Catholic Cemetery in purple.

This chapter presents the results of each phase including an analysis of the human skeletal remains recovered by the CAR and descriptions of burial associated artifacts.

Phase 1

At some point before the utility trench excavation, CHoSA removed approximately 0.46-0.91 m (1.5-3.0 ft.) of overburden from the Memorial Garden. This could account for up to half of the grave overburden, assuming original burial depths of six feet. The approximate dimensions of the utility trench were 58 m (190 ft.) long by 0.8 m (2.6 ft.) wide by 0.46-0.61 m (1.5-2.0 ft.) deep. An initial inspection by the CAR Physical Anthropologist suggested that at least three sets of remains, one within the boundary of the Campo Santo and two outside the Campo Santo but within the boundaries of the Old Catholic Cemetery, were exposed in the trench walls. It was also apparent that human remains were in the backdirt piles along the sides of the trench. CAR staff covered the exposed burials in the trench with sand and the backdirt piles with tarps to protect the remains while waiting for the 408th District Court's ruling. On March 23, 2017, CAR was granted a Disinterment Permit allowing disinterment of all burials on the CHoSA property. The court signed the petition on March 24, 2017 allowing excavations of human remains to begin. In the interim, the Geological Sciences Department of UTSA, led by Dr. Blake Weissling, conducted a magnetometer survey of a portion of the Memorial Garden.

Ground Penetrating Radar and Soil Magnetometer Survey

On November 4, 2016, Dr. Blake Weissling and three of his students attempted to use Ground Penetrating Radar (GPR) to explore subsurface disturbances in the far eastern portion of the Memorial Garden. The goal of the GPR survey was to reveal anomalies that may represent burial features, which would then be used to guide CAR's exhumations. GPR is a non-destructive method of geophysical inspection that creates subsurface images by transmitting electromagnetic waves into the ground surface and receiving pulses reflected from materials with different dielectric properties. The amplitudes of the received pulses and their arrival times are used to determine the nature and location of the anomaly. Soils with high conductivity, such as clay, limit GPR performance (Daniels 2007; Schrott and Sass 2008). Because Dr. Weissling concluded that the heavy clay content of the project area sediments was not conducive to GPR, the survey was not completed.

In lieu of GPR, Dr. Weissling and his students conducted a magnetometer survey (Figure 4-2). Magnetometers, using spatially separated sensors, measure the gradient of the magnetic field to provide resolution of small subsurface anomalies. Magnetometers can detect subtle anomalies caused by decaying organic materials, but react very strongly to iron, steel, many types of rock, and brick (Garcia-Garcia et al. 2016). Scanning was performed using a Geometrics Cesium Vapor Gradiometer. The area surveyed was divided into two grids measuring 6.7 m (22.0 ft.) by 6.0 m (19.7 ft.) and 20.2 m (66.3 ft.) by 3.3 m (10.8 ft.). The grids were surveyed along transects. Figure 4-3 is a map of the magnetometer results. See Appendix E for an enlargment of the magnetometer results. Because the anomalies (boxed in black) could show burials or could be reflecting construction and utility disturbances, CAR planned to follow up the magnetometer survey with ground-truthing excavations in Phase 2 of the fieldwork.

Utility Trench Burial Exhumations

From April 4 through the 17, 2017, CAR conducted fieldwork to exhume the human remains disturbed by the utility trench. The field crew carefully inspected the surface of the Memorial Garden to locate all human bone dislodged during the mechanical excavation of the trench. All finds were flagged, numbered, mapped with a SOKKIA Total Data Station (TDS), and bagged with an identification number. To provide a more fine-grained exploratory and documentation strategy, we used the TDS to establish a grid aligned to magnetic north. An arbitrary elevation of 100 meters above datum (mad) was established at a northing 1000 and easting 1000. Human remains were mapped to document their vertical distribution and density.

Fifty-five human skeletal elements were collected from the surface. Upon completion of the inspection, CAR archaeologists cleaned the trench floor and carefully cut back the trench walls. An examination of the walls located a fourth set of remains (Figure 4-4). Test Units, each initially 1-x-1 m, were laid out adjacent to the trench over each of the four human bone concentrations. To recover human remains and burial artifacts from the utility trench backdirt, all sediments were screened through 1/8-inch hardware cloth (Figure 4-5). The utility trench, backdirt piles, and test units were mapped with the TDS.

Seven burials were excavated from the four concentrations of human bone exposed in the trench (Table 4-1). Five of the seven were in the extended position (Burials 1, 2, 3, 4a, and 4b) with four lying supine (Burials 1, 3, 4a, and 4b) and one on its right side (Burial 2). One of the five burials had a head orientation to the north (Burial 2), three to the northwest (Burials 3, 4a, and 4b), and one to the southwest (Burial 1). Burials 4c and 6 were too incomplete to determine body placement. None of the burials had discernable grave shafts or pits. A minimum of four additional individuals

Figure 4-2. UTSA Geological Sciences Department conducting a magnetometer survey over a portion of the prayer garden.

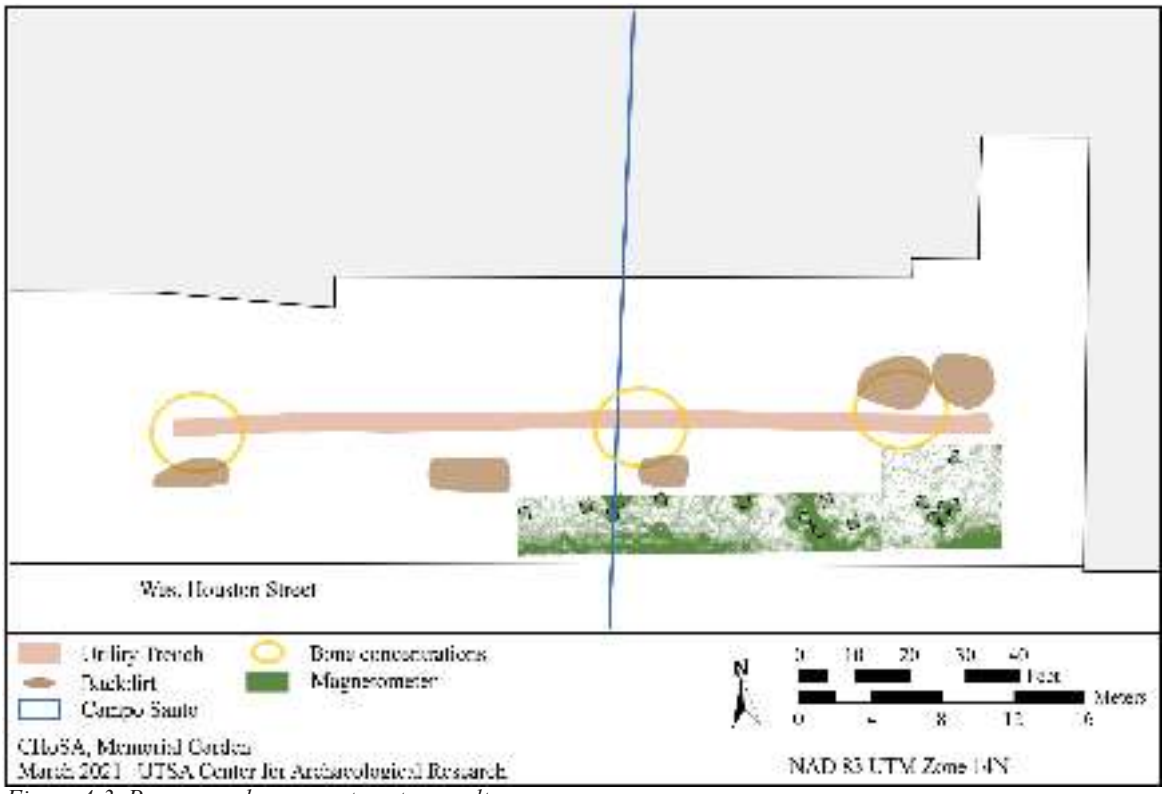

Figure 4-3. Prayer garden magnetometer results.

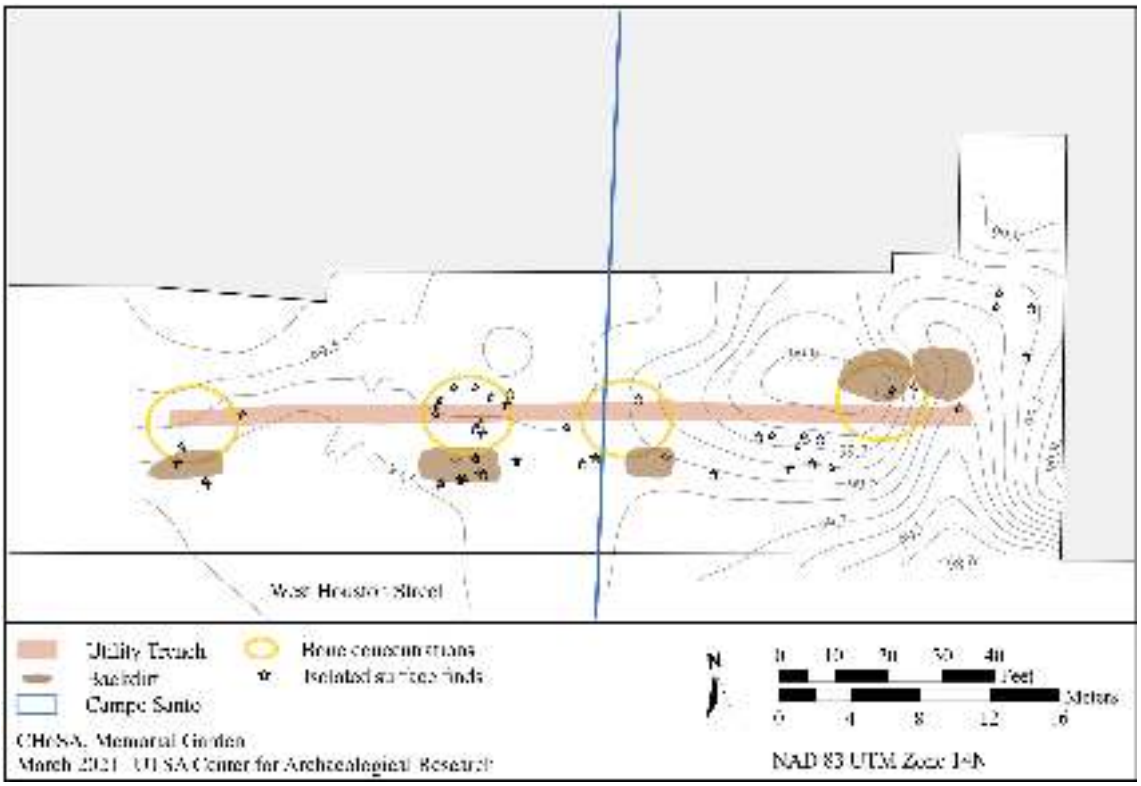

Figure 4-4. Human skeletal elements recovered from the surface of the prayer garden associated with the utility trench.

Figure 4-5. CAR archaeologists screening backdirt piles.

Table 4-1. Burials Recovered from Utility Trench Concentrations 1-4

Burial	Concentration	Campo Santo?	Biological Affinity	Sex	Age	% Complete	Grave Goods
1	2	No	Probable European	Probable Male	Young Adult	50	Yes
2	3	Yes	Probable European	Unknown	Adult	40	Yes
3	1	No	Unknown	Probable Male	Adult	25	No
4A	4	Yes	Unknown	Unknown	Adult	40	Yes
4B	4	Yes	Unknown	Unknown	Adult	25	No
4C	4	Yes	Unknown	Unknown	Newborn - 2/3yrs	40	No
6	4	Yes	Unknown	Unknown	Adult	5	Yes

were identified during analysis of the individual elements recovered from the backdirt and the elements collected from the surface, one from the backdirt adjacent to Burial 2 and three from the backdirt adjacent to Burials 4a, 4b, 4c, and 6 (Table 4-2). An additional 1,737 gm of human bone was recovered from the surface surrounding the trench (Table 4-3). This consisted of human remains recovered prior to CAR's involvement with the project by the Medical Examiner that did not include locational information and surface remains recorded by CAR that were not adjacent to any of the four concentrations. Because it was not possible to associate these elements with any of the identified individuals, they were not included in CAR's MNI calculations. Few personal goods or ornamentations were found with the remains (Table 4-4). The artifacts that were directly associated with individual burials are described and illustrated in the following sections. Evidence of the use of coffins (i.e. coffin nails and wood) was found with all of the seven excavated burials. All of the recovered coffin wood was poorly preserved and friable. Due to the state of the wood, any evidence of wood working or plank size was unattainable.

CAR's Physical Anthropologist conducted an analysis of the skeletal remains at the UTSA-CAR laboratory. The elements were carefully cleaned using dry brushing or gentle washing and wooden skewers. All burial data were entered into an Excel spreadsheet as the analysis progressed. The analytical methods used in the current study are those recommended by Buikstra and Ubelaker (1994) for relatively complete skeletons. The analysis involved standard cranial and postcranial measurements, the determination of sex, biological affinity, probable age of the individual, examinations for bone pathologies, and photographic records. For an analysis of burial patterns in the Campo Santo and Old Catholic Cemetery based on Leal's (1975, 1976) translations of the San Fernando Burial Registry, see Munoz and Mauldin (2020).

Because adult male and female skeletons vary in both size and general shape, accurate estimates of sex should be based on multiple factors. These include measurements of dimorphic dimensions, such as the maximum diameter of the femur head, and observations of morphological features (i.e. traits of the skull and pelvis) that are known to differ between males and females. The morphology of the Ox Coxae is the most reliable indicator of sex in the human skeleton.

Based on the criteria set forth in Standards (Buikstra and Ubelaker 1994), age can be determined from pelvic

Table 4-2. Individuals Identified from Unarticulated Ossuary Elements

Burial	Concentration	Campo Santo?	Biological Affinity	Sex	Age	% Complete	Grave Goods
5	3	Yes	Unknown	Unknown	Adult	5	No
7	4	Yes	Unknown	Unknown	9 mo +/- 3 mo to 3 yr +/- 12 mo	5	No
8	4	Yes	Unknown	Unknown	7 yr +/- 24 mo	1	No
9	4	Yes	Unknown	Unknown	Fetal to Neonate	1	No

Table 4-3. Elements Recovered as Isolated Surface Finds by CAR or the Medical Examiner

Recovery	Element	Side	Description	Count	Weight (gm)
Medical Examiner	Skull	Unsided	Parietal	1	26.8
CAR	Skull	Unsided	Fragment	1	4.4
Medical Examiner	Molar, third	Unsided	Complete	1	1.6
CAR	Premolar	Unsided	Complete	1	1.1
Medical Examiner	Rib	Unsided	Head, fragment	1	1.3
Medical Examiner	Humerus	Right	Lower diaphysis and complete distal epiphysis	1	23.7
Medical Examiner	Metacarpal/ Metatarsal	Unsided	Diaphysis only	1	3.6
Medical Examiner	Hand/Foot Phalange	Unsided	1 complete, 2 incomplete	3	4.1
Medical Examiner	Femur	Left	Mid to upper diaphysis and lesser trochanter	1	115.7
Medical Examiner	Femur	Left	Mid to upper diaphysis and lesser and greater trochanter	1	92
CAR	Femur	Left	Complete diaphysis, missing both epiphyses	1	255.2
Medical Examiner	Femur	Right	Complete diaphysis, missing both epiphyses	1	275.8
Medical Examiner	Femur	Right	Lower and mid diaphysis	1	150.9
Medical Examiner	Femur	Right	Lower and mid diaphysis	1	112
Medical Examiner	Femur	Right	Distal epiphysis, fragmented (~1/2)	1	23.4
Medical Examiner	Femur	Right	Head only	1	19.5
Medical Examiner	Femur	Right	Diaphysis, complete	1	240.8
Medical Examiner	Tibia	Left	Diaphysis, fragment ~16cm long	1	52.3
Medical Examiner	Tibia	Right	Diaphysis, >75% complete	1	129.1
CAR	Ulna	Unsided	Diaphysis fragment	1	3.9
Medical Examiner	Talus	Left	Complete	1	21.6
Medical Examiner	Metatarsal, first	Left	Complete	1	9.1
Medical Examiner	Unidentified Longbone	Unsided	Fragments		44.8
CAR	Unidentified longbone	Unsided	Fragments		124.7

morphological changes, the degree of cranial suture closure, dentition, and morphology of the long bones and joint surfaces. Reliable age-related changes occur in the pubic symphysis and the auricular surface of the ilium. Another indicator of age-related change is the degree of cranial suture closure. Eruption and wear of the teeth are also commonly used in aging the human skeleton. Because of predictable formation and eruption times for teeth and because the dentition is the most regularly recovered element in archaeological contexts, dental development is the most widely used method for aging subadult remains. In addition to eruption, rates and patterns of attrition are a function of age. When the rate of wear within a population is fairly consistent, the rate can be used to assign dental ages to adult specimens (White 2000).

Postcranial epiphysis fusion is predictable in that an epiphysis fuses at a known age but may vary by individual, population, and sex (White 2000). Because there is substantial interindividual variation in the chronology of epiphyseal closure, data with fusion ranges are available on various compilational charts for specific elements by sex (Baker et al. 2010; Krogman and Iscan 1986; McKern and Stewart 1957; Redfield 1970; Suchey et al. 1984;

Table 4-4. Personal Artifacts Associated with Utility Trench Burials

Burial	Metal Arrow Point	31-Caliber Pistol Ball	Cuprous Bullet	Bone Button	Shell Button	Ceramic Button	Ferrous Loop Shank Button	Cuprous Loop Shank Button	Tack	Pin	Fiber (g)	Unidentified Metal (g, Coffin Hardware?)
1	2	2		1	1			1				87.0
2				5			1			1		
4a					2			5			0.2	
4a, 4b, or 4c			1									
6				1								
4a, 4b, 4c, 6, 7, 8, or 9				1	1			10	1			45.2
Isolates						1		1				
Totals	**2**	**2**	**1**	**8**	**4**	**1**	**1**	**17**	**1**	**1**	**0.2 g**	**132.2 g**

Ubelaker 1989a, b). The presence of osteoarthritis in the spine, hip, and knee is inherent as aging progresses. Nearly all individuals older than 60 years show osteoarthritic features, particularly in the lower thoracic and lumbar spine (White 2000). Although not reliable as a lone indicator, indications of osteoarthritis are useful as one element of a multifactorial age estimate.

Because "no human skeletal markers that correspond perfectly to geographic origin" exist, some amount of uncertainty is inherent in geographic ancestral affiliation of a skeleton or individual skeletal elements (White 2000:375). However, the estimation of biological affinity is necessary to the extent possible to address legal concerns, especially the NAGPRA laws. Traditional, primary indicators of general ancestral affiliation are the morphological traits of the dentition (Hillson 1996; White 2000). For example, a 'mongoloid dental complex' (including Native Americans) consisting of upper incisor shoveling and specific cusp morphology, including protostylids, metaconule, deflecting wrinkle, and cusp 6 and 7, has been defined by Hanihara (1967, 1969) and Turner II (1987). The 'mongoloid dental complex' is further divided into two patterns. Sinodonty characterizes people from northeast Asia and Native Americans, whereas Sundadonty characterizes people of southeast Asia, Micronesia, and Polynesia (Turner II 1987, 1989, 1990). Sinodonts express eight dental variations including shoveling and double-shoveling of the upper incisors, one-rooted upper first premolars, and various molar cusp and root expressions (Turner II 1990). A 'Caucasoid dental complex' is defined as an absence of shoveling, a high incidence of Carabelli's cusps, along with other morphological traits (Hanihara 1969; Mayhall et al. 1982).

In addition to dental traits, other elements of the human skeleton suggest Native American ancestry. The morphology of the femora, specifically platymeria or the flatness of the subtrochanteric portion of the shaft, suggests Native American ancestry. In a study of Northern Plains Indians, Gill (1995) demonstrated that this feature effectively discriminates Whites from Northern Plains Indians. White (2000) presents other traits attributable specifically to Mongoloids, Negroids, and Caucasoids. Traits indicating Native American ancestry include complex cranial sutures, wide vertical ascending rami, and the presence of Wormian bones.

Metric analysis was only performed on elements with the appropriate measurement landmarks intact. Only precision implements were employed during the attainment of metric traits of the skeletal remains. Skeletal measurements were obtained by Mitutoyo® Digimatic Calipers.

Burial 1

Three test units were excavated over Bone Concentration 2. Test Units (TU) 1 and 2 (both 1-x-1 m) were placed on the south wall of the utility trench and TU 3 (0.5-x-0.75 m) on the north wall. The starting elevations for TUs 1, 2, and 3 were 99.71, 99.66, and 99.58 mad, respectively. Burial 1, skull exposed at 99.36 mad in TU 1 and tibia at 99.50 mad in TU 3, was encountered 35 cmbs (13.8 in. below surface (inbs)) on the south side of the trench and 8 cmbs (3.2 inbs) on the north side (Figure 4-6). Note that CHoSA previously removed approximately 0.46-0.91 m (1.5-3.0 ft.) of overburden from the Memorial Garden. The articulated, primary burial measured 179 by 33 cm (70.5 by 13.0 in.). The bone was in poor condition with most of the elements heavily

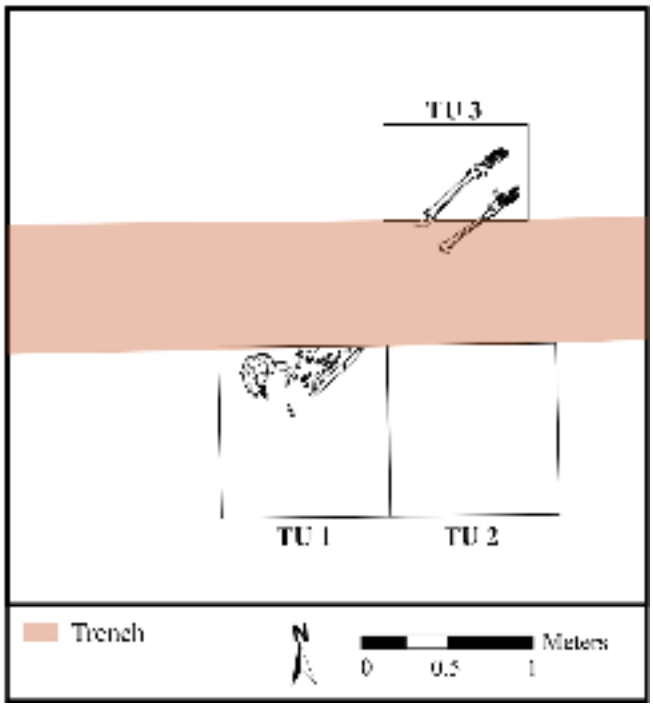

Figure 4-6. Burial 1 excavated from Bone Concentration 2.

fragmented and friable. The location of the remains below heavy machinery during this project's construction and under a previous hospital parking lot, as well as the heavy clay sediments, likely caused the fragmentation.

This individual is a young adult, probable male of primarily European ancestry. The burial was disturbed by the utility trench, resulting in displacement of the left clavicle, scapula, ribs, lower thoracic vertebrae, the lumbar vertebrae, sacrum, pelvis, left humerus, left and right radii, ulnae, carpals, metacarpals, hand phalanges, femora, and the right patella. Elements recovered from the adjacent backdirt and surface include the right carpals, right and left metacarpals, a rib and pelvic fragment, left and right radii and ulnae, right femur, unidentifiable longbone fragments (35.0 g), and unidentifiable fragments (515.9 g). The remains were extended in a supine position with the body lying on a northeast-southwest axis. The skull was located to the southwest and was facing southeast. Before disturbance, his arms were likely folded across the midsection.

Coffin nails, coffin hardware, and fragments of disintegrating wood were recovered from around and from within the human remains suggesting a coffin burial. Two metal points, two 31-caliber pistol balls, one bone button, one shell button, and one cuprous loop-shank button were recovered from Burial 1 (Figure 4-7). The .31 was a percussion cap and ball revolver first developed by Paterson Arms (a subsidiary of Colt Manufacturing) of Paterson, New Jersey in 1836. Three models, the Colt Pocket or Baby Model Paterson Revolver Number 1 (1836-1838), the Colt Belt Model Paterson Revolver Number 2 (1837-1840), and the Colt Belt Model Paterson Revolver Number 3 (1838-1840), used the .31-caliber pistol balls (Colt Collectors Association, Inc 2021). The revolvers were produced for the private market. The points and pistol balls suggest a violent death, likely from an encounter with Native Americans. One of the metal points was embedded in the young man's ribs. No bone remodeling was evident.

Burial 1 was located outside of the Campo Santo (see Figure 4-6). Based on the assumption that this individual's death took place sometime between 1836 and 1840, i.e. within the manufacture dates of the .31 caliber weapon, the individual would have been buried outside of the Campo Santo eight to twelve years before the establishment of the Old Catholic Cemetery. A burial outside of the Campo Santo suggests the individual was not of the Catholic faith. An article published in 1880 using an 1838 diary gives an account of a violent encounter on October 19, 1838 with Comanche Indians at the Leon Creek crossing of the Presidio Road, then some seven miles from town. The diary mentions that ten dead Americans and at least two dead Mexican Texans were recovered on the 20th and buried outside the Campo Santo on the 21st. The deaths included Mr. Jones of Bastrop, Captain Cage, Mr. Lee, Robert Patton, Mr. O'Boyle, an individual referred to only as "the young Doctor from Mississippi," Judge Hood, and Mr. Bailey. The article also mentions the name of an American land surveyor, Mr. Cammill, killed in August of 1838 (GDN, 22 February 1880:4). Mary Maverick's Memoirs also mention the encounter, but she estimates the year at 1839 or 1840. She states that nine Americans were buried in a large grave outside of the Catholic burying ground near the southwest corner and nine Mexicans were buried inside the Campo Santo (Maverick 1921:30). One of these men may represent the Burial 1 individual, but is is also possible that the weapon was used at a date past its manufacture.

Sex

Due to the complete fragmentation of the skull and the destruction of the pelvis by construction machinery, sex determination based on pelvic and skull morphology was not possible. The axis (2nd cervical vertebra) was the only element recovered with potential for sex estimation. This vertebra has been shown to exhibit sexual dimorphism (Bethard and Seet 2012; Gama et al. 2015; Marlow and Pastor 2011; Wescott 2000). Of the eight measurements with the highest discriminate power, two, the maximum width of the right superior facet (LMFSD) and the sagittal maximum body diameter (DSMC), were complete for measurements. The DSMC indicated a male, and the LMFSD fell within the male and female range.

Figure 4-7. Grave items recovered from Burial 1 including a cuprous loop-shank button (a), a shell button (b), a bone button (c), two metal points (d and g), two 31-caliber pistol balls (e), and coffin hardware (f).

Age

The age of Burial 1 was estimated from the degree of cranial suture closure. Although the skull was fragmented, all observable fragments with cranial sutures exhibited open to minimal closure. The stage of closure indicates a young adult, ranging in age from 20-35 years (Meindl and Lovejoy 1985). No other elements of the skeleton were present or complete enough to evaluate for age determination.

Ancestry

Morphological traits of the dentition of Burial 1 indicate probable European ancestry. Shoveled incisors were not noted. The upper first premolars from this individual were double rooted. The lower right first molar is double rooted. The lower left was lost post-mortem. Metaconules were not present on the upper molars. The lower molars were too worn to assess the presence of protostylids. No other skeletal indicators were present or complete for observations of ancestral traits.

Dentition

Although the mandible and maxilla were crushed and fragmented, most of the dentition for Burial 1 was present. The dental health of this individual was generally poor. Large carious lesions were present on the maxillary right second premolar and second molar, the left first premolar and second molar, and on the mandibular left second molar. Approximately ninety percent of the second mandibular molar's occlusal surface was destroyed by a carious lesion. The presence or absence of abscesses could not be assessed due to the fragmented condition of the alveolar bone. No hypoplastic defects were noted. A small amount of calculus was observed on the lingual surfaces of the mandibular incisors, canines, and premolars. Of interest, the mandibular right second molar had a large wear facet on its buchal side and the right maxillary first incisor exhibited heavy wear on its lingual surface. The left maxillary first incisor was not worn. The wear was likely from habitual use of an unidentified implement. It does not fit the typical wear pattern caused by pipe smoking (see Hillson 1996:252-253; Ubelaker 1996).

Pathology

The frontal and parietal bones of the skull exhibited mild porotic hyperostosis suggesting anemia, rickets, chronic infection, or other general nutritional deficiencies. These conditions can also present as cribia orbitalia, but due to the deteriorated condition of the remains, the orbital plates could not be inspected (Aufderheide and Rodriguez-Martin 1998;

Ortner and Putschar 1985; Roberts and Manchester 1995; Walker et al. 2009; White 2000). Two left and one right foot phalange exhibited osteoarthritis presenting as distal deformations. Hadjouis (2011) concluded that this type of bony deformity is a characteristic of psoriatic arthritis. Carious lesions were present on five teeth (see previous section). Perimortem trauma was evident in the right upper abdomen in the form of a metal point embedded in a rib. The presence of an additional metal point and two pistol balls in association with the remains suggest this individual experienced a traumatic death. Due to the fragmented condition of the burial, it was not possible to observe most of the skeletal elements for pathological indicators.

Burial 2

CAR staff removed approximately 12 cm (4.7 in.) of overburden before commencing test unit excavations over Bone Concentration 3. Test Unit 7 (1-x-1 m), placed on the north side of the utility trench, had a starting elevation of 99.43 mad. The skull of Burial 2 was encountered 19 cmbs (7.5 inbs, 99.36 mad) on the north side of the trench. Because TU 7 was set up with the TDS on a north-south grid, it was expanded to the south (0.3 m (1 ft.) on its west side and 0.5 m (1.6 ft.) on its east side) to reach the utility trench north wall. The unit was further expanded (approximately 0.25-x-0.5 m) off its east wall fronting the trench to completely expose the individual's abdomen. A longbone was observed protruding from the south wall of the trench across from TU 7. Test Unit 4 (1-x-0.5 m) was excavated off the south wall of the trench to expose the lower body of the individual. The left lower leg was uncovered 23 cmbs (9.1 inbs, 99.32 mad) in TU 4 (Figure 4-8). The articulated, primary burial measured 163 by 50 cm (64.2 by 20.0 in.). As with Burial 1, Burial 2 was heavily fragmented and friable. A large rock was intruding into the skull and upper abdomen.

This individual is an adult of indeterminate age and sex, and of primarily European ancestry. Due to the disturbed and fragmented state of the burial, sex and age could not be estimated. The body was semi-flexed and lying on its right side on a northeast-southwest axis. The skull was located to the northeast and was facing southwest. The arms were extended in front of the body to the southwest. The burial was disturbed by the utility trench, resulting in the displacement of the lumbar vertebrae, sacrum, pelvis, left hand, femora, patellae, right leg and foot, and proximal left tibia and fibula. The left hand was recovered from the trench floor. Elements recovered from the adjacent backdirt and surface include an unsided femur diaphysis, unsided fibula diaphysis fragments (11 g, 0.39 oz.), unsided tibia diaphysis fragments (7.9 g, 0.28 oz.), unidentifiable longbone fragments (156.3 g, 5.51 oz.), unsided metatarsal fragments (9.9 g, 0.35 oz.), the right first distal and medial foot phalanges, unsided foot phalange fragments (5.6 g, 0.20 oz.), and unidentifiable fragments (45.4 g, 1.60 oz.). Fragments of disintegrating wood and coffin nails were recovered from around and within the human remains suggesting a coffin burial. Five bone buttons, one ferrous loop-shank button, and one pin were recovered from Burial 2 (Figure 4-9).

Ancestry

Morphological traits of the dentition suggest probable European ancestry. Shoveled incisors were not noted. The left upper first premolar from this individual was single rooted. The upper right was not present. The lower left first and second molars and the lower right second molar are double rooted. The lower molars were too worn to assess the presence of protostylids. Metaconules were not present on the upper molars. No other skeletal indicators were present or complete for observations of ancestral traits.

Dentition

Ten teeth, the maxillary right canine, premolars, third and fourth molars, maxillary left first molar, mandibular right second premolar, first molar, third molar, and the left first molar were not present. Due to the crushed and fragmented condition of the maxilla and mandible, it was not possible to determine if the teeth were lost premortem or postmortem. Observation of the recovered teeth suggests moderately good dental health. Three carious lesions, all maxillary,

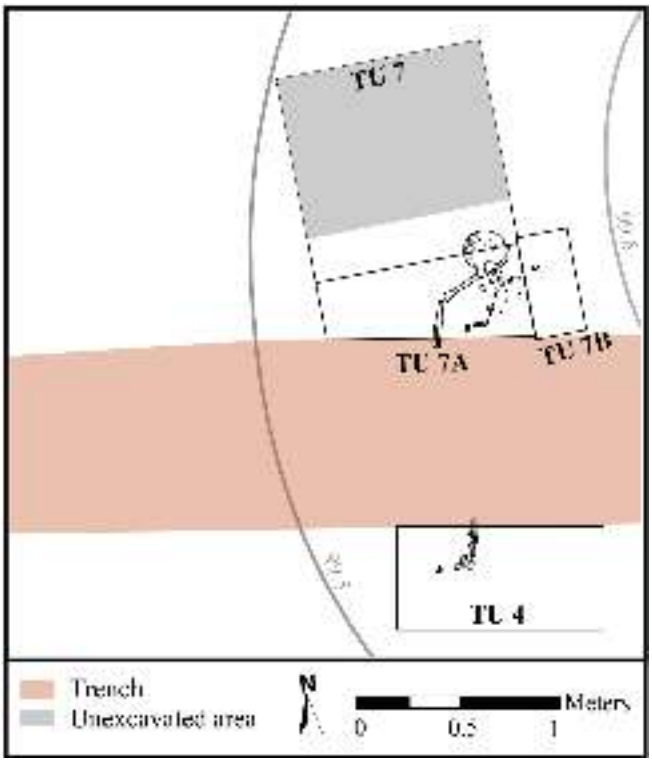

Figure 4-8. Burial 2 excavated from Bone Concentration 3.

Figure 4-9. Grave items recovered from Burial 2 including a bone buttons (a, c, d), a ferrous loop-shank button (b), and a pin (e).

were present. The right first molar and left first premolar each contained a small interproximal surface lesion and the left third molar had evidence of cervical caries. Due to the fragmented condition of the alveolar bone, abscesses could not be assessed. Dental attrition is slight to moderate with the most wear on the molars. Calculus deposits, observed on the incisors, premolars, and canines, are slight. Enamel hypoplasias are present on the mandibular canines, central maxillary incisors, and the maxillary left canine, suggesting systemic stress, possibly from illness or malnutrition, in early childhood (Buikstra and Ubelaker 1994; Ubelaker 1989b).

Pathology

Although the human remains were in poor condition, the skeletal elements present were carefully assessed for any indications of bone pathology. Pathological bone lesions, bone swelling, and arthritic change are absent. No fractures were noted. Carious lesions were present on three teeth and hypoplastic defects were noted on five (see previous section).

Burial 3

Bone Concentration 1, located at the far west end of the utility trench, was recorded on the ground surface adjacent to the trench's north wall. Test Unit 5 (1-x-1 m) was placed over the exposed bone. Test Unit 6 (1-x-1 m), adjacent to the south wall of TU 5, was excavated in the utility trench. Due to the shallowness of the trench on this end of the project area, the Project Archaeologist expected the remains to extend into the floor of the trench. The starting elevations for TU 5 and 6 were 99.49 and 99.36 mad, respectively. The remains of Burial 3, partially exposed on the surface of TU 5, were recovered at 99.50 mad (right hand) and 99.48 mad (left femur). No human remains were encountered in TU 6 (Figure 4-10). Because the burial was truncated by construction activity at the pelvis on its north end and the femoral diaphyses on its south end, maximum length was not obtainable. The articulated, primary remains present measured 50 by 40 cm (20.0 by 15.8 in.). The bone was in poor condition with most of the elements heavily fragmented and friable.

This individual is a probable male adult of indeterminate age and biological affinity. The lower portion of the individual was disturbed by the utility trench, resulting in displacement of the right femur diaphysis and distal epiphysis, right patella, and both lower legs and feet. The upper portion was disturbed by previous construction, evident from intrusive yellow clay fill. This caused displacement of the ilium, proximal sacrum, vertebra,

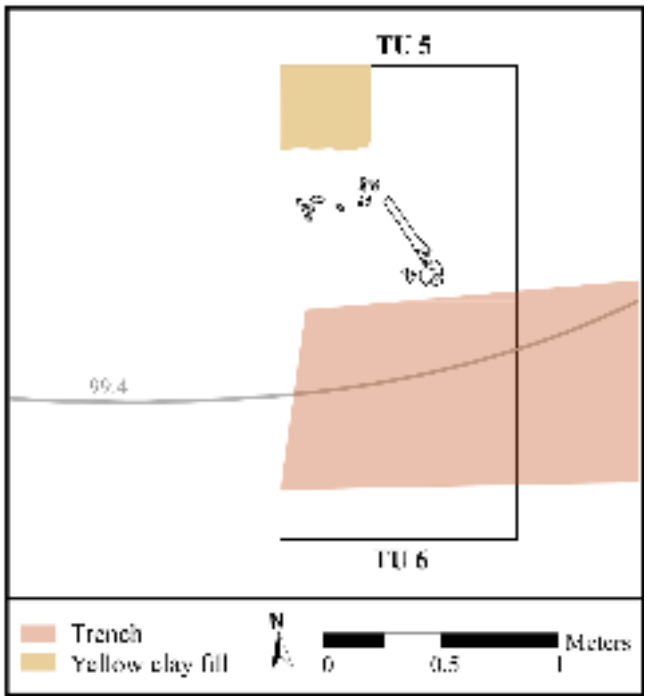

Figure 4-10. Burial 3 excavated from Bone Concentration 1.

ribs, clavicles, scapulae, the diaphyses and proximal epiphyses of both ulnae and radii, both humeri, and skull. An exploratory test pit was excavated to 40 cmbs (15.8 inbs) into the yellow fill. No human remains were observed. Elements recovered from the adjacent backdirt and surface include the left and right fibulae, tibial fragments (75.3 g, 2.7 oz.), and both feet. The remains were extended in a supine position with the body lying on a northwest-southeast axis. The skull would have been at the northwest end. Coffin wood and nails were recovered from around and from within the human remains indicating a coffin burial (Figures 4-11, 4-12). In comparison with coffin remnants from the other exhumed burials in the Memorial Garden, coffin wood recovered from Burial 3 was in a better state of preservation. The burial's location outside of the Campo Santo points to a post 1848 interment and likely accounts for the condition of the wood. No personal items were recovered with the burial.

Sex

Sex determination based on pelvic and skull morphology was not possible. Because postcranial elements exhibit sexual dimorphism, the right femur maximum head diameter (45.13 mm, 1.78 in.) and midshaft circumference (91 mm, 3.6 in.) were used to estimate sex. The diameter falls in the probable male range (Cavazzuti et al. 2019; Milner and Boldsen 2012; Purkait 2003). The midshaft circumference indicates a male burial (Black 1978; Gaballah et al. 2014; Jerkovic et al. 2016; MennattAllah et al. 2020).

Figure 4-11. Coffin nails associated with Burial 3.

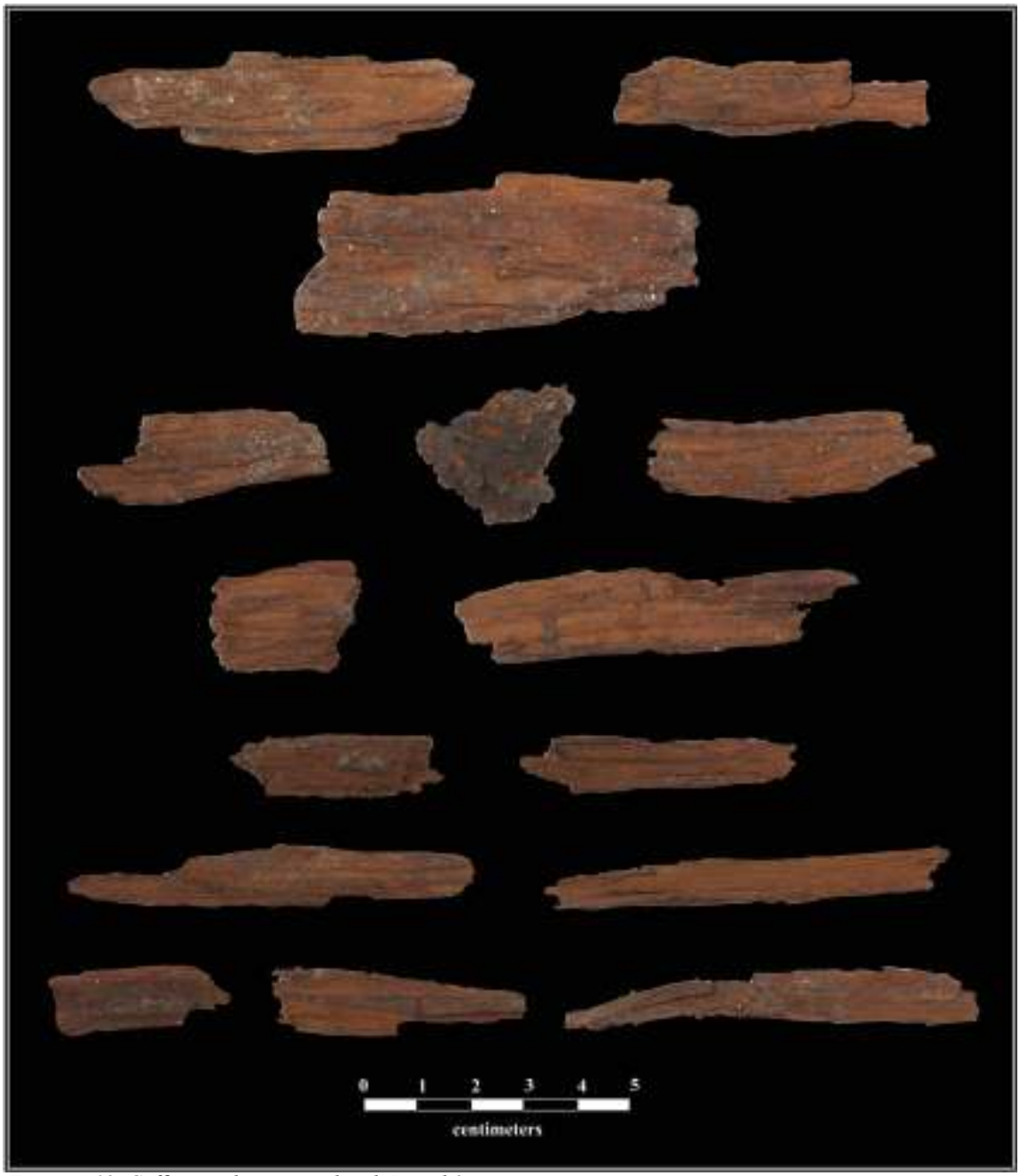

Figure 4-12. Coffin wood associated with Burial 3.

Pathology

Although the human remains were in poor condition, the skeletal elements present were carefully assessed for any indications of bone pathology. Pathological bone lesions, bone swelling, and arthritic change were absent. No fractures were noted.

Burials 4a, 4b, and 4c

CAR archaeologists removed approximately 31 cm (12.2 in.) of overburden from Bone Concentration 4 prior to setting up Test Unit 8 (1-x-1 m). A large concrete slab, approximately 15 cm (5.9 in.) thick, covering the northern portion of the unit, was exposed 25 cmbs (9.8 inbs, 99.65 mad). The southern portion of the test unit's starting elevation was 99.59 mad. The northern portion was not excavated. The unit was expanded to the south (0.1 m (3.9 in.) on its west side and 0.2 m (7.9 in.) on its east side) to reach the utility trench north wall. A human pelvis, vertebrae, and a left femur were exposed at 56 cmbs (22 inbs, 99.34 mad), a right femur at 50 cmbs (19.7 inbs, 99.40 mad), and an infant skull at 49 cmbs (19.3 inbs, 99.41 mad). CAR's Physical Anthropologist determined that the bones were the remains of three individuals discussed

below as Burials 4a, 4b, and 4c (Figure 4-13). Coffin nails and fragments of disintegrating wood were recovered from TU 8 and the adjacent backdirt piles suggesting coffin burials. Twelve buttons were collected from the backdirt (Figure 4-14) and a cuprous bullet fragment was removed from TU 8 screened sediments.

Burial 4a, an articulated, primary burial, is an adult of indeterminate age, sex, and biological affinity. The bone was in poor condition with most of the elements heavily fragmented and friable. A large portion of the pelvis and vertebrae had disintegrated into bone dust. The remains were extended in a supine position with the body lying on a northwest-southeast axis. The skull was positioned to the northwest. Before disturbance, the arms were likely folded across the midsection. The individual's skull was assumed to be under the concrete slab. After removal of all the human remains from TU 8, the slab was mechanically removed with a backhoe. No human remains were observed. They were likely disturbed when the slab was constructed or disintegrated under its weight.

Burial 4a was disturbed by the utility trench resulting in the displacement of the legs and feet. Elements recovered from the adjacent backdirt and surface include right and left femora, tibiae, and fibulae, tarsals, metatarsals, and phalanges. These elements are likely associated with Burial 4a, but it is possible they may represent other burials disturbed in the utility trench. The large amount of backdirt adjacent to Bone Concentration 4, the presence of multiple burials within TU 8, and the location in the Campo Santo suggest a high concentration of burials in the area. Two shell buttons, five cuprous loop-shank buttons, and fiber (0.24 g, 0.01 oz.) attached to a button were recovered from Burial 4a (Figure 4-15).

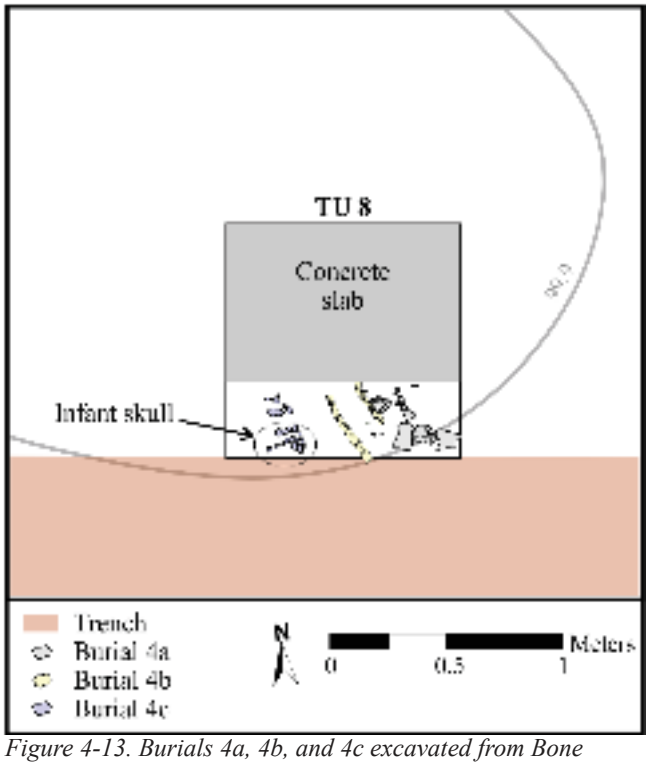

Figure 4-13. Burials 4a, 4b, and 4c excavated from Bone Concentration 4.

Burial 4b is an adult of indeterminate sex, age, and biological affinity. The articulated, primary burial was disturbed by the concrete slab and the utility trench. Heavily fragmented left and right femora and a left patella were the only remaining elements in situ. The right femur was lying over Burial 4a's right abdomen, right humerus, left lower arms, and left hand. The individual's lower legs and feet are assumed to have been under the concrete slab. Elements recovered from the trench floor and adjacent trench backdirt include pelvis, vertebrae, rib, scapula, ulna and skull fragments, left and right clavicles, humeri, radii, carpals, metacarpals, and teeth. As mentioned for Burial 4a, the recovered elements could represent other disturbed burials. The remains were extended in a supine position with the body lying on a northwest-southeast axis. The skull would have been positioned to the southeast. No grave goods were recovered from Burial 4b.

Burial 4c, a young child (newborn to 2 to 3 years of age) of indeterminate sex and biological affinity, was exposed in the western portion of TU 8. The remains consisted of a complete but highly fragmented skull, a longbone epiphysis, three metacarpals/metatarsals, one hand/foot phalanx, rib and vertebrae fragments, and 18.5 g (0.65 oz.) of unidentified bone fragments. The age of this individual was based on a comparison of the size of skull fragments and metacarpals/metatarsals to a template in Baker et al. (2010). The skull's location against the utility trench wall suggests that the body was positioned on a northwest-southeast axis. No grave goods were recovered with the burial.

Pathology

The skeletal elements recovered from Burials 4a, 4b, and 4c were either fragmented or represented by bone dust in the test unit. All recovered bones were carefully assessed for any indications of bone pathology. Pathological bone lesions, bone swelling, and arthritic change were absent. No fractures were noted. Due to the fragmented condition of the burial, it was not possible to observe most of the skeletal elements for pathological indicators.

Burial 6

A test pit was excavated over a stain immediately adjacent to the north side of the utility trench to determine if it was the location of a burial. The stain was located 5.2 m (17.1 ft.)

Figure 4-14. Grave items recovered from the backdirt pile adjacent to Bone Concentration 4 including 10 cuprous loop-shank buttons (a, b), one bone button (c), and one shell button (d).

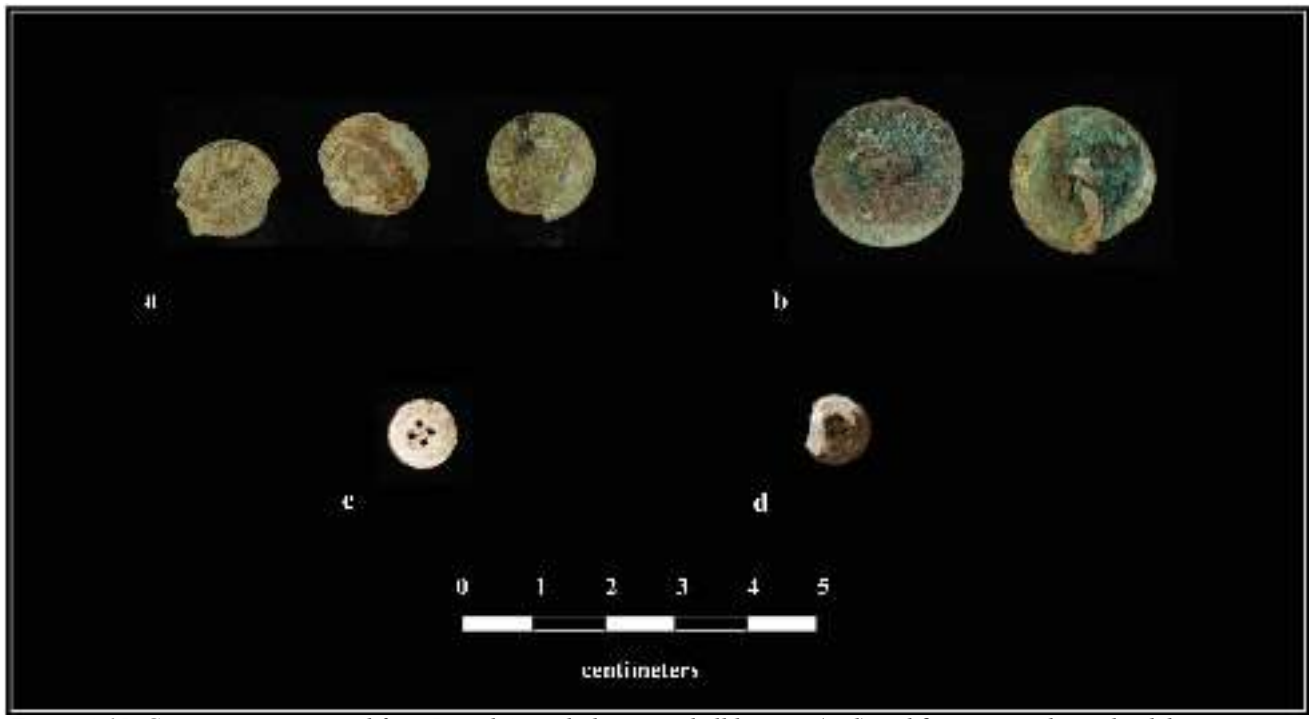

Figure 4-15. Grave items recovered from Burial 4a including two shell buttons (c, d) and five cuprous loop-shank buttons (a, b). One button contained a remnant of fabric (b).

east of TU 8 at 99.41 mad (Figure 4-16). Upon excavation, it was quickly apparent that the stain consisted of bone dust with some fragmented human bone. A burial shaft or pit was not evident. Elements recovered from Burial 6 included skull fragments (2.3 g), unidentified fragments (40.9 g), a small rib fragment, unsided diaphyses fragments of a tibia, a radius, and a phalanx. Based on the condition of the other burials in Bone Concentration 4, it is probable that the bone dust represented pelvis, vertebra, sacrum, or scapula. It is also assumed that most of Burial 6 was disturbed during the excavation of the utility trench and was part of the bone screened from the adjacent backdirt piles. It was not possible to determine if the burial was articulated or how it was aligned. Based on the recovered bone, and assuming it represented one individual, the remains represented an adult of indeterminate age, sex, and biological affinity. One bone button was recovered (Figure 4-17).

Disassociated Human Remains

Twenty-seven skeletal elements, disassociated from Burials 2, 4a, 4b, and 4c, were recovered from backdirt adjacent to Bone Concentrations 3 and 4 (see Table 4-2). The elements represent a minimum of four individuals, including an adult, a nine month (+/- 3 months) to three year old (+/- 12 months), a seven year old (+/- 24 months), and an infant (fetal to neonate). Elements attributed to the adult consisted of an almost complete mandible with two molars. Skull fragments, four incisors, two unerupted incisors, two unerupted canines, three molars, and five unerupted molars represented the nine month to three year old. Bones attributed to the seven year old included an incomplete left mandible with an unerupted premolar, a hand/foot epiphysis, and rib fragments. The infant was represented by an atlas, two hand/foot phalanges, and two vertebrae.

Phase 2

Upon completion of the utility trench burial exhumations, CAR's Principal Investigator and Project Archaeologist decided that prior to starting the complete excavation of the Memorial Garden to exhume all the human remains, as per the request of the 408th court, a series of exploratory

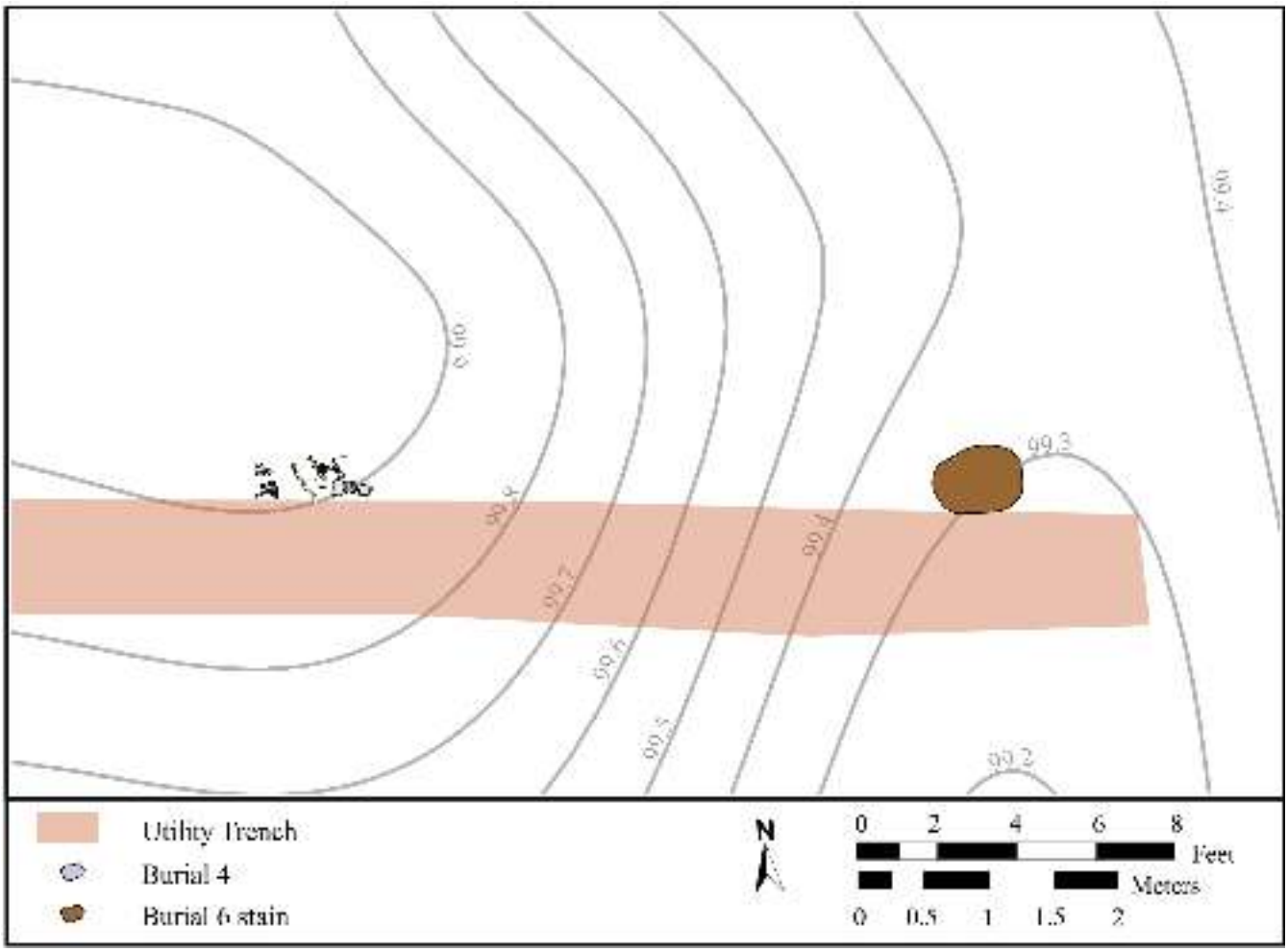

Figure 4-16. Location of Burial 6.

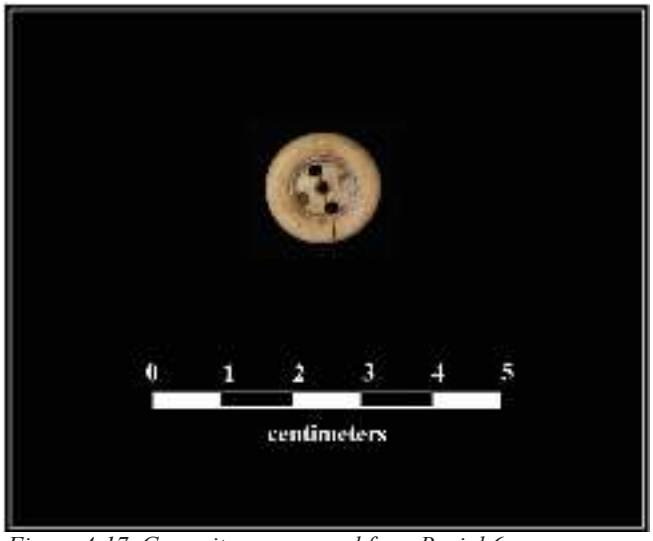

Figure 4-17. Grave item recovered from Burial 6.

trenches should be excavated. The results of the trenches in concert with the results of the soil magnetometer survey would then be used to plan an excavation approach. Soil magnetometry results indicated 16 anomalies. Because the project area has a history of disturbance, including parking lot construction, signage, building construction, and utility placement, it was unclear if the anomalies were burials or utilities. To supplement the results, 11 exploratory trenches were systematically placed along the eastern two-thirds of the Memorial Garden (0.18 acres). A mini-excavator with a 0.3 m (1 ft.) wide smooth bucket scraped approximately 7 cm (2.8 in) of sediment at a time under the supervision of a CAR archaeological monitor (Figure 4-18). Upon any indication of remains, the monitor halted the excavator and flagged the potential burial for identification by CAR's Physical Anthropologist. After identification, the remains were covered with a layer of sand.

Within the 11 exploratory trenches, 148 locations with human remains were flagged (Figures 4-19 and 4-20). A basic identification of each exposed element was obtained (Table 4-5). No further excavation or exploration of the remains was undertaken. Although CAR did not proceed with further excavation, numerous elements were noted to be articulated.

Figure 4-18. CAR archaeologist monitoring exploratory trench excavations. Flags are marking human remains (photo is facing west).

Figure 4-19. Locations of human remains exposed in exploratory trenches (facing west).

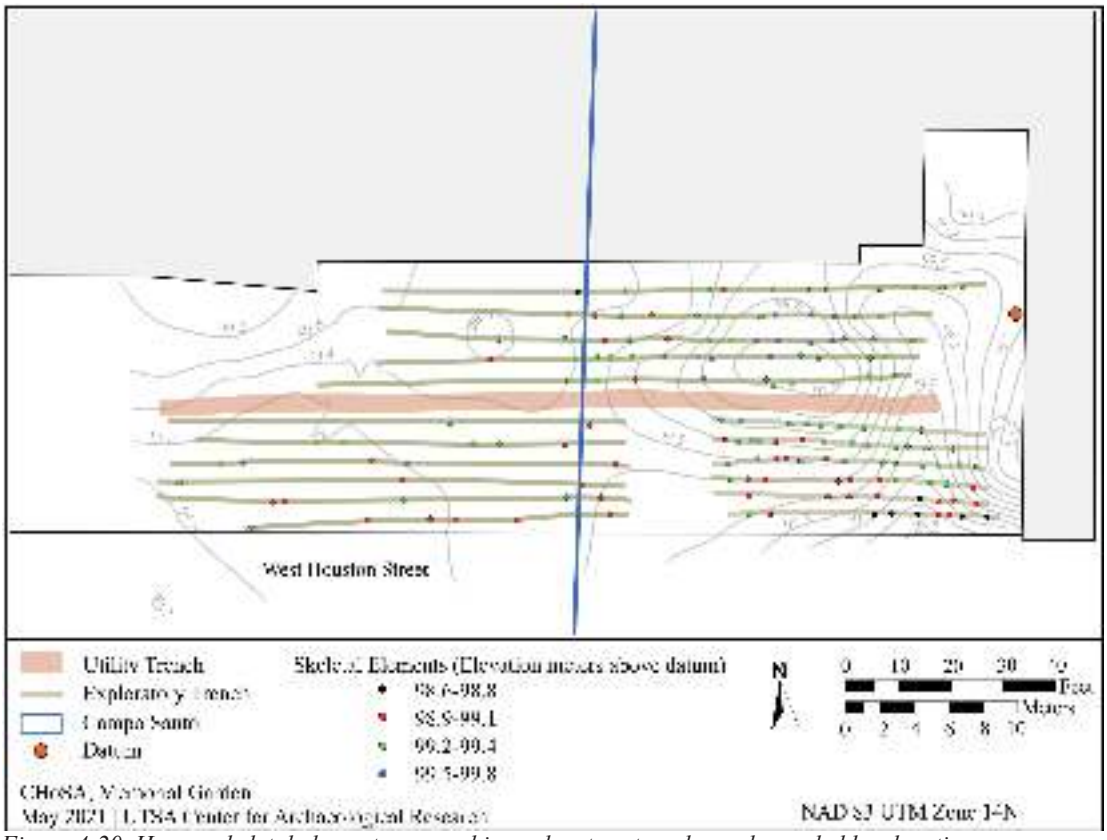

Figure 4-20. Human skeletal elements exposed in exploratory trenches color coded by elevation range.

Table 4-5. Number of Burial Element Locations by Exploratory Trench

Element	Exploratory Trench No.											Total
	1	2	3	4	5	6	7	8	9	10	11	
Coffin wood	1		1									**2**
Hand									1			**1**
Hand/foot - metacarpals/metatarsals			1				1	1	1	1		**5**
Hand/foot - phalanges	1			2				1				**4**
Longbone - arm	1											**1**
Longbone - arm - humerus									1			**1**
Longbone - leg - femur				2		1		1				**4**
Longbone - leg - tibia				1	1							**2**
Longbone - leg - tibia, fibula, and foot	1			1	1							**3**
Longbone	4	11	9	9	8	7	1	6	3	8	3	**69**
Longbone w/ evidence of coffin	2		1	1	1					1		**6**
Pelvis		1					1		1		1	**4**
Rib				1		1		1	1		3	**7**
Skull	2	2	1		8	1	3	3	6	1	5	**32**
Skull w/ evidence of coffin	1							1				**2**
Tooth						1						**1**
Vertebra	1			1			2					**4**
Total	**14**	**14**	**13**	**18**	**19**	**11**	**8**	**14**	**14**	**11**	**12**	**148**

The elements ranged in elevation from 98.57 to 99.81 mad with 5% buried the deepest (98.57-98.85 mad), 29% between 98.86 and 99.14 mad, 56% between 99.16 and 99.45 mad, and 10% buried the shallowest (99.46-99.81 mad). This translates to a 1.24 m (4.1 ft.) spread between the shallowest and deepest buried element. In relation to the starting construction ground surface, the elements ranged in depth from 1 to 69 cmbs (0.4-27.2 inbs) with 11% buried the deepest (52-69 cmbs (20.5-27.2 inbs)), 28% between 35 and 48 cmbs (13.8-18.9 inbs), 33% between 18 and 34 cmbs (7.1-13.4 inbs), and 28% buried the shallowest (1-17 cmbs (0.4-6.7 inbs)).

No discernable grave shafts or pits were observed. Archival sources mention that the Campo Santo was within a walled enclosure (McKenzie et al. 2020:21.) No evidence of a wall was noted during exploratory trenching. It is possible that any remaining wall footings were removed prior to CAR's involvement with the project.

Figure 4-21 shows two histograms of the elements' elevations (mad). The top graph shows elements within the Campo Santo and the bottom graph elements outside the Campo Santo. The mean element elevation is 99.21 mad for both histograms. The burials within the Campo Santo have a wider elevation range (98.57-99.81 mad) relative to those outside (98.82-99.53 mad). The histograms suggest that the Campo Santo burials may have been interred in multiple layers, i.e. vertically stacked. The excavation of Burials 4a and 4b discussed previously, the large number of burials in the Campo Santo (over 1,800 per the San Fernando Burial Registry (Leal 1975, 1976)), an 1842 personal account of the crowded condition of the Campo Santo (Hendricks 1919; McKenzie et al. 2020:21), and archaeological investigations of burials at other Spanish Colonial burial sites in the region (including Missions San Antonio de Valero, San Jose, Concepción, San Juan, and Refugio) support this supposition. The elements recorded in the two southernmost Campo Santo exploratory trenches with the deepest elevation ranges (98.6-98.8 mad and 98.9-99.1 mad, see Figure 4-18) were uncovered immediately under the construction ground surface. It is possible burials above these elements were previously removed. Because CAR archaeologists stopped exploration upon uncovering a skeletal element in our trenches, the potential for layered burials was not investigated.

To estimate the number of individuals buried in the explored portion of the Memorial Garden, CAR's Physical Anthropologist reviewed the plotted locations and identifications of the skeletal elements. A review of the elements' spatial relationships suggests that a minimum of 83 individuals were exposed in the 11 exploratory trenches. The large number of interments in the Campo Santo and Old Catholic Cemetery, and the three burials intruding into each other in TU 8 suggest that the numbers are likely much higher. Based on the large number of burials and the wishes of various descendent groups, CHRISTUS Health made the

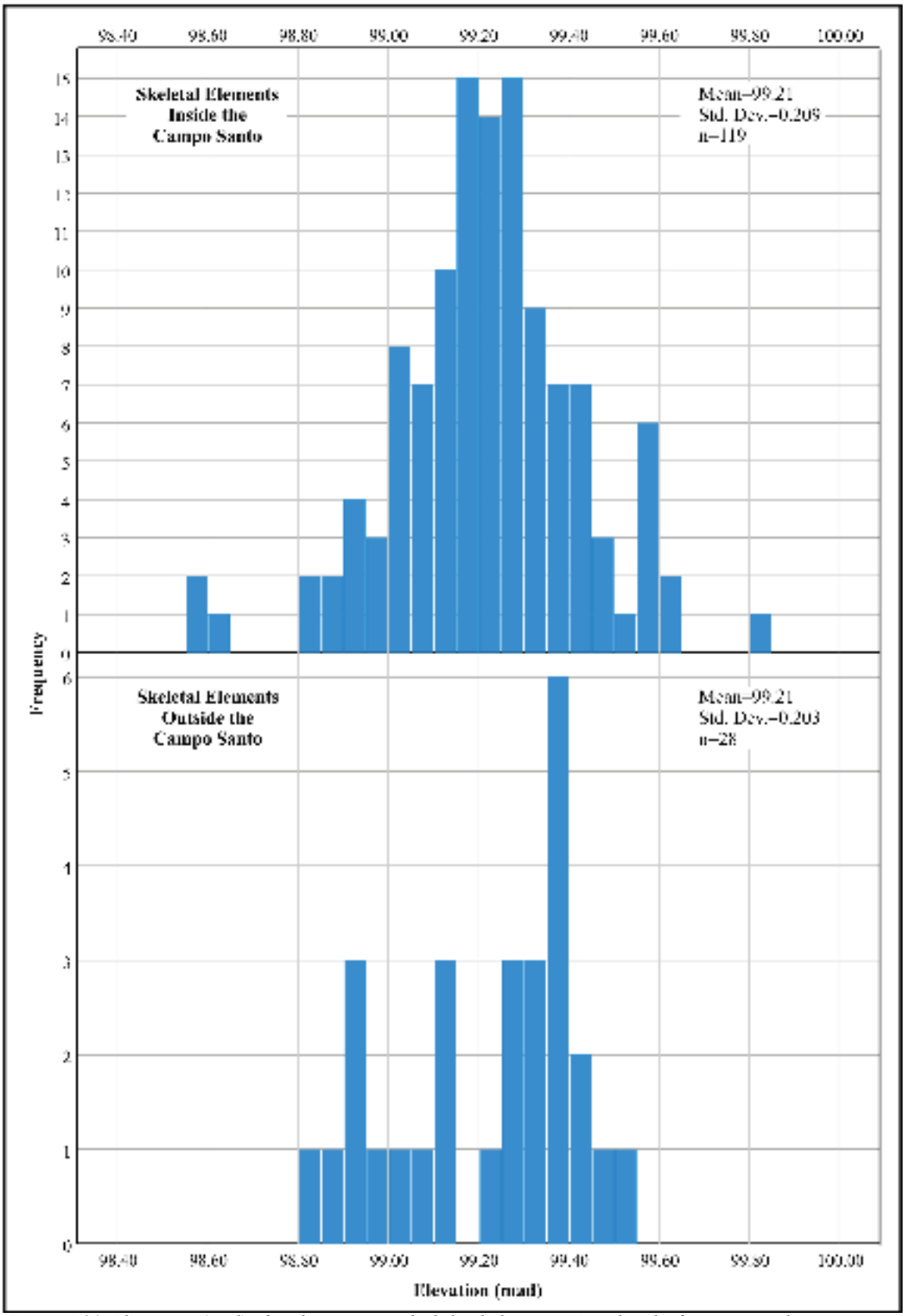

Figure 4-21. Elevations (mad) of exploratory trench skeletal elements. Note that the frequency scales are different.

decision to not exhume the remains and to retain the cemetery dedication for the property. The garden was redesigned and renamed the Memorial Garden in order to avoid impacting burials. On September 6, 2017, the 11 individuals from the utility trench were reburied in their original locations. The additional burials from the exploratory trenches were left in place and covered with a layer of sand and backdirt.

Phase 3

The final phase of the project involved monitoring of all subsurface construction activities on the CHoSA property including pier drilling, mechanical and hand-excavated trenches for electrical lines and connectors, drainage and irrigation, utility placement and renovation, basement waterproofing, boiler room lateral pipe repair, terrace footers, wall replacement, bench and marker foundations, and excavations for bush and tree plantings. During this phase, CAR staff hand-excavated seven shovel tests in advance of pier drilling, hand-excavated a footer trench for the installation of a coffee/observation terrace, and hand-excavated sediments along the Houston Street property boundary in advance of butter-stick wall placement. To avoid below-surface impacts to the Campo Santo and Old Catholic Cemetery, butter-sticks were used in lieu of new wall construction. Archaeological monitoring began on October 21, 2017 and concluded September 30, 2020. Three days of trench excavations, one in May 2018 for a broken water main and two in August 2020 for a broken sewer line, took place 65.7 m (215.6 ft.) north of the Old Catholic Cemetery northern boundary. Because neither were associated with the cemetery, they are not discussed in this report. Excavations were conducted by multiple contractors and subcontractors for the Children's Hospital, including but not limited to Alpha Insulation & Waterproofing, Bartlett Cocke General Contractors, Big State Electric Ltd, KMAC Construction Services, Inc., Linbeck Group, LLC, Maldonado Nursery & Landscaping, Inc., Texas Cutting and Coring/Texas Curb Cut, and Urban Concrete Contractors Ltd. Monitoring results are presented below by general location on the hospital property, including the Memorial Garden, the Tower, the Play Lawn and Prayer Garden, and the Boiler Room.

Memorial Garden

On October 21, 2017, CAR staff excavated seven shovel tests on the locations of proposed piers for the construction of a coffee /observation terrace along the hospital's south wall overlooking the Memorial Garden (Figure 4-22). No human

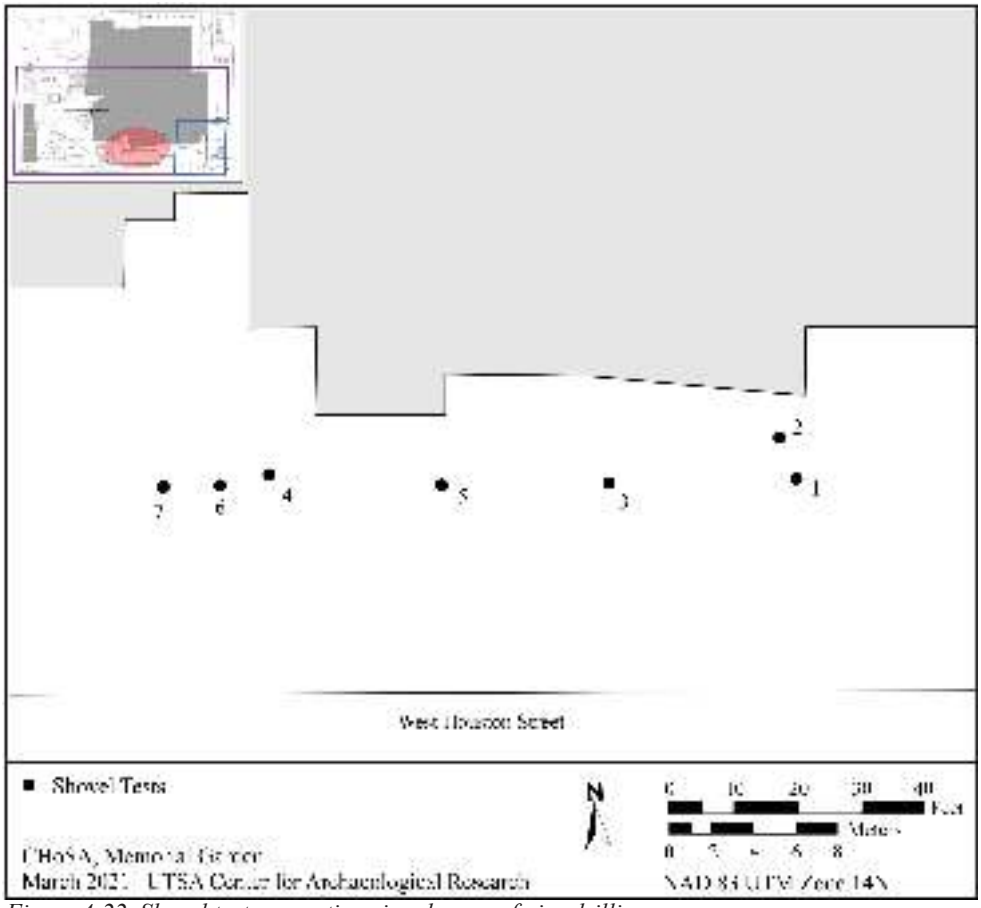

Figure 4-22. Shovel test excavations in advance of pier drilling.

remains or grave items were evident. The shovel tests, 40 cm (15.7 in.) in diameter to exceed the width of the pier footprint, were excavated to 70 cmbs (27.6 inbs). The ground surface elevation along the hospital wall was 99.21 mad near STs 1 and 2 and 99.31 mad near ST 3, translating into shovel test termination elevations of approximately 98.51 mad (STs 1 and 2) and 98.61 mad (ST 3). The skeletal element with the lowest elevation within a 20 m radius of ST 1 was 98.82 mad located 19.3 m to the east of ST 1. The elements in this radius, ranging from 98.82-99.94 mad with an average elevation of 99.26 mad, were well within the shovel test excavation depths. Shovel Tests 4 through 7 were not within the locations of CAR's exploratory excavations, but the elevation data from the exploratory trenches (see Figure 4-21) suggests that burial elevations were trending higher moving east to west. Upon completion of shovel testing, CAR staff monitored the pier drilling (approximately 9.4 mbs (31 ftbs)). No evidence of burials was noted in the core sediments (Figure 4-23).

On December 11, 2017, CAR was contacted by the CHoSA to monitor trenching for electrical work along the south wall of the building on the far west side of the Memorial Garden. Three trenches, each approximately 30.5 cm (1.0 ft.) wide by 71.1 cm (2.3 ft.) deep, were machine excavated into previously disturbed soils. No burials were evident. While monitoring the trenches, CAR staff discovered a previously excavated trench in the area of the pier drillings. Because CAR was not informed of the excavation, the trench, approximately 33.5 m (109.9 ft.) long, 2.4 to 4.5 m (7.9-14.8 ft.) wide, and 0.7 m (2.3 ft.) deep, was not monitored (Figure 4-24). An inspection of the trench walls and floor revealed human remains. No grave shafts or pits were noted. When CAR archaeologists returned the next morning, the trench backdirt piles had been spread out across the property as additional fill. CAR crew walked the property, but did not note any human remains on the surface. Over nine days in December and January 2018, CAR crew cleaned the trench walls and floor and screened all the associated sediment (Figure 4-25). Human remains removed from the walls and floor of the unmonitored trench consisted of a fibula diaphysis fragment, a tibia epiphysis fragment, two hand/foot phalanges, unidentified longbone fragments (3.5 g, 0.12 oz.), and unidentified bone (6.5 g, 0.23 oz.). The elements removed from the walls were from multiple elevations and locations. One cuprous button (Figure 4-26), seven nails, and probable coffin wood (4.5 g, 0.16 oz.) were also recovered. The wood fragments were poorly preserved.

Figure 4-23. Core drilling on the location of Shovel Test 4.

An area of sediment in the eastern portion of the trench, approximately 2.6 m long by 0.4 m wide by 0.7 m deep (8.5 by 1.3 by 2.3 ft.), was not excavated. CAR hand-excavated these sediments in advance of further coffee /observation terrace construction. The sediments contained the partial remains of two individuals, both lying on a northeast-southwest axis approximately 49 cmbs (19.3 inbs, 99.14 mad). The only in-situ elements remaining for the first individual was a left proximal tibia diaphysis and epiphysis, a left patella, a left distal femur and epiphysis, and a left proximal femur diaphysis. The elements were articulated. The skull would have been to the southwest (Figure 4-27). No discernable grave pit or shaft was observed. The lower legs and feet were disturbed by an earlier hospital pier, the left femur mid diaphysis, the right femur, and all the elements from the pelvis to the skull were removed during the unmonitored trenching.

The only elements in place for the second individual were the distal diaphyses and epiphyses of the left fibula and tibia, a left talus, a left calcaneus, four tarsals, and a phalanx. The rest of the body was removed during the utility trench excavation and the earlier pier installation. The skull would have been to the northeast. Skeletal elements recovered that could be associated with either individual included left femur fragments, unsided fibula and tibia fragments, skull fragments, unidentified longbone fragments, and unidentified fragments. One copper and five ferrous tacks were recovered from the burial matrix (Figure 4-28). Nails were associated with both individuals suggesting coffin burials. All recovered bones were carefully assessed for any indications of bone pathology. No fractures were noted. Pathological bone lesions, bone swelling, and arthritic change were absent. Due to the fragmented condition of the burial, it was not possible

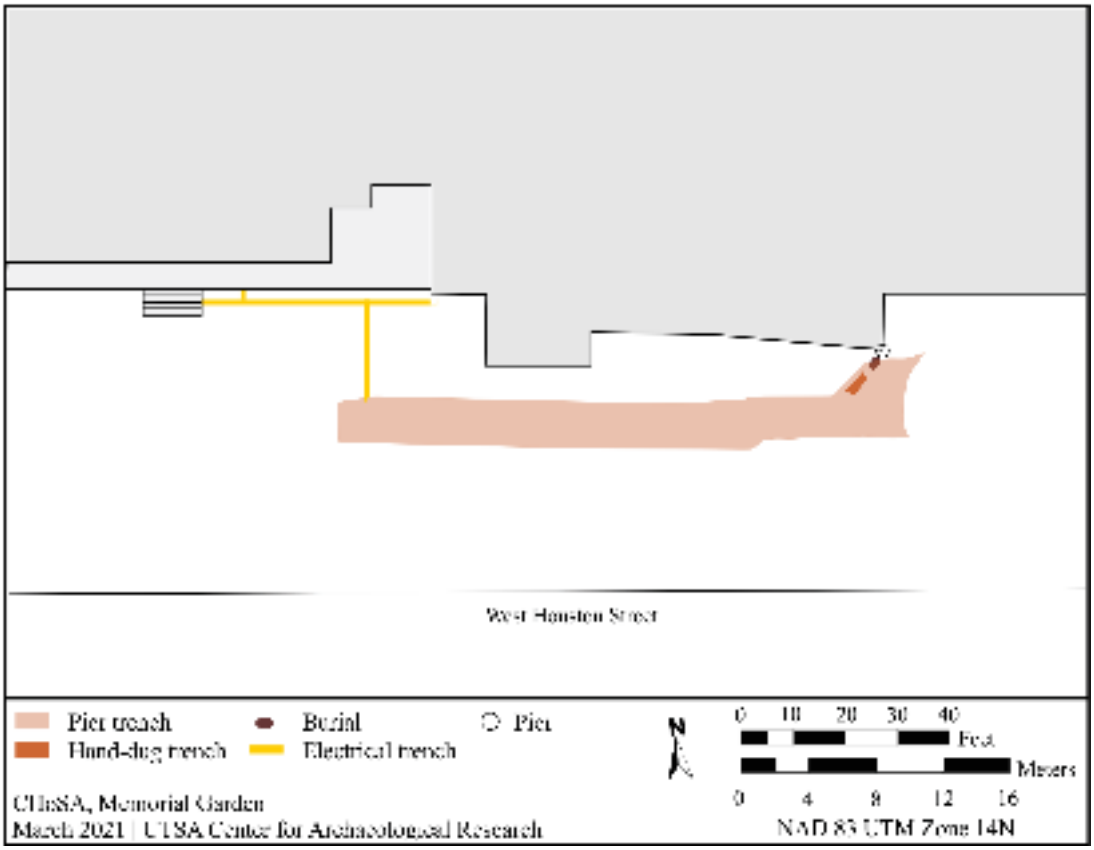

Figure 4-24. Location of excavations adjacent to the coffee/observation terrace.

Figure 4-25. CAR archaeologist cleaning the trench walls and floor.

Figure 4-26. Button recovered from the trench.

to observe most of the skeletal elements for pathological indicators or to determine sex, age, or ancestry from the recovered elements.

CAR archaeologists continued monitoring the construction of the coffee/observation terrace until all excavations were complete on January 25, 2018. From March 20-21, 2019, additional monitoring of the terrace was conducted. A trench was machine excavated along the base of the structure for waterproofing. The trench, ranging from 1.5 m (4.9 ft.) deep on the east side to 0.9 m (3 ft.) on the west side, with one exception, remained within the footprint of the previous terrace construction. Its far east corner extended into undisturbed sediments. No human remains were observed.

In May 2019, CAR archaeologists hand-excavated a trench, 9.2 m (30.2 ft.) long by 1 m (3.3 ft.) wide by 35-45 cm (13.8-17.7 in.) deep, along the CHoSA property line fronting Houston Street. The trench was on the far eastern side of the property in the Campo Santo. The sediments needed to be removed prior to temporary fence replacement. The new fence section was anchored to the sidewalk to avoid impact to the cemetery. Except for the western edge of the trench, which consisted of clay, the sediments were construction fill. The

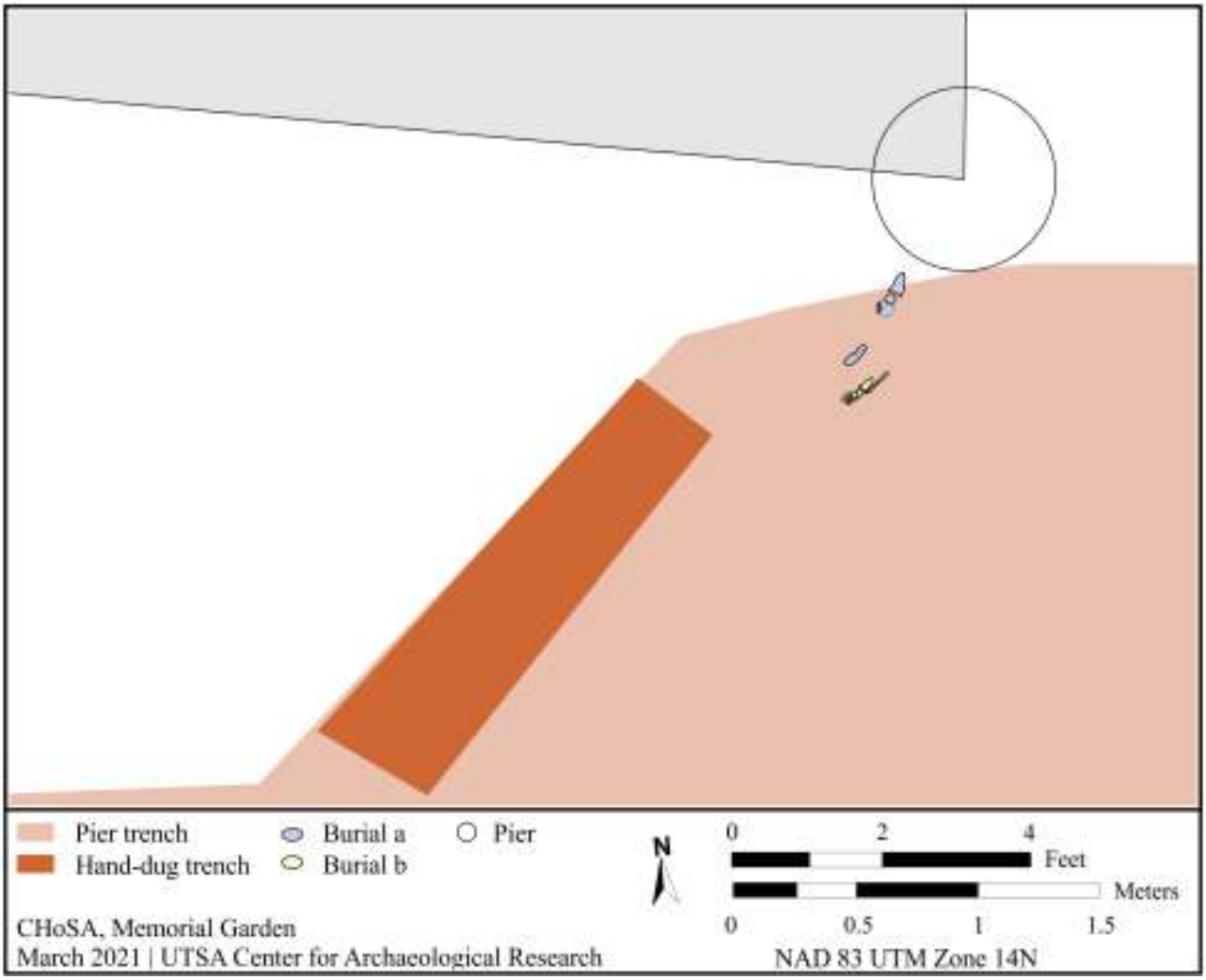

Figure 4-27. Burials removed from coffee /observation terrace trench.

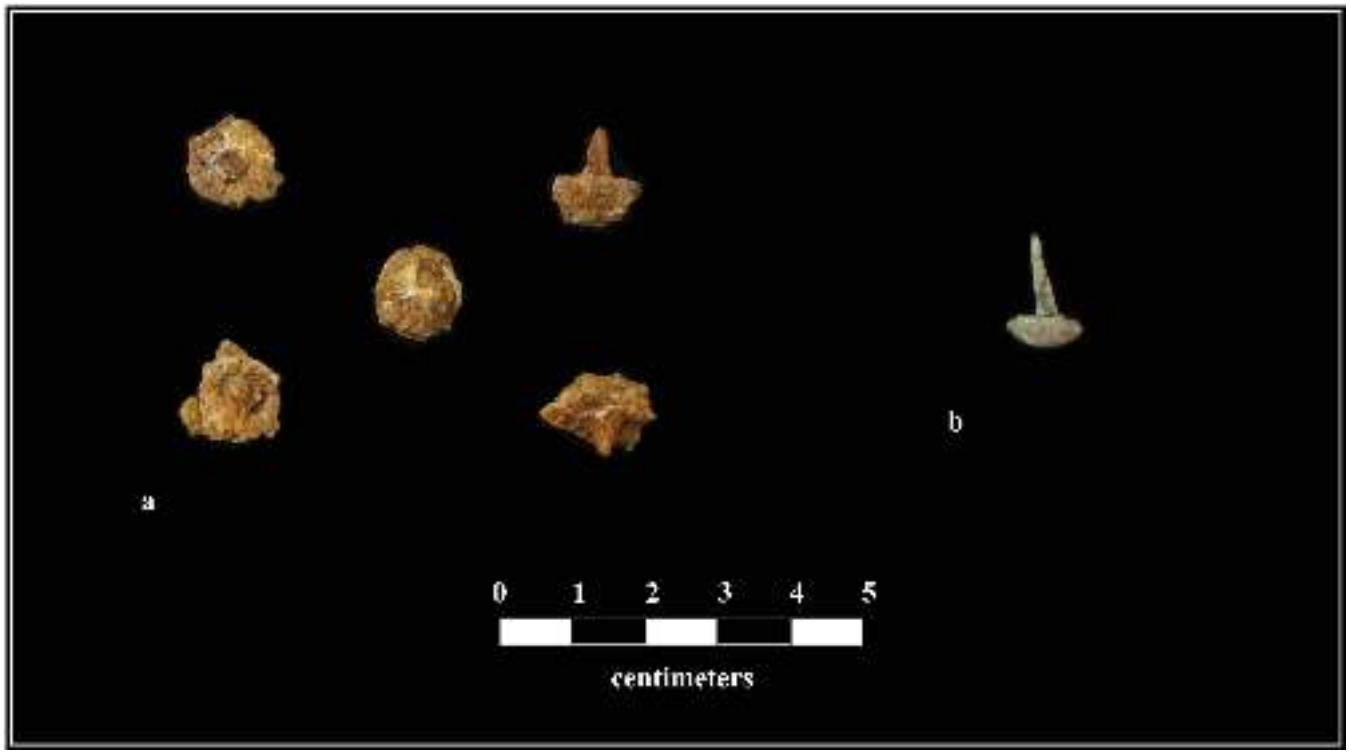

Figure 4-28. Grave items associated with coffee/observation terrace burials including five ferrous tacks (a) and one cuprous tack (b).

clay was heavily disturbed with rebar, tarp fragments, and other construction debris. CAR monitored the removal of a 0.9 m (3.0 ft.) section of a retaining wall in this area in June 2020. The wall footer extended to approximately 27.9 cmbs. The remaining 1.6 m (5.1 ft.) section was removed in August 2020. The wall removals caused minimal disturbance to the underlying sediments (Figure 4-29). No human remains were noted during the hand trenching or wall removal.

Over six days in June and July 2020, CAR staff monitored the hand excavation of a series of irrigation trenches, 15.2 cm wide by 15.2 cm (6.0 in.) deep, and electrical trenches, 61.0 cm (24 in.) wide and 45.7 cm (18 in.) deep in the Memorial Garden. The trenches were all within construction fill, brought in to avoid impacts to burials, that was laid over the area's sediments. To connect to the water meter in the sidewalk along Houston Street an end section of one irrigation trench, approximately 0.3-x-0.6 m (1-x-2 ft.), was hand excavated to 1.5 mbs (4.9 ft.). No human remains were encountered. Completion of the irrigation system on August 26, 2020 involved the monitoring of three hand-excavated trenches along the property wall fronting Houston Street for the installation of rainwater drain pipes (Figure 4-30). The trenches, approximately 50 by 50 cm (19.7 in.), varied in depth. The trench located in the Campo Santo terminated at 45 cmbs (17.7 inbs), which extended below the imported fill. An isolated human adult temporal fragment (6.9 g, 0.24 oz.) was recovered in the backdirt. The skull fragments was in good condition. All of the associated sediment was screened and the trench walls were carefully cut back and explored. No evidence of a grave shaft was noted. No other bone or grave items were observed. The two remaining drain pipe excavations did not extend below construction fill.

The final excavations in the Memorial Garden consisted of the monitoring of ground preparation for the installation of butter sticks in three locations along the property wall fronting Houston Street in August 2020 (Figure 4-30). Each trench was approximately 0.9 m (3.0 ft.) wide and 15.2 cm (6.0 in.) deep and, moving from east to west along Houston Street, 10.9 m (35.8 ft.), 4.2 m (13.8 ft.), and 9.6 m (31.5 ft.) long. All excavated sediments consisted of construction fill. No human remains were observed.

Tower

On June 27, 2019, a CAR archaeologist monitored grading for the construction of a 1.5 m (5 ft.) wide asphalt walkway leading from a handicap ramp under the tower to an existing exit gate on Houston Street. Most of the grading, with the exception of the area near the street entrance, excavated to 0.6 mbs (2 ft.), was shallow and all of it was into imported fill (Figure 4-31). On May 8, 2020 the removal of the asphalt walkway under the tower was monitored. No human remains were observed on either day.

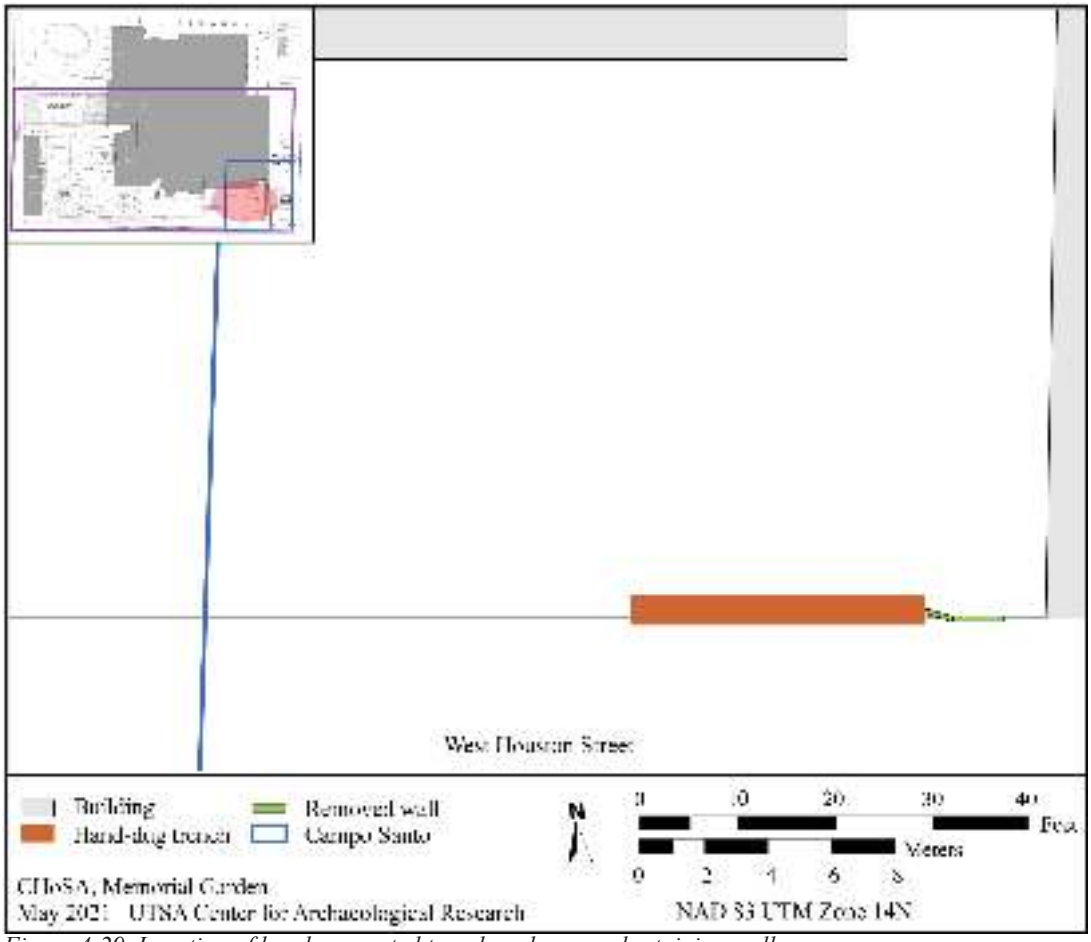

Figure 4-29. Location of hand-excavated trench and removed retaining wall.

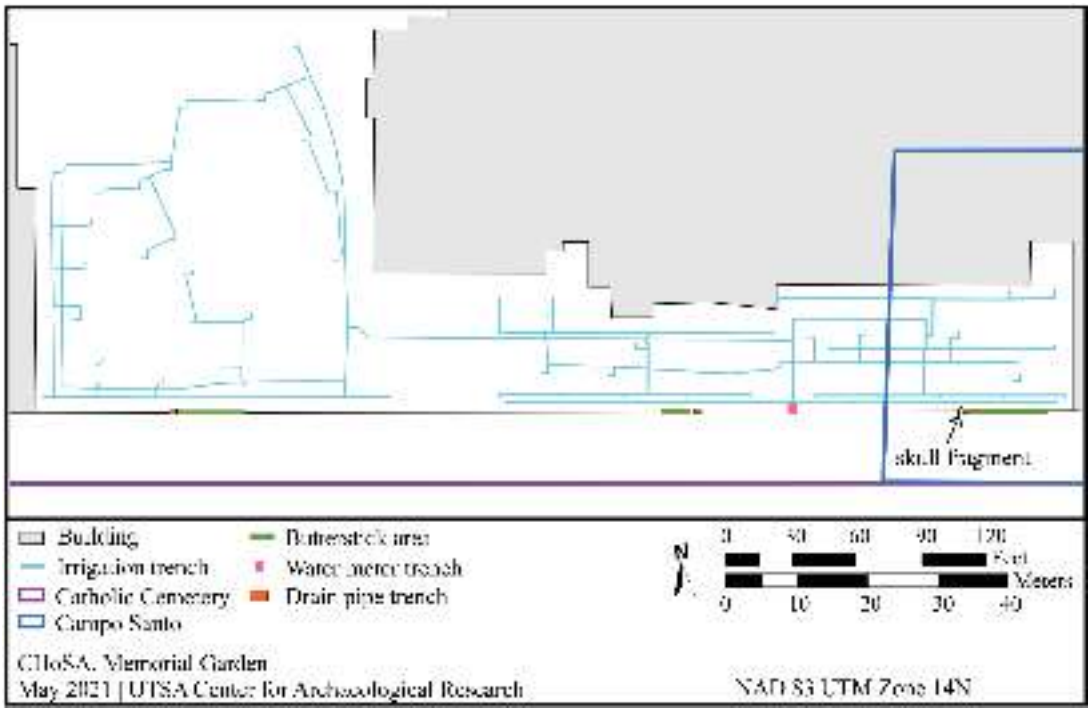

Figure 4-30. Location of irrigation trenches, water meter connection, drain pipes, and butter stick excavations.

Over 18 days in June and July 2020, CAR staff monitored hand-excavated trenching under the tower for the placement of a drainage pipe related to the irrigation system and its tie-in to an existing drainage. The trench, approximately 21.5 m long by 0.6 m wide by 1.5 m deep (70.5 by 2.0 by 5.0 ft.), ran east to west to a tie-in located west of the tower near the property line fronting Houston Street (Figure 4-32). No human remains were observed in the trench.

To determine the placement of the drainage pipe and to connect it to a north-south existing drainage located just west of the tower, four trenches were hand-excavated to locate the existing pipe. No human remains were observed in the first two trenches, each approximately 0.6 m wide by 0.6 m long, by 1.5 m deep (2.0 by 2.0 by 5.0 ft.). Both were located under the tower, one on the east side and one on the west. Human remains were exposed 57 cmbs (22.4 inbs, 99.81 mad) in the third trench that was located just west of the tower. CAR's Physical Anthropologist inspected the trench and confirmed it contained a human burial within the remnants of a hexagonal coffin. A fragmented coffin lid was present and collapsed onto the remains. The exposed friable wood was fragmented into small pieces. The coffin was oriented on an east-west axis and was approximately 30 cm (11.8 in.) in width at its widest point (Figure 4-33). It ran the entire length of the 1-x-1 m (3.3 by 3.3 ft.) trench with one end continuing into the trench's west wall and one end into the south and east walls. The narrow width of the coffin suggests a child burial. There was no evidence of a grave shaft or pit. The burial was mapped with a Total Data Station, but was not further excavated or explored. The backdirt associated with the trench was screened for human remains and grave items. The hospital, the Medical Examiner's office, and the COSA OHP were notified of the burial. The unexcavated burial, and a small button and bone fragments recovered from the backdirt, were covered with linen, geocloth, sand, and backdirt. The fourth trench, excavated approximately 1 m (3.3 ft.) to the north of the burial and measuring 3.7 m long by 0.6 m wide by 1.5 m

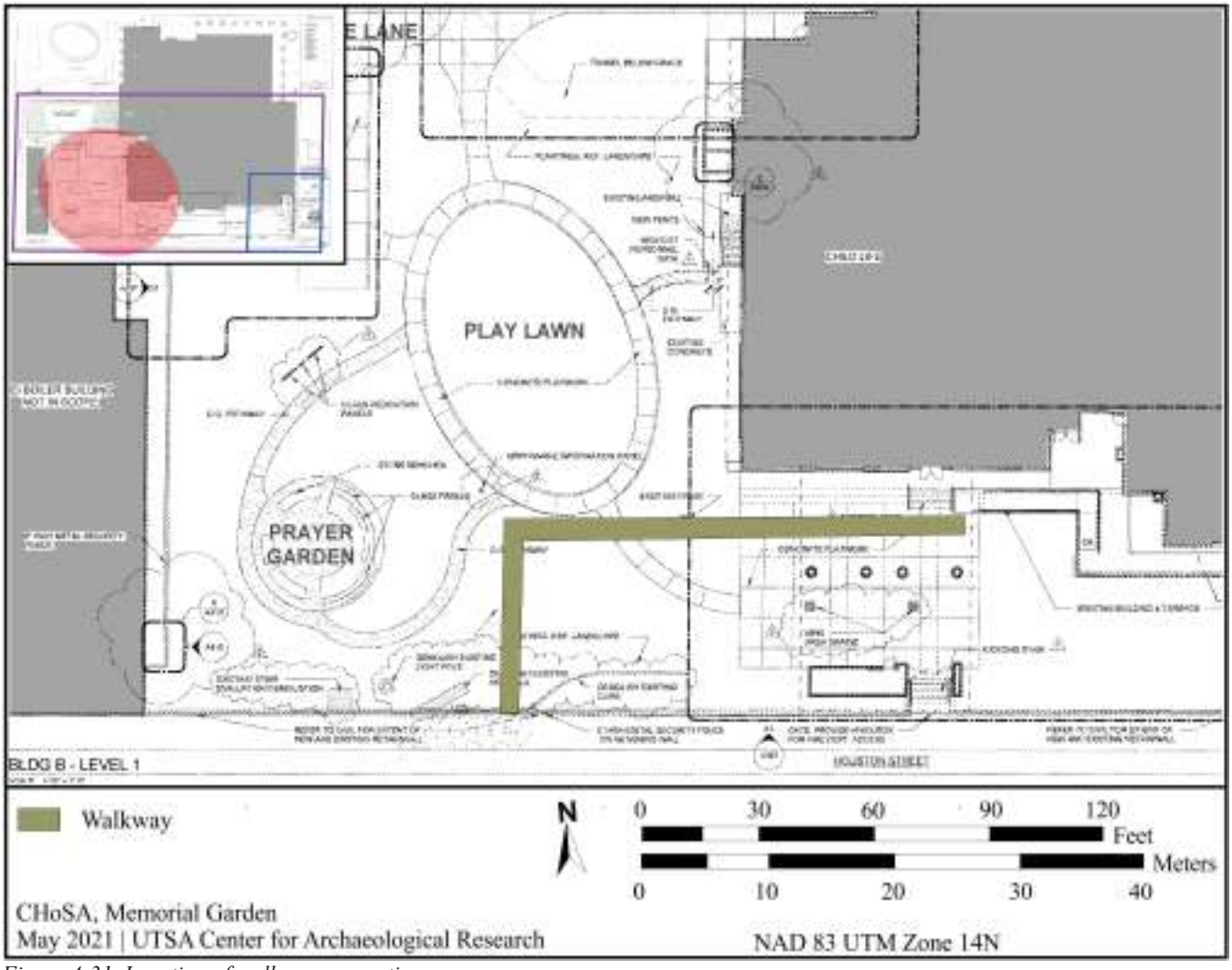

Figure 4-31. Location of walkway excavation.

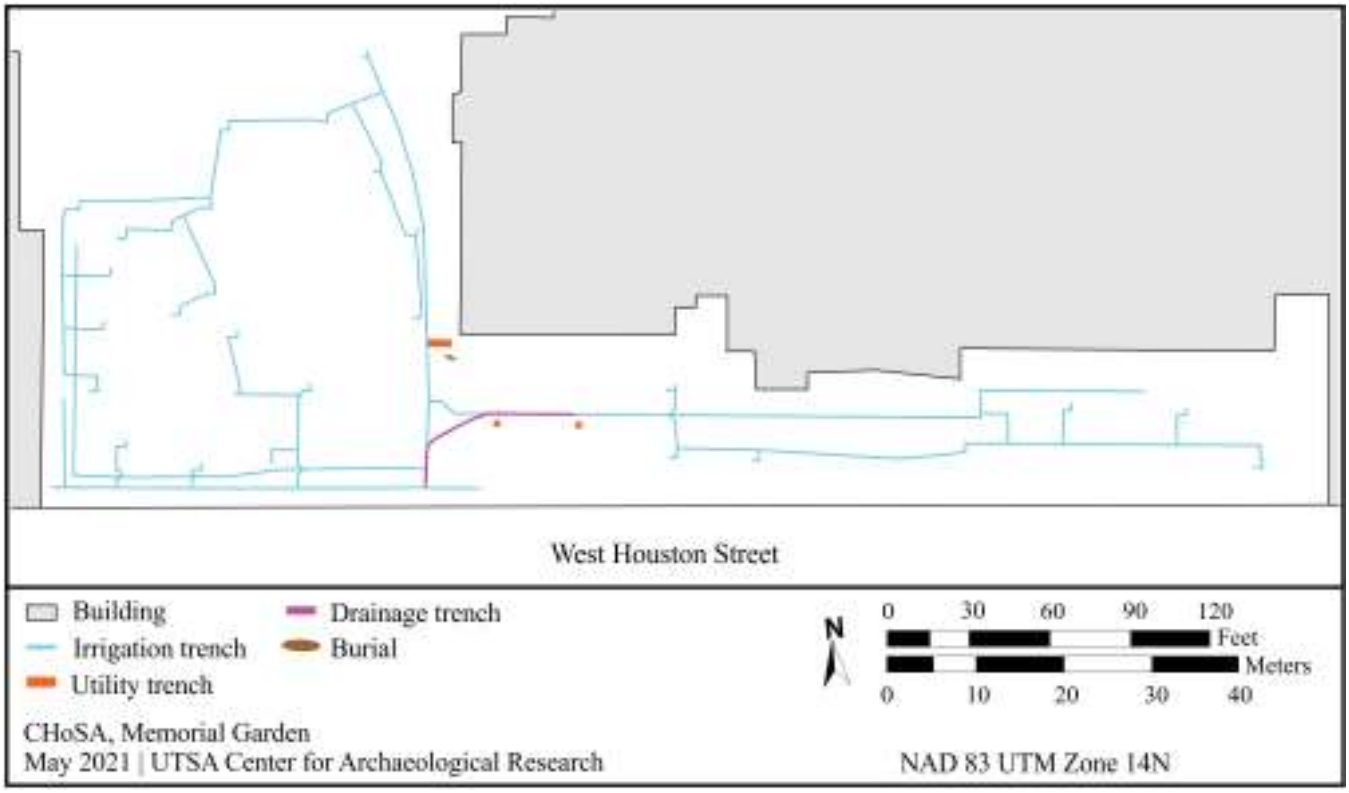

Figure 4-32. Location of utility trenches and coffin burial.

deep (12 by 2 by 5 ft.), exposed the drainage needed for tie-in. The sediments were heavily disturbed with construction debris and fill. Three isolated human bone fragments (3.8 g, 0.13 oz.) were recovered from the trench (Figure 4-32).

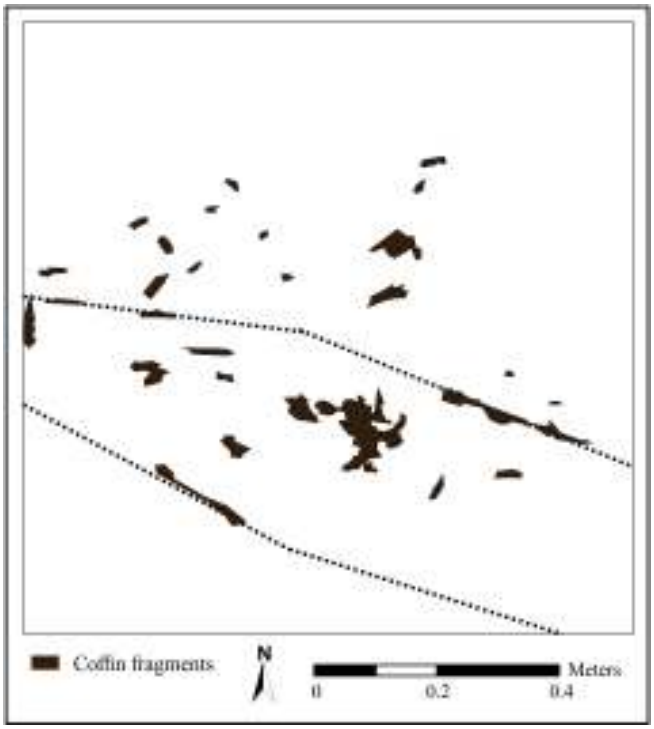

Figure 4-33. Illustration of coffin in plan view.

After an inspection of the burial in the third trench, the COSA City Archaeologist requested additional excavations to the 10.1 m (33.0 ft.) long drainage pipe under the tower and the 3.7 m (12 ft.) long fourth trench of 0.3 m (1 ft.) to a termination of 1.8 m (6 ft.). The rationale for the additional work was to ensure no burials were under the newly installed drainage pipes in compliance with the Texas Health and Safety Code §711.010. Per OSHA regulations, trenches deeper than 1.5 m (5 ft.) must be shored or stepped. Steps, 0.6 m (2 ft.) wide and 0.6 m (2 ft.) deep, were excavated along both walls of both trenches prior to excavation completion. A small Bobcat removed the layer of construction fill. Sediments below fill were removed by hand. No human remains, grave items, or burial shafts were observed in the steps or in the additional 0.3 m (1 ft.) of sediments.

The final excavations under the tower consisted of a series of post-holes to locate existing electric lines and hand-excavated trenches for electrical conduit. The excavations, terminating at 45.6 cmbs (18 inbs), were all in construction fill above original sediments. Human remains or grave items were not noted.

Play Lawn and Prayer Garden

On December 21, 2017, a CAR archaeologist monitored the machine-excavation of a trench to waterproof a portion of the hospital's foundation (Figure 4-34). The trench,

approximately 13.0 m long by 1.2 m wide by 0.9 m deep (45.7 by 4.0 by 3.0 ft.), was excavated into previously disturbed soils. No human remains were exposed. The trench was re-excavated over four days in March and April 2018. From March 25-27, 2019, CAR staff monitored three machine-excavated trenches for the installation of roof drains. The first trench, located at the far northern end of the play lawn was approximately 13.0 m long by 0.6 m wide by 0.6 m deep (45.7 by 2.0 by 2.0 ft.), the second trench was 7.0 m long by 2.0 m wide by 1.0 m deep (13.1 by 6.6 by 3.3 ft.), and the third trench was 3.5 m long by 0.6 m wide by 0.6 m deep (11.5 by 2.0 by 2.0 ft.; Figure 4-34). The trenches each ran from the hospital building to an existing storm drain west of the building. All three showed evidence of disturbance near the building with undisturbed sediments occurring from 0.3 to 0.5 mbs (1.0 to 1.5 ftbs) as the excavations moved west away from the building. No human remains or grave items were encountered.

On March 24, 2020, a CAR archaeologist monitored the removal of palm trees and bushes along the Houston Street property line on the southwest corner of the hospital property

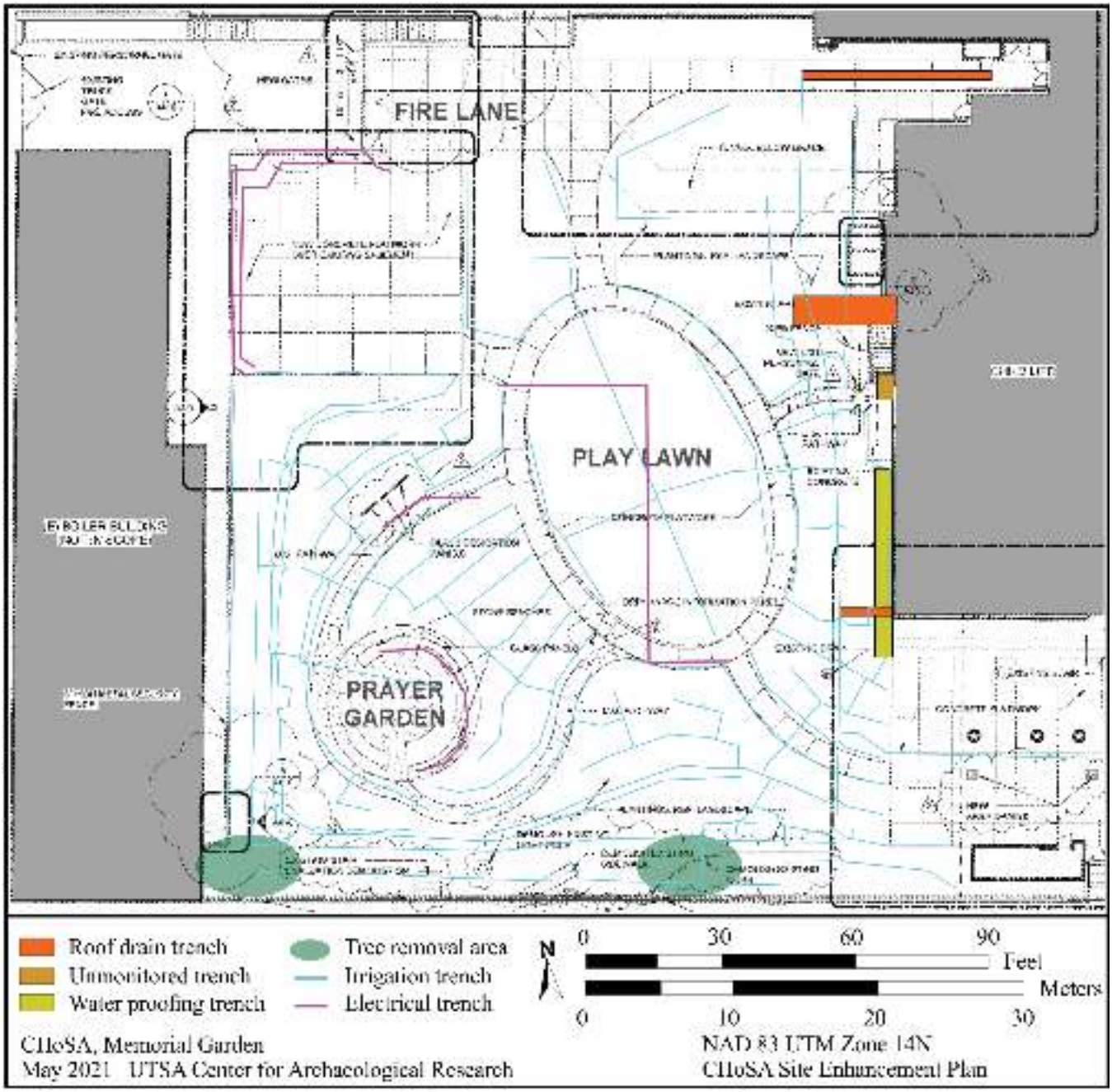

Figure 4-34. Location of monitored excavations in the Play Lawn and Prayer Garden.

(Figure 4-34). No evidence of burials was noted. Over three days in June and July 2020, excavations of machine-excavated trenches for electrical conduits were monitored by CAR staff. The trenches, approximately 0.6 m wide by 0.5 m deep (2 by 1.5 ft.), were all excavated into construction fill (Figure 4-34).

The COSA City Archaeologist contacted CAR on August 31, 2020 after noting two open trenches. Bone was scattered on the surface near the first trench. Because CAR was not informed of the excavation, the trenches were not monitored. The bone was all identified as faunal. CAR staff explored the trench walls and screened the trench backdirt. No human remains or grave goods were recovered. The first trench, 3.28 m long by 1.3 m wide by 0.8 m deep (10.8 by 4.3 by 2.7 ft.), was at the far northern end of the play lawn in an area previously monitored by CAR. The second trench, 1.8 m long by 1.1 m wide by 0.5 m deep (5.8 by 3.6 by 1.6 ft.), was excavated parallel to the west wall of the hospital about 30 m (98.4 ft.) north of the Houston Street property line (see Figure 4-34).

The final excavations in the Play Lawn/Prayer Garden portion of the hospital grounds were for the installation of irrigation lines, glass panel and bench foundations, and tree and bush plantings. CAR monitored this work over 14 days in September 2020. The trenches were all excavated into construction fill. A schematic of the locations of the irrigation lines, bench and glass panel and plantings is included in Figure 4-34.

Boiler Room

Over five days in October 2019, a CAR archaeologist monitored trenching into the Boiler Room floor associated with the replacement of leaking drain pipes (Figure 4-35). The Boiler Room is located on the western edge of the hospital property along San Saba Street. The boiler system was constructed to allow boiler overflow to drain through pipes in the room's floor into the city sewer. Hard water deposits eventually clogged the pipes causing flooding. The floor surface is approximately 1.6 m (5.3 ft) below current ground surface. Excavations were completed with hand-held automatic shovels into previously dug trenches. Exposed sediments consisted of gravel fill, over flowable fill, over tarry gley, over a pea gravel base. Because each trench was flooded and the floors and walls of the trenches could not be inspected, each wheelbarrow of removed sediment was examined by CAR's monitor. No undisturbed sediments, human remains, or grave items, or grave shafts were noted.

Summary

This chapter attempted to summarize close to four years of archaeological fieldwork on the portion of the Children's Hospital property that was previously used as the Old Campo Santo of San Fernando and the Old Catholic Cemetery. The fieldwork took place in three phases. The first phase consisted of the mitigation of the disturbance of human burials caused by the machine-excavation of a utility trench across the Memorial Garden. CAR archaeologists systematically investigated and hand-excavated the locations along the trench with evidence of human remains. A minimum of 11 individuals were recovered during Phase 1. On September 6, 2017, the 11 individuals from the utility trench were reburied in their original locations.

The second phase of the project involved exploratory trenching across the eastern portion of the Memorial Garden to help guide CAR's planned removal of all the remaining burials on the hospital property. CAR's Physical Anthropologist determined that a minimum of 83 individuals remained in this portion of the Memorial Garden. Due to the large number of burials and discussions with descendant groups, CHRISTUS Health decided not to exhume the individuals remaining on the property. The plans for the hospital grounds were redesigned to avoid impacts to burials.

The last phase of CAR's fieldwork consisted of monitoring, supplemented with hand-excavations as needed, of all

Figure 4-35. An example of trenching to repair pipes in the Boiler Room.

remaining subsurface construction activities. A minimum of two individuals were removed near the hospital coffee/observation terrace, an isolated skull fragment was collected from the Campo Santo along the Houston Street property boundary, and three isolated human fragments were recovered just west of the Tower. One coffin burial was also exposed just west of the Tower, but it was not removed or explored. On September 30, 2020, the remains exhumed from the December 2017, June 2020, and August 2020 trenches were reinterred in the Memorial Garden.

Although close to 100 burials were recorded on the CHoSA property, the small number that were exhumed did not provide a large enough sample size to conduct an analysis of mortuary patterns at the Campo Santo and Old Catholic Cemetery. Recovered grave items consisted of one cuprous pin and buttons. Of the 30 buttons recovered from the Campo Santo (n=26) and the Old Catholic Cemetery (n=4), one was a ferrous loop shank (1.5 cm diameter, 0.6 in.), four were shell four-hole (1.0 cm diameter, 0.4 in.), eight were bone (two four-hole and six five-hole, diameters ranging from 1 to 2 cm, 0.4 to 0.8 in.), and 17 were cuprous loop shank (diameters ranging from 1 to 2 cm, 0.4 to 0.8 in.). Metal, shell, and bone buttons were recovered from both cemeteries. The small sample size, particularly from the Old Catholic Cemetery, limits any meaningful temporal comparisons. All of the exhumed burials contained some evidence of coffin use. The wood appeared to be in better condition in the Old Catholic Cemetery, but this supposition is based on a sample of three. Of the three, the wood observed in Burial 3, located on the west end of the original utility trench in the Memorial Garden, and the hexagonal coffin burial, immediately west of the Tower, was preserved to the extent that coffin outlines were visible. The wood was too fragmented and friable to preserve any data on plank size/form or wood working details. Coffin wood observed in the Campo Santo burials and in Burial 1, located just outside the west border of the the Old Catholic Cemetery was sparse and fragmented. Coffin nails and/or tacks (1164.8 g, 41.09 oz.) were present in all of the burials.

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Chapter 5: Summary and Recommendations

The Center for Archaeological Research was initially contracted by CHRISTUS Health to exhume human remains inadvertently exposed in September 2016 during the mechanical excavation of a linear utility trench in a proposed prayer garden. The original hospital building was constructed in 1874 over the Old Campo Santo of San Fernando Cathedral (0.51 acres) and the Old Catholic Cemetery of San Antonio (3.72 acres). The cemeteries were in use between 1808 and 1855. Over the four-year duration of the project, CAR's fieldwork progressed from removal of burials on the project area to monitoring subsurface construction activity designed to avoid impact to human remains. Dr. Paul Shawn Marceaux served as the Principal Investigator until November 2019 at which point Dr. Raymond Mauldin assumed the role. Cynthia Moore Munoz served as the Project Archaeologist. The cemeteries were recorded as archaeological site 41BX2397.

In April 2017, CAR archaeologists conducted test unit excavations and screened the backdirt from the 2016 utility trench. A minimum of 11 individuals were recovered. In May 2017, mechanical trenching of the eastern portion of the prayer garden to locate additional burials revealed a minimum of 83 individuals. The burials from the exploratory trenches were left in place and covered with a layer of sand and backdirt. Based on the large number of burials and the wishes of cemetery descendants, CHRISTUS Health redesigned the Play Lawn, Memorial Garden, and Prayer Garden to avoid impacting any remaining burials. On September 6, 2017, the 11 individuals from the utility trench were reburied in their original locations. CAR archaeologists exhumed a minimum of two individuals, in December 2017, that were disturbed during unmonitored mechanical-trenching to construct footers for a coffee/observation terrace. In June 2020, human remains were encountered during monitoring of a hand-excavated utility trench. The coffin burial was not explored or removed, but was covered with linen, geocloth, sand, and backdirt. Three isolated human bone fragments were recovered from the relocated utility trench. One isolated human skull fragment was collected in August 2020 during monitoring of a hand-excavated irrigation trench. On September 30, 2020, the remains exhumed from the December 2017, June 2020, and August 2020 trenches were reinterred in the Memorial Garden.

Recommendations

Test unit and trench excavations on the project area revealed that undisturbed areas still contain the human remains buried in the Old Campo Santo and the Old Catholic Cemetery. Except for the eastern portion of the Memorial Garden, the footer trench for the coffee/observation terrace in the Memorial Garden, the deep utility trench under the Tower, the utility trench immediately west of the Tower that exposed the coffin burial, and a small section of the northern part of the Campo Santo (see Lyle 1999), large areas of the property have not been archaeologically investigated. Sanborn maps provide hospital building construction dates including basement locations (Sanborn-Perris Map and Publishing Company 1892, 1896; Sanborn Map and Publishing Company 1904, 1911, 1931, 1950, 1960, 1965, 1971). There is a high probability that any burials where basements were constructed were removed, either in whole or in part, depending on the depth of each basement's excavation. Figure 5-1 provides the locations of basements, as noted on Sanborn Maps, on the project area with their year of construction.

The documentation of basement subsurface impacts across the property and the results from archaeological investigations by Lyle (1999) and this project, can provide planning and avoidance guidance for any future projects conducted on the hospital property. CAR recommends that any future excavations on the property be subject to archaeological testing and monitoring with the expectation of burial exposure.

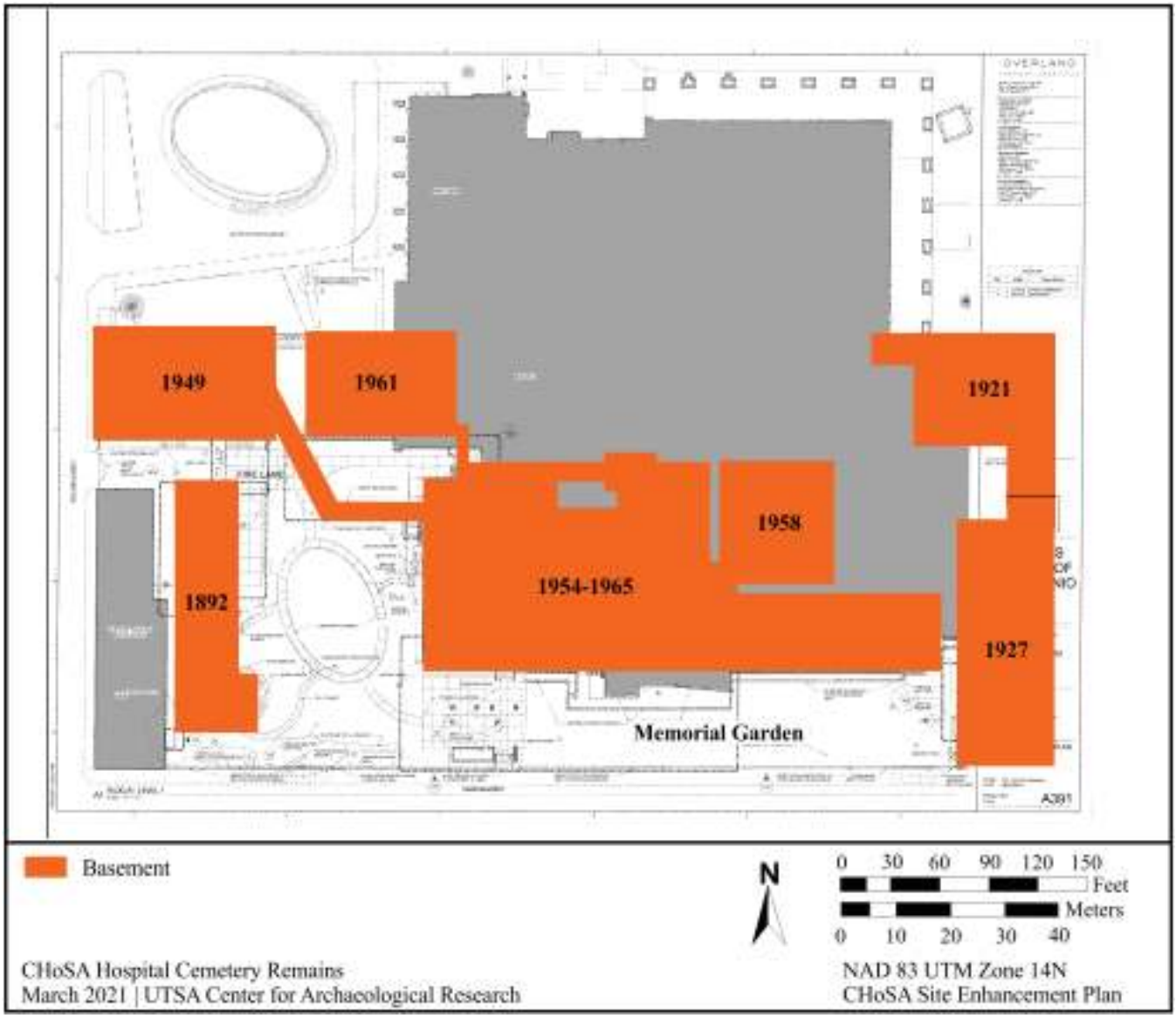

Figure 5-1. Locations of basements by construction year per Sanborn maps.

References Cited:

Alley, W. M.
1984 The Palmer Drought Severity Index: Limitations and Applications. *Journal of Climate and Applied Meteorology* 23:1100-1109.

Almaraz, F. D., Jr.
1989 *The San Antonio Missions and their System of Land Tenure*. University of Texas Press, Austin.

Ancestry.com
2018a 1880 Census. Electronic document. https://www.ancestry.com, accessed December 21, 2018.

2018b U.S., Find a Grave Index, 1600s-Current. Electronic document. https://www.ancestry.com, accessed December 21, 2018.

Aufderheide, A. C. and C. Rodriguez-Martin
1998 *The Cambridge Encyclopedia of Human Paleopathology*. Cambridge University Press, New York.

Baker, B. J., T. L. Dupras and M. W. Tocheri
2010 *The Osteology of Infants and Children.* Texas A&M University Press, College Station.

Bauer, K. J.
1992 *The Mexican War, 1846-1848.* University of Nebraska Press, Lincoln.

Baugh, D.
2011 *The Global Seven Years War, 1754-1763.* Pearson Press, London.

Bethard, J. D. and B. L. Seet
2012 Sex Determination from the Second Cervical Vertebra: A Test of Wescott's Method on a Modern American Sample. *Journal of Forensic Science* doi: 10.1111/j.1556-4029.2012.02183.x.

Black, S. L.
1986 *The Clemente and Herminia Hinojosa Site, 41JW8: A Toyah Horizon Campsite in Southern Texas*. Special Report No. 18. The Center for Archaeological Research, The University of Texas at San Antonio.

1989 Central Texas Plateau Prairie. In *From the Gulf Coast to the Rio Grande: Human Adaptation in Central, South and Lower Pecos Texas*, edited by T. R. Hester, S. L. Black, D. G. Steele, B. W. Olive, A. A. Fox, K. J. Reinhard and L. C. Bement, pp. 17-38. Research Series No. 33. Arkansas Archeological Survey, Fayetteville.

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

Black, T. K., III
1978 A New Method for Assessing the Sex of Fragmentary Skeletal Remains: Femoral Shaft Circumference. *American Journal of Physical Anthropology* 48:227-31.

Blair, W. F.
1950 The Biotic Provinces of Texas. *The Texas Journal of Science* 2(1):93-117.

Buikstra, J. E. and D. H. Ubelaker
1994 *Standards for Data Collection from Human Skeletal Remains*. Research Series No. 44. Arkansas Archeological Survey, Fayetteville.

Calloway, C. G.
2006 *The Scratch of a Pen: 1763 and the Transformation of North America*. Oxford University Press, New York.

Campbell, R.
1989 *An Empire for Slavery: The Peculiar Institution in Texas, 1821-1865.* Louisiana State University Press, Baton Rouge.

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

Carlson, S. B.
1994 Texas beyond the Periphery: An Archaeological Study of the Spanish Missions during the Eighteenth Century. Ph.D. dissertation, Department of Anthropology, Texas A&M University, College Station.

Carpenter, S. M., C. B. Bousman, O. Potapova, L. D. Agenbroad, J. K. Hanselka, K. A. Miller, K. Lawrence, C. T. Hartneff, J. Lowe, M. C. Cody and L. Bement
2013 *The San Antonio River Mammoth Site: Archaeological Investigations on 41BX1239 for the Interstate 37 Bridge at the San Antonio River Improvement Project, Bexar County, Texas.* SWCA Environmental Consultants, SWCA Cultural Resources Report No. 13-275, Texas Department of Transportation, Archeological Studies Program Report No. 154.

Cavazzuti, C., B. Breseadola, C. d'Innocenzo, S. Interlando and A. Sperduti
2019 Towards a New Osteometric Method for Sexing Ancient Cremated Human Remains. Analysis of Late Bronze Age and Iron Age Samples from Italy with Gendered Grave Goods. In *PLoS ONE* vol. 14(1):e0209423.

Chabot, F. C.
1929 *Presidio de Texas at the Place called San Antonio*. San Antonio.

1932 *Excerpts from the Memorias for the History of the Province of Texas: Being a Translation of Those Parts of the Memorias which Particularly Concern the Various Indians of the Province of Texas; Their Tribal Divisions, Characteristics, Customs, Traditions, Superstitions, and All Else of Interest Concerning Them. With a Prolog, Appendix, and Notes by Frederick C. Chabot. Covering the Period from Earliest Times to the Close of the Memorias by Padre Fray Agustin de Morfi, Lector Jubilado e Hijo de la Provincia del Santo Evangelio de Mexico.* Translated and annotated by F.C. Chabot. Translation revised by C.E. Castaneda of the University of Texas. Naylor Printing Company, San Antonio.

1937 *With the Makers of San Antonio.* Privately printed, San Antonio.

Chipman, D. E.
1992 *Spanish Texas, 1519-1821*. University of Texas Press, Austin.

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

City Council Minutes (CCM)
1848 Public Records. Volume A:135-137, left. San Antonio City Hall, San Antonio, Texas.

1884 Public Records. Volume B:569. San Antonio City Hall, San Antonio, Texas.

Cleaveland, M. K., T. H. Votteler, D. K. Stahle, R. C. Casteel and J. L. Banner
2011 Extended Chronology of Drought in South Central, Southeastern and West Texas. *Texas Water Journal* 2(1):54-96.

Collins, M. B.
1995 Forty Years of Archeology in Central Texas. *Bulletin of the Texas Archeological Society* 66:361-400.

1998 *Wilson-Leonard: An 11,000 Year Archeological Record of Hunter-Gatherers in Central Texas.* Studies in Archeology 31. Texas Archeological Research Laboratory. The University of Texas at Austin.

1999a *Clovis Blade Technology*. University of Texas Press, Austin.

1999b Gault Site. In *The Handbook of Texas*, edited by R. R. Barkley, pp. 117-118. Texas State Historical Association, Austin.

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

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

Colt Collectors Association, Inc.
2021 The Official Website of Colt Collectors. https://coltcollectors.com, accessed September 3, 2021.

Cook, E. R. and P. J. Krusic
2004 The North American Drought Atlas. Lamont-Doherty Earth Observatory and the National Science Foundation. Columbia University, Palisades, New York, http://iridl.ldeo.columbia.edu/SOURCES/.LDEO/.TRL/.NADA2004/.pdsi-atlas.html, accessed November 2013.

Cox, I. W.
1997 The Growth of San Antonio. In *Archaeology at the Alamodome: Investigations of a San Antonio Neighborhood in Transition. Volume 1, Historical, Architectural, and Oral History Research,* edited by A. A. Fox, M. Renner and R. J. Hard. pp. 8-44. Archaeological Survey Report, No. 236. Center for Archaeological Rsearch, The University of Texas at San Antonio.

2005a History of the "Priest's House" on Military Plaza. In *Test Excavations and Monitoring at 41BX1598: A Multicomponent Historic Site in Bexar County, Texas*, edited by A. L. Figueroa and R. P. Maulidn. pp. 125-130. Archaeological Report, No. 360. Center for Archaeological Research. The University of Texas at San Antonio.

2005b *The Spanish Acequias of San Antonio*. Maverick Publishing Company, San Antonio.

Daniels, D.
2007 *Ground Penetrating Radar.* 2nd ed. Institution of Electrical Engineers, London.

Davis, W. C.
2004 *Lone Star Rising*. Free press, London.

Dayton, C., M. C. Stotts and H. E. Rush
2016 *Archeological Monitoring of Street, Sidewalk, and Storm Sewer Improvements along North San Saba Street, City of San Antonio, Bexar County, Texas*. Archeological Report 120. Cox/McLain Environmental Consulting, Inc.

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

DeLara-AlmondArchitects and L. O. Bobbitt
1981 *Vista Verde South: Historical & Architectural Assessment*. De-Lara-Almond Architects, Inc.

Donecker, F.
2010 San Antonio River. Handbook of Texas Online. Electronic Document. http://www.tshaonline.org/handbook/online/, accessed December 2017.

Eckhardt, G.
2017 The San Antonio River. Electronic Document. The Edwards Aquifer Website. http://edwardsaquifer.net, accessed December 2017.

Everett, D. E.
2016 Steves, Edward. In Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/fstat, accessed December 14, 2018.

Favata, M. A. and J. B. Fernandez
1993 *The Account: Nunez Cabeza de Vaca's Relacion*. Arte Publico Press, Houston.

Fehrenbach, T. R.
1983 *Seven Keys to Texas*. Texas Western Press, El Paso.

2000 *Lone Star: A History of Texas and the Texans*. Da Capo Press, Boston.

Figueroa, A. L. and C. D. Frederick
2008 *Archeological Testing of the Pavo Real Site (41BX52), San Antonio, Bexar County, Texas.* Archaeological Report, No. 382. Center for Archaeological Research. The University of Texas at San Antonio.

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

Figueroa, A. L. and C. McKenzie
in press *Archaeological Investigations and Historical Research for the Frost Tower Project, San Antonio, Texas*. The University of Texas at San Antonio, Center for Archaelogical Research.

Fisher, L. F.
1997 *Crown Jewel of Texas: The Story of San Antonio's River.* Maverick Publishing Co., San Antonio.

Forrestal, P. P.
1935 Pena's Diary of the Aguayo Expedition. *Preliminary Studies of the Texas Catholic Historical Society* 2(7):3-68.

Foster, W. C.
1998 *The La Salle Expedition to Texas: The Journal of Henri Joutel 1664-1687*. Texas State Historical Association, Austin.

2008 *Historic Native Peoples of Texas.* University of Texas Press, Austin.

Fox, A. A.
1977 *The Archaeology and History of the Spanish Governor's Palace Park*. Archaeological Survey Report, No. 31. Center for Archaeological Research, The University of Texas at San Antonio.

1997 *Test Excavations at the Spanish Governor's Palace, San Antonio, Texas*. Archaeological Survey Report, No. 259. The University of Texas at San Antonio, Center for Archaeological Research.

Gaballah, I. F., A. M. Shehab and K. A. Bayoumi
2014 Sex Determination in Femurs of Modern Egyptians: A Comparative Study between Metric Measurements and SRY Gene Detection. *Egyptian Journal of Forensic Sciences* 4:109-115.

Galveston Daily News, The (GDN)
1880 San Antonio in 1838. 22 February:4.

Gama, I., D. Navega and E. Cunha
2015 Sex Estimation Using the Second Cervical Vertebra: A Morphometric Analysis in a Documented Portuguese Skeletal Sample. *International Journal of Legal Medicine* 129(2):365-72.

Garcia-Garcia, E., J. Mari Mtz. Txoperena, R. Sala, A. Araanburu and J. Agirre-Mauleon
2016 Magnetometer Survey at the Newly-discovered Roman city of Auritz/Burguete (Navarre). Results and Preliminary Archaeological Interpretation. *Archaeological Prospection* 23(4):243-256.

Garcia, R. and F. E. Loch
2005 Telephone conversation memorialized on Ancestry.com Message Board July 9, 2005. http://boards.ancestry.com/thread.aspx?mv=flat&m=855&p=localities.northam.usa.states.texas.counties.bexar, Accessed December 7, 2017.

Garver, L.
2010 Milam, Benjamin Rush. In Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/fmi03, accessed December 13, 2018.

Gerstle, A., T. C. Kelly and C. Assad
1978 *The Fort Sam Houston Project: An Archaeological and Historical Assessment.* Archaeological Survey Report No. 40. Center for Archaeological Research. The University of Texas at San Antonio.

Gill, G. W.
1995 Challenge on the Frontier: Discerning American Indians from Whites Osteologically. *Journal of Forensic Science* 40:783-88.

Givens, R. D.
1968 A Preliminary Report on Excavations at Hitzfelder Cave. *Bulletin of the Texas Archeological Society* 38:47-50.

Habig, M. A.
1968 *The Alamo Chain of Missions: A History of San Antonio's Five Old Missions.* Franciscan Herald Press, Chicago.

1990 *Spanish Texas Pilgrimage.* Franciscan Herald Press, Chicago.

Hackett, C. W.
2010 Aguayo Expedition. In Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/upa01, accessed November 20, 2018.

Hadjouis, D.
2011 Psoriatic Arthropathy in a 17th Century Archaeological Protestant Population Belong to Saint-Maurice Cemetery in France. *International Journal of Modern Anthropology* 4:29-41.

Hall, G. D.
1981 *Allens Creek: A Study in the Cultural Prehistoric of the Brazos River Valley.* Research Report 61. Texas Archeological Survey. The University of Texas at Austin.

Handbook of Texas Online
2018 San Antonio de Béxar Presidio. Electronic Document. http://www.tshaonline.org/handbook/online/articles/uqs02, accessed December 12, 2018.

Hanihara, K.
1967 Racial Characteristics in the Dentition. *Journal of Dental Research* 46:923-26.

1969 *Mongoloid Dental Complex in the Permanent Dentition.* VIIIth Congress of Anthropological and Ethnological Sciences 1968. Tokyo and Kyoto, 298-300.

Hatcher, M. A.
1932 The Expedition of Don Domingo Teran de los Rios into Texas (1691-1692). *Preliminary Studies of the Texas Catholic Historical Society* 2(1):3-67.

Henderson, J.
2001 *Excavations at the Rainey Site (41BN33): A Late Prehistoric Sinkhole Site in Bandera County, Texas*. Archeological Studies Program Report 5. Texas Department of Transportation, Environmental Affairs Division, Austin.

Henderson, T. J.
2009 *The Mexican Wars for Independence*. Hill and Wang Publishing, New York.

Hendricks, S. B.
1919 The Somervell Expedition to the Rio Grande, 1842. *Southwestern Historical Quarterly* 23:112-140.

Henson, M. S.
1982 *Juan Davis Bradburn: A Reappraisal of the Mexican Commander of Anahuac.* Texas A&M University Press, College Station.

Hester, T. R.
1977 Excavations at St. Mary's Hall (41BX229): A Buried Plainview Campsite in South Central Texas. Manuscript of a Paper Presented at the 1977 Texas Archaeological Society Annual Meeting in Arlington Texas. Center for Archaeological Research. The University of Texas at San Antonio.

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

Hester, T. R. and H. Kohnitz
1975 Chronology and Placement of "Guadalupe" Tools. *La Tierra* 2(2):22-25.

Highley, L., C. Graves and G. Judson
1978 Archeological Investigations at Scorpion Cave (41ME7), Medina County, Texas. *Bulletin of the Texas Archaeological Society* 49:139-194.

Hill, R. T. and T. W. Vaughan
1896 *The Geology of the Edwards Plateau and Rio Grande Plain Adjacent to Austin and San Antonio, Texas, with References to the Occurrence of Underground Waters*. US Geological Survey 18th Annual Report, pt. 2-B, p. 103-321.

Hillson, S.
1996 *Dental Anthropology*. Cambridge University Press.

Hoffman, F. L.
1935 *Diary of the Alarcon Expedition into Texas, 1718-1719* by Francisco Celiz. Vol. 5. Quivira Society Publications. Los Angeles, California.

1938 The Mezquia Diary of the Alarcon Expedtion into Texas, 1718. *Southwestern Historical Quarterly* 41:312-323.

Holliday, V. T., J. C. Knox, G. L. Running IV, R. D. Mandel and C. R. Ferring
2001 The Central Lowlands and Great Plains. In *The Physical Geography of North America*, edited by A. R. Orme, pp. 335-362. Oxford University Press, New York.

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

Ivey, J. E. and C. A. Assad
1982 Menger Soap Works. Unpublished Manuscript. The University of Texas at San Antonio, Center for Archaeological Research.

Jasinski, L. E.
2018 San Antonio, TX. In Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/hds02, accessed November 19, 2018.

Jerkovic, I., Z. Basic, I. Kruzic and S. Andelinovic
2016 Sex Determination from Femora in Late Antique Sample from Eastern Adriatic Coast (Salona Necropolis). *Anthropological Review* 79(1):59-67.

Johnson, L.
1995 *Past Cultures and Climates at Jonas Terrace, 41ME29, Medina County, Texas.* Office of the State Archeologist, Report 40. Texas Department of Transportation and Texas Historical Commission, Austin.

Johnson, L. and G. Goode
1994 A New Try at Dating and Characterizing Holocene Climates, as well as Archaeological Periods, on the Eastern Edwards Plateau. *Bulletin of the Texas Archeological Society* 65:1-15.

Karbula, J. W.
2003 Toyah Bluff Site (41TV441): Changing Notions of Late Prehistoric Subsistence in the Blackland Prairie, Travis County, Texas. *Bulletin of the Texas Archaeological Society* 74:55-81.

Karl, T. R.
1986 The Sensitivity of the Palmer Drought Severity Index and Palmer's Z-Index to their Calibration Coefficients Including Potential Evapotranspiration. *Journal of Climate and Applied Meteorology* 25:77-86.

Krieger, A. D.
2002 *We Came Naked and Barefoot, the Journey of Cabeza de Vaca across North America*. edited by M.H. Krieger. University of Texas Press, Austin.

Krogman, W. M. and M. Y. Iscan
1986 *The Human Skeleton in Forensic Medicine*. Second ed. Charles C. Thomas, Springfield, Illinois.

Labadie, J. H.
1987 *An Archaeological and Historical Assessment of the Vista Verde South Project, San Antonio, Texas.* Archaeological Survey Report, No. 156. The University of Texas at San Antonio, Center for Archaeological Research.

Leal, J. O.
1975 Camposanto: An Ancient Burial Ground of San Antonio, Texas, 1808-1860, San Fernando Cathedral Archives, Manuscript on file, San Antonio Public LIbrary.

1976 San Fernando Church Burials: 1761-1808, San Fernando Cathedral Archives, Manuscript on file, San Antonio Public LIbrary.

Long, C.
2017 Bexar County. The Handbook of Texas Online. Electronic Document. http://www.tshaonline.org/handbook/online/articles/hcb07, accessed December 2017.

Lukowski, P. D.
1988 *Archaeological Investigations at 41BX1, Bexar County, Texas.* Archaeological Survey Report, No. 135. The Center for Archaeological Research, The University of Texas at San Antonio.

Lyle, A. S.
1999 *Exhumation and Analysis of Two Historic Burials from the Camposanto at Santa Rosa Hospital, San Antonio, Texas.* Archaeological Survey Report, No. 276. The Center for Archaeological Research. The University of Texas at San Antonio.

Marley, D.
2014 *Mexico at War: From the Struggle for Independence to the 21st-Century Drug Wars*. ABC-CLIO, Santa Barbara, California.

Marlow, J. and F. Pastor
2011 Sex Determination Using the Second Cervical Vertebra-a Test of the Method. *Journal of Forensic Science* 56(1):165-169.

Mauldin, R. P.
2003 *Exploring Drought in the San Antonio Area between 1700 and 1979.* Special Report, No. 29. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R. P., A. L. Figueroa, L. Kemp, C. M. M. McKenzie and S. Wigley
2018 *An Archaeological Survey and Resource Assessment of 1,445 Acres in Southern Bexar County, Texas.* Center for Archaeological Research, The University of Texas at San Antonio. Archaeological Report, No. 455.

Mauldin, R. P., R. J. Hard, C. M. Munoz and J. L. Rice
2013a Stable Carbon ($\delta^{13}C_{collagen}$, $\delta^{13}C_{carbonate}$) and Nitrogen ($\delta^{15}N$) Isotopes from Radiocarbon Dated Hunter-Gatherers at Hitzfelder Cave, Texas. Poster Presented at the 2013 Meetings of the Society for American Anthropologists, Honolulu, Hawaii.

Mauldin, R. P., R. J. Hard, C. M. Munoz, J. L. Rice, K. Verostick, D. R. Potter and N. Dollar
2013b Carbon and Nitrogen Stable Isotope Analysis of Hunter-Gatherers from the Coleman Site, a Late Prehistoric Cemetery in Central Texas. *Journal of Archaeological Science* 40(2):1369-1381.

Mauldin, R. P., S. Smith, S. Wigley, A. L. Figueroa and C. M. M. McKenzie
2015 *Archaeological Investigations within San Pedro Springs Park (41BX19), San Antonio, Bexar County, Texas.* Archaeological Report, No. 443. Center for Archaeological Research. The University of Texas at San Antonio.

Maverick, M.
1921 *Memoirs of Mary A. Maverick*. Alamo Printing Company, San Antonio.

Mayhall, J. T., S. R. Saunders and P. L. Belier
1982 The Dental Morphology of North American Whites: A Reappraisal. In *Teeth: Form, Function, and Evolution*, edited by B. Kurten, pp. 245-258. Columbia University Press, New York.

McGraw, A. J. and K. Hindes
1987 *Chipped Stone and Adobe: A Cultural Resources Assessment of the Proposed Applewhite Reservoir, Bexar County, Texas.* Archaeological Survey Report, No. 163. Center for Archaeological Research, The University of Texas at San Antonio.

McKenzie, C., L. Martinez and R. Mauldin
2016 *Archaeological Monitoring and Test Excavations at the 1722 Presidio San Antonio de Bexar (Plaza de Armas Buildings), San Antonio, Bexar County, Texas*. Center for Archaeological Research, The University of Texas at San Antonio, Archaeological Report, No. 445.

McKenzie, C., C. M. Munoz and R. Mauldin
2020 *Archival and Historical Review of the Children's Hospital of San Antonio Property, Downtown San Antonio, Bexar County, Texas*. The Center for Archaeological Research, The University of Texas at San Antonio, Special Report, No. 35.

McKern, T. and T. D. Stewart
1957 *Skeletal Age Changes in Young American Males Analyzed from the Standpoint of Identification*. Technical Report EP-45. Headquarters, Quartermaster Research and Development Command, Natick, Massachusetts.

Meindl, R. S. and C. O. Lovejoy
1985 Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age at Death Based on the Lateral-Anterior Sutures. *American Journal of Physical Anthropology* 68:57-66.

Meinig, D. W.
1969 *Imperial Texas: An Interpretive Essay in Cultural Geography.* University of Texas Press, Austin.

Menchaca, L. M.
1803 *Ultima Voluntad Testamentaria de Luis Mariano Menchaca*. Bexar Archives. Library of the University of Texas, Archives Division, Austin.

MennattAllah, H. A., F. M. M. B. El-Dine, M. H. Attia and N. M. A. El-Sekily
2020 Sample Specific Sex Estimation Method Using Parameters Around Dominant Nutrient Foramina in Unknown Femur Bones Collection of Contemporary Egyptians. *International Journal of Osteoarchaeology* 30(5):583-593.

Milner, G. R. and J. L. Boldsen
2012 Humeral and Femoral Head Diameters in Recent White American Skeletons. *Journal of Forensic Science* 57(1):35-40.

Minamiguchi, N.
2005 Health Risks and Hazards Caused by Floods. Electronic Article. https://www.ssi.dk/~/media/Indhold/DK%20-%20dansk/Smitteberedskab/Infektionshygiejne/Vandskade/, accessed December 2017.

Moneyhon, C. H.
2017 Reconstruction. In Handbook of Texas Online. Texas State Historical Association. http://www.tshaonline.org/handbook/online/articles/mzr01, accessed November 29, 2018.

Munoz, C. M. and N. Divito
2012 Observations on a Paleoindian Component on the San Antonio River at 41BX1888. Paper Presented at the 2012 Meetings of the Society for American Anthropologists, Memphis, Tennessee.

Munoz, C. M. and R. Mauldin
2020 Burial Patterns within the Campo Santo and Old Catholic Cemetery of San Fernando. In *Archival and Historical Review of the Children's Hospital of San Antonio Property, Downtown, San Antonio, Bexar County, Texas*, edited by C. McKenzie, C. M. Munoz and R. Mauldin, The University of Texas at San Antonio, Center for Archaeological Research, Special Report, No. 35.

Munoz, C. M., R. P. Mauldin, J. Thompson and S. C. Caran
2011 *Archeological Significance Testing at 41BX17/271, the Granberg Site: A Multi-Component Site along the Salado Creek in Bexar County, Texas.* Archaeological Report No. 393. Center for Archaeological Research, The University of Texas at San Antonio. Archeological Studies Program, Report No. 140. Texas Department of Transportation Environmental Affairs Division.

Munoz, C. M., J. L. Rice, K. Verostick, R. J. Hard and R. P. Mauldin
2013 A Stable Isotope Analysis of Hunter-gatherers from Hitzfelder Cave, Texas. Paper Presented at the 2013 Meetings of the Texas Academy of Sciences, Kerrville, Texas.

National Oceanic and Atmospheric Administration
2013 Monthly/Annual/Average Precipitation for San Antonio, TX (1871-2013). http://www.crh.noaa.gov/Image/ewx/sat/satmonrain.pdf, accessed December 2017.

Neu, C. T.
2015 Annexation. In Handbook of Texas Online. Texas State Historical Association. Electronic document, http://www.tshaonline.org/handbook/online/articles/mga02, accessed November 29, 2018.

Nevin, D.
1975 *The Old West: The Texans*. Time/Life Books, Alexandria, Virginia.

Nichols, K. M.
2015a *Archaeological Investigations at 41BX1968, Probable First Site of Mission San Antonio de Valero, 1718, Bexar County, Texas*. Raba Kistner Environmental, Inc.

2015b *Archaeological Investigations at the Christopher Columbus Italian Society Property and Columbus Park: 41BX1968, the Possible First Site of Mission San Antonio de Valero*. Archaeological Report, No. 432. The University of Texas at San Antonio, Center for Archaeological Research.

2018 *Archaeological Investigations in Front of the Spanish Governor's Palace in Plaza de Armas, San Antonio, Bexar County, Texas.* Raba Kistner Environmental, Inc.

Nichols, M.
2013 *Archeological Monitoring of the Milam Park (41BX992) Playground Redevelopment Project, San Antonio, Bexar County, Texas*. Atkins North America, Inc.

Nickels, D. L.
2000 The Beisenbach Site (41WN88): A Case Study in Diet Breadth. Unpublished Masters Thesis, The University of Texas at San Antonio.

Ortner, D. J. and J. G. Putschar
1985 *Identification of Patholoigcal Conditions in Human Skeletal Remains*. Smithsonian Contributions to Anthropology, No. 28. Smithsonian Institution Press, Washington, D.C.

Potter, D. R., R. B. Pickering and C. E. Mear
2005 Salvage Excavation at the Coleman Cemetery Site, 41BX568. *La Tierra* 32(1).

Poyo, G. E.
1991 The Canary Islands Immigrants of San Antonio: From Ethnic Exclusivity to Community in Eighteenth-Century Bexar. In *Tejano Origins in Eighteenth-Century San Antonio*, edited by G. E. Poyo and M. Hinojosa. pp. 41-58. University of Texas Press, Austin.

Prewitt, E. R.
1974 *Archeological Investigations at the Loeve-Fox Site*. Research Report 49. Texas Archeological Survey. The University of Texas at Austin.

Purkait, R.
2003 Sex Determination from Femoral Head Measurements: A New Approach. *Legal Medicine* 5:S347-S350.

Ramenofsky, A.
1987 *Vectors of Death: The Archaeology of European Contact*. University of New Mexico Press, Albuquerque.

Ramsdell, C. W.
1959 *San Antonio: A Historical and Pictorial Guide*. University of Texas Press, Austin.

Redfield, A.
1970 A New Aid to Aging Immature Skeletons: Development of the Occipital Bone. *American Journal of Physical Anthropology* 33:217-220.

Reed, S. G.
1941 *A History of the Texas Railroads.* St. Clair Publishing Company, Houston.

Roberts, C. A. and K. Manchester
1995 *The Archaeology of Disease.* Cornell University Press, Ithaca, New York.

San Antonio, Municipality of, Office of the City Engineer Survey Books (CESB)
1848 March 22. City Engineer Survey Book 1:10-11. Plat and Field Notes of a Catholic Cemetery, laid off by order of the City Council, Francois Giraud, City Surveyor.

San Antonio Light
1948 San Antonio's First Public School Preserved at Museum. December 15.

Sanborn-Perris Map and Publishing Company
1892 San Antonio, Texas, Fire Insurance Map, Volume 1, Sheet 4. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1896 San Antonio, Texas, Fire Insurance Map, Volume 1, Sheet 8. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

Sanborn Map and Publishing Company
1904 San Antonio, Texas, Fire Insurance Map, Volume 1, Sheet 49. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1911 San Antonio, Texas, Fire Insurance Map, Volume 1, Sheet 18. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1931 San Antonio, Texas, Fire Insurance Map, Volume 1, Sheet 19. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1950 San Antonio, Texas, Fire Insurance Map, Volume 1a, Sheet 18a. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1960 San Antonio, Texas, Fire Insurance Map, Volume 1a, Sheet 18a. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1965 San Antonio, Texas, Fire Insurance Map, Volume 1a, Sheet 18a. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

1971 San Antonio, Texas, Fire Insurance Map, Volume 1a, Sheet 18a. New York, New York. Digital Sanborn Map, UTSA Special Collections Department.

Schrott, L. and O. Sass
2008 Application of Field Geophysics in Geomorphology: Advances and Limitations Exemplified by Case Studies. *Geomorphology* 93(1):55-73.

Schwarz, T. and R. H. Thonhoff
1985 *Forgotten Battlefield of the Texas Revolution: The Battle of Medina, August 18, 1813.* Eakin Press, Austin, Texas.

Shafer, H. J. and T. R. Hester
2011 *Archaeological Monitoring for the Plaza de Armas Project, Downtown San Antonio, Bexar County, Texas*. Report No. 98. Abasolo Archaeological Consultants.

Soil Survey Staff
2017 Web Soil Survey. Natural Resources Conservation Service, United States Department of Agriculture. http://websoilsurvey.nrcs.usda.gov/app/ accessed December 2017.

Sonnichsen, C. L.
1950 *Cowboys and Cattle Kings*. University of Oklahoma Press, Norman.

Southern Regional Climate Center
2017 CLIMDAT. https://climdata.srcc.lsu.edu/, accessed December 2017.

Spanish Archives
1804 *Sale of a Stone House by Jose Manchaca to Ygnacio Perez*. Vol E2:75-76, Bexar County Courthouse.

Strong, B.
2010 Ruiz, Jose Francisco. Handbook of Texas Online. http://www.tshaonline.org/handbook/online/articles/fru11, accessed December 21, 2018.

Suchey, J. M., P. A. Owings, D. V. Wiseley and T. T. Noguchi
1984 Skeletal Aging of Unidentified Persons. In *Human Identification: Case Studies in Forensic Anthropology*, edited by T. A. Rathbun and J. E. Buikstra, pp. 278-297. Charles C. Thomas, Springfield, Illinois.

Suhm, D. A.
1957 Excavations at the Smith Rockshelter, Travis County, Texas. *Texas Journal of Science* 9:26-58.

Taylor, A. J. and C. L. Highley
1995 *Archaeological Investigations at the Loma Sandia Site (41LK28): A Prehistoric Campsite in Live Oak County, Texas*. Studies in Archeology No. 20. Texas Archeological Research Laboratory. The University of Texas at Austin.

Taylor, R.
1996 *The New Handbook of Texas in Six Volumes*. The Texas State Historical Association, Austin.

Tennis, C. A.
1995a *Excavation in an Historic Cemetery: Milam Park Renovation Phase II*. Archaeological Survey Report, No. 227. Center for Archaeological Research. The Universtiy of Texas at San Antonio.

1995b *Exhumation of a Hero, Colonel Ben Milam: Milam Park Renovation Phase I.* Archaeological Survey Report, No. 223. The University of Texas at San Antonio, Center for Archaeological Research.

Texas Historical Commission
1979 The Texas Historical Commission Inventory Master File. On file at the Texas Historical Commission, Austin.

2018a Jose Antonio Navarro. www.thc.texas.gov/historic-sites/casa-navarro/history/, accessed December 14, 2018.

2018b A Tejano Statesman's Home. www.thc.texas.gov/historic-sites/casa-navarro/history/tejano-statesmans-home, accessed December 14, 2018.

2018c Texas Archeological Site Atlas. http://nueces.thc.state.tx.us/, accessed December 3, 2018.

Texas State Library and Archivist Commission
2016 Hard Road to Texas, Texas Annexation 1836-1845. Electronic document, https://www.tsl.texas.gov/exhibits/annexation/index.html, accessed November 29, 2018.

Thompson, J. and K. Nichols
2016 *Pedestrian Survey and Data Recovery at 41BX1396, Brackenridge Park, San Antonio, Bexar County, Texas Trail Segments 12 and 12b*. Center for Archaeological Research, the University of Texas at San Antonio, Archaeological Report, No. 416.

Thoms, A. V. and S. W. Ahr
1995 The Pampopa-Talon Crossings and Heerman Ranch Sites: Preliminary Results of the 1994 Southern Texas Archaeological Field School. *La Tierra* 22(2):34-67.

Thoms, A. V. and R. D. Mandel
2007a *Archaeological and Paleoecological Investigations at the Richard Beene Site, South-Central Texas*. Reports of Investigations 8. Center for Ecological Archaeology. Texas A&M University.

2007b Ecological Setting: The Lower Medina River Valley and Surrounding Inner Gulf Coastal Plain. In *Archaeological and Paleoecological Investigations at the Richard Beene Site, South-Central Texas,* edited by A. V. Thoms and R. D. Mandel. Center for Ecological Archaeology, Texas A&M University, Reports of Investigations 8.

Thonhoff, R. H.
2013a Battle of Medina. In Handbook of Texas Online. http://www.tshaonline.org/handbook/online/articles/qfm01, accessed November 20, 2018. Texas State Historical Association.

2013b Battle of Rosillo. In Handbook of Texas Online. http://www.tshaonline.org/handbook/online/articles/qfr02, accessed November 20, 2018. Texas State Historical Association.

Toomey, R. S.
1993 Late Pleistocene and Holocene Faunal Environmental Changes at Hall's Cave, Kerr County, Texas. Unpublished Ph.D. Dissertation, The University of Texas at Austin.

Toomey, R. S. and T. W. Stafford Jr.
1994 Paleoenvironmental and Radiocarbon Study of the Deposits from Hall's Cave, Kerr County, Texas. Program and Abstracts. 52nd Plains Conference, 65th Annual Meeting of the Texas Archeological Society, Lubbock.

Tous, G.
1930a The Espinosa-Olivares-Aguirre Expedition of 1709. *Preliminary Studies of the Texas Catholic Historical Society* 1(3):3-14.

1930b Ramon's Expedition: Espinosa's Diary of 1716. *Preliminary Studies of the Texas Catholic Historical Society* 1(4):4-24.

TPWD
1984 The Vegetation Types of Texas. http://tpwd.texas.gov/publications/pwdpubs/pwd_bn_w7000_0120/, accessed December 2017.

2017 Biotic Provinces of Texas. Texas Parks & Wildlife Department GIS Lab, http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_mp_e0100_1070ae_08.pdf, accessed December 2017, accessed March 2013.

Turner II, C. G.
1987 Late Pleistocene and Holocene Populatoin History of East Asia Based on Dental Variation. *American Journal of Physical Anthropology* 73:305-321.

1989 Teeth and Prehistory in Asia. *Scientific American*, February 1989:88-96.

1990 Major Features of Sundadonty and Sinodonty, Including Suggestions about East Asian Microevolution, Population History, and Late Pleistocene Relationships with Australian Aboriginals. *American Journal of Physical Anthropology* 82:295-317.

U.S. Geological Survey
2015 Mineral Resources On-Line Spatial Data. U.S. Department of the Interior, https://mrdata.usgs.gov/general/, accessed December 2017

2017 NWIS Site Information for USA: Site Inventory. U.S. Department of the Interior, http://waterdata.usgs.gov/nwis/inventory, assessed December 2017.

Ubelaker, D. H.
1989a The Estimation of Age at Death from Immature Human Bone. In *Age Markers in the Human Skeleton*, edited by M. Y. Iscan, pp. 55-70. Charles C. Thomas, Springfield, Illinois.

1989b *Human Skeletal Remains*. Second ed. Taraxacum Press, Washington, D. C.

1996 Pipe Wear: Dental Impact of Colonial American Culture. *Anthropologie* 34(3):321-327.

Uecker, H. G., F. K. Meskill and I. W. Cox
1991 *Archaeological Investigations at the Ruiz Family Property (41BX795), San Antonio, Texas.* Archaeological Survey Report, No. 198. The University of Texas at San Antonio, Center for Archaeological Research.

Ulrich, K. M.
2010 *Archaeological Investigations at the Spanish Governor's Palace, San Antonio, Bexar County, Texas,* Archaeological Report, No. 410. The University of Texas at San Antonio, Center for Archaeological Research.

Wade, M.
2003 *The Native Americans of the Texas Edwards Plateau, 1585-1799*. The University of Texas Press, Austin.

Walker, P. L., R. R. Bathurst, R. Richman, T. Gjerdrum and V. A. Andrushko
2009 The Causes of Porotic Hyperostosis and Cribia Orbitalis: A Reapraisal of the Iron-Deficiency-Anemia Hypothesis. *American Journal of Physical Anthropology* 139:109-125.

Wallace, E.
1965 *Texas in Turmoil, 1849-1875.* Steck-Vaughn, Austin.

Weber, D. J.
1982 *The Mexican Frontier, 1821-1846: The American Southwest under Mexico.* University of New Mexico Press, Albuquerque.

Weddle, R. A.
1968 *San Juan Bautista: Gateway to Spanish Texas.* University of Texas Press, Austin.

Wermund, E. G.
1996 Physiography of Texas. Bureau of Economic Geology, The University of Texas at Austin, http://www.beg.utexas.edu/UTopia/images/pagesizemaps/physiography.pdf, assessed December 2017.

Wescott, D. J.
2000 Sex Variation in the Second Cervical Vertebra. *Journal of Forensic Science* 45(2):462-6.

White, T. D.
2000 *Human Osteology.* Academic Press.

Appendix A: Temporary Order on Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes

02/26/2011 08:11 1 PAGE 01/05

FAX COVER SHEET

DATE: ***February 22, 2017***

TO: Nicki K. Elgie
FAX#: (210) 340-6664

FROM: JUDGE ANGELICA JIMENEZ
408TH DISTRICT COURT

REG: ***2017CI01502 EX PARTE ABANDONED CEMETERY***

TOTAL PGS: ***5*** (INCLUDING COVER SHEET)

COMMENTS:

ATTACHED PLEASE FIND THE TEMPORARY ORDER SIGNED BY JUDGE JIMENEZ . YOU MAY STOP BY THE 408TH DISTRICT COURT FOR YOUR BINDER. THANK YOU

This facsimile transmission is intended for the designated and intended recipient(s) listed above. If you receive this facsimile in error, please dispose of properly and contact us immediately at the above number. Any dissemination, copying or use of this facsimile by or to anyone other than the designated and intended recipient(s) is unauthorized.

ANY PROBLEMS OR QUESTIONS CONCERNING THIS FAX PLEASE CALL:
210/ 335-2831
CONTACT: MARY H. BECERRA-CRUZ

2017CI01502 -D168

CAUSE NO: 2017CI01502

	§	IN THE DISTRICT COURT
	§	
EX PARTE	§	
	§	166th JUDICIAL DISTRICT
ABANDONED CEMETERY	§	
	§	
	§	BEXAR COUNTY, TEXAS

Temporary **ORDER ON**
PETITION FOR REMOVAL OF REMAINS FROM ABANDONED CEMETERY AND FOR REMOVAL OF DEDICATION FOR CEMETERY PURPOSES

On February 13, 2017 and February 22, 2017, the court heard and considered the Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes filed by CHRISTUS Santa Rosa Health Care Corporation pursuant to Texas Health and Safety Code Sections 711.004 and 711.010, as well as the evidence presented, the relevant statutes, and the arguments of counsel.

The Court hereby finds that the allegations in the Petition are true; that the notices required by law were timely provided to the Texas Historical Commission and the Bexar County Historical Commission and that neither have intervened in this lawsuit; that CHRISTUS Santa Rosa Health Care Corporation is the owner of certain real property located at 333 North San Antonio Street with legal description NCB 14487, Block Lot 7, located in Bexar County, Texas; that CHRISTUS Santa Rosa Health Care Corporation has plans to construct a prayer garden along the southern side of the subject property (the area of the planned construction will hereinafter be referred to as the "subject property"); that the subject property contains an abandoned cemetery; that CHRISTUS Santa Rosa Health Care Corporation has identified at least three human remains within the subject property; that CHRISTUS Santa Rosa Health Care Corporation has abided by all requirements of Chapter 711 of the Texas Health and Safety Code and all applicable

rules and regulations; that there is no cemetery organization operating the abandoned cemetery; that there is no reasonable manner in which CHRISTUS Santa Rosa Health Care Corporation can identify the interred individuals on the subject property and thus no reasonable manner in which the descendants of the interred individuals can be specifically identified or contacted for consent or notice; that CHRISTUS Santa Rosa Health Care Corporation has agreed to cover all costs associated with the removal of the remains; and that it is in the public interest for the remains to be removed and any dedication for cemetery purposes to be removed from the subject property.

The Court further finds that notice to the potential descendants of the interred within the abandoned cemetery should be made by publication prior to entry of a final order granting the removal of remains and removal of dedication. The Court additionally finds, however, that CHRISTUS Santa Rosa Health Care Corporation needs to be able to move forward with its application for the necessary permit(s) from the Vital Statistics Unit so that it can proceed with disinterment in an orderly and timely fashion after a final order is entered in this matter.

IT IS THEREFORE ORDERED:

1. CHRISTUS Santa Rosa Health Care Corporation cannot and is not required to identify the living descendants of the interred and is not required to obtain consent from or provide notice to any descendants for the removal and reburial of the remains, except that CHRISTUS Santa Rosa Health Care Corporation must publish the attached notice of the reburial of remains in the San Antonio Express News once a week for three consecutive weeks. Any other notice requirements to descendants under Chapter 711, any regulations, or the Department of State Health Services' application(s) for Disinterment Permit are hereby excused.

2. The Vital Statistics Unit of the Department of State Health Services shall issue a Disinterment Permit to UTSA on behalf of CHRISTUS Santa Rosa Health Care Corporation and issue any other required permits to effectuate removal and reburial of any human remains identified during construction of the prayer garden. CHRISTUS Santa Rosa Health Care Corporation and UTSA are not required to submit Form VS-271.1 as part of its application to the Vital Statistics Unit for Disinterment Permit. The Disinterment Permit issued by the Vital Statistics Unit shall allow removal and reburial of any and all remains identified in the abandoned cemetery. Specifically, CHRISTUS Santa Rosa Health Care Corporation and/or UTSA shall not be required to submit separate applications for each interred body identified. No human remains will be disturbed until further order of the Court.

3. The final order on this matter will be entered at a later date.

SIGNED AND ENTERED THIS DATE: 2/22/2017

HONORABLE ANGELICA JIMENEZ

02/26/2011 08:11 1
Feb. 14. 2017 4:31PM

No. 3371

Public Notice

Notice of Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes
Cause No. 2017-CI-01502
166th Judicial District, Bexar County

Subject Property:
333 North San Antonio Street
NCB 14487, Block Lot 7

Abandoned Cemeteries:
Catholic Cemetery
Campo Santo

Be it known that, pursuant to Texas Health and Safety Code Sections 711.004 and 711.010, CHRISTUS Santa Rosa Health Care Corporation has petitioned the Bexar County District Court for permission to remove remains from an abandoned cemetery and for removal of any dedication of the subject property for cemetery purposes so that a prayer garden may be constructed on the property. The subject property sits on a portion of what used to be the Catholic Cemetery and the Campo Santo. There have been no known interments in the cemetery since 1860. Notice was provided to the Texas Historical Commission and the Bexar County Historical Commission and neither intervened in the suit. The remains from the subject property will be reinterred in accordance with Texas law and the Order of the District Court at Sunset Memorial Park with consecration of the new burial area by a Catholic Priest. The Petition and the Court's Order are available to the public via the Bexar County District Clerk's Office.

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Appendix B: Order on Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes

CAUSE NO: 2017CI01502

	§	IN THE DISTRICT COURT
EX PARTE	§	
	§	166th JUDICIAL DISTRICT
ABANDONED CEMETERY	§	
	§	BEXAR COUNTY, TEXAS

ORDER ON
PETITION FOR REMOVAL OF REMAINS FROM ABANDONED CEMETERY
AND FOR REMOVAL OF DEDICATION FOR CEMETERY PURPOSES

On February 13, 2017 and February 22, 2017, the court heard and considered the Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes filed by CHRISTUS Santa Rosa Health Care Corporation pursuant to Texas Health and Safety Code Sections 711.004 and 711.010, as well as the evidence presented, the relevant statutes, and the arguments of counsel.

The Court hereby finds that the allegations in the Petition are true; that the notices required by law were timely provided to the Texas Historical Commission and the Bexar County Historical Commission and that neither have intervened in this lawsuit; that CHRISTUS Santa Rosa Health Care Corporation is the owner of certain real property located at 333 North San Antonio Street with legal description NCB 14487, Block Lot 7, located in Bexar County, Texas (the "subject property"); that CHRISTUS Santa Rosa Health Care Corporation has plans to construct a prayer garden along the southern side of the subject property; that the subject property contains an abandoned cemetery; that CHRISTUS Santa Rosa Health Care Corporation has identified at least three human remains within the subject property; that CHRISTUS Santa Rosa Health Care Corporation has abided by all requirements of Chapter 711 of the Texas Health and Safety Code and all applicable rules and regulations; that there is no cemetery organization operating the

abandoned cemetery; that there is no reasonable manner in which CHRISTUS Santa Rosa Health Care Corporation can identify the interred individuals on the subject property and thus no reasonable manner in which the descendants of the interred individuals can be specifically identified or contacted for consent or notice; that, as ordered by this Court, notice by publication of this action was provided to any potential descendants and the public at large in the San Antonio Express News once a week for three consecutive weeks; that no individual or entity has intervened in this lawsuit; that CHRISTUS Santa Rosa Health Care Corporation has agreed to cover all costs associated with the removal of the remains; and that it is in the public interest for the remains to be removed and any dedication for cemetery purposes to be removed from the subject property.

IT IS THEREFORE ORDERED:

1. CHRISTUS Santa Rosa Health Care Corporation cannot and is not required to identify the living descendants of the interred and is not required to obtain consent from or provide notice to any specific descendants for the removal and reburial of the remains. CHRISTUS Santa Rosa Health Care Corporation met its notice burden by publishing notice of the reburial of remains in the San Antonio Express News once a week for three consecutive weeks, in compliance with the Temporary Order of this Court previously entered in this matter. Any other notice requirements to descendants under Chapter 711, any regulations, or the Department of State Health Services' application(s) for Disinterment Permit are hereby excused.

2. Any designation for cemetery purposes affecting the subject property is hereby removed.

3. CHRISTUS Santa Rosa Health Care Corporation will make a good faith effort to locate and remove all the human remains from the subject property and will

rebury the remains in accordance with Chapter 711 of the Texas Health and Safety Code and the requirements of this Order.

4. CHRISTUS Santa Rosa Health Care Corporation can proceed with excavation and construction of the prayer garden, in line with the requirements of this Order and of Chapter 711 of the Texas Health and Safety Code, as of the date of this Order.

5. All human remains on the subject property will be reburied at Sunset Memorial Park, a perpetual care cemetery. Sunset Memorial Park will allow CHRISTUS Santa Rosa Health Care Corporation to purchase as many graves/plots as necessary to rebury the remains. To the extent permitted by Sunset Memorial Park, multiple human remains—up to three individuals—may be reburied together in one burial or grave, so long as the remains are handled and reburied with dignity and the burial is at an appropriate depth. To the extent necessary, CHRISTUS Santa Rosa Health Care Corporation will return to the Court for an amended order detailing the specific section, block, lot, and space(s) that the reburial of the remains will occur. The Associate Chief Nursing Officer of The Children's Hospital of San Antonio will be the designated person on behalf of CHRISTUS Sana Rosa Health Care Corporation to sign any and all paperwork and contracts required by Sunset Memorial Park.

6. Prior to reburial, a Catholic Pastor will consecrate the space(s) of Sunset Memorial Park where the remains will be reinterred.

7. The Vital Statistics Unit of the Department of State Health Services shall issue a Disinterment Permit to UTSA on behalf of CHRISTUS Santa Rosa Health Care Corporation and issue any other required permits to effectuate removal and reburial of any human remains identified during construction of the prayer garden. CHRISTUS

Santa Rosa Health Care Corporation and UTSA are not required to submit Form VS-271.1 as part of its application to the Vital Statistics Unit for Disinterment Permit. The Disinterment Permit issued by the Vital Statistics Unit shall allow removal and reburial of any and all remains identified in the abandoned cemetery. Specifically, CHRISTUS Santa Rosa Health Care Corporation and/or UTSA shall not be required to submit separate applications for each interred body identified.

SIGNED AND ENTERED THIS DATE: MAR 2 2 2017

HONORABLE ANGELICA JIMENEZ

Appendix C: Disinterment Permit

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

JOHN HELLERSTEDT, MD
COMMISSIONER

P.O. Box 149347 • Austin, Texas 78714-9347
1-888-963-7111 • http://www.dshs.state.tx.us
TDD: 512-458-7708

March 23, 2017

NICKI K ELGIE EVANS, ROWE AND HOLBROOK
10101 REUNION PLACE, SUITE 900
SAN AN TONIO TEXAS 78216

RE: MULTIPLE ***
Died

Cert
Req. V794512 2/27/2017 $25.00

Dear Customer:

Thank you for contacting the Vital Statistics Unit. We have received and processed your request regarding the record identified above.

Enclosed are two copies of the requested Disinterment Permit. One is for your records and one for the sexton of the cemetery where is the body is being disinterred.

My telephone number and email address are listed below my name if you need any further assistance. Please do not hesitate to contact me.

Sincerely,

LINDA CISNEROS
AMENDMENTS SPECIALIST
Vital Statistics
Phone: 512-776-2667
Email: LINDA.CISNEROS@DSHS.TEXAS.GOV

RECEIVED
MAR 2 4 2017
BY:

An Equal Employment Opportunity Employer

DISINTERMENT PERMIT

DEPARTMENT OF STATE HEALTH SERVICES, TEXAS VITAL STATISTICS

Part I. Information relating to the deceased:	
Full Name of Deceased: **MULTIPLE, UNABLE TO BE DETERMINED**	Date of Death: **UNKNOWN**
Place of Death: **BEXAR COUNTY, SAN ANTONIO, TEXAS**	State File Number: - -
Name of Cemetery: **ABANDONED CEMETERIES – CAMPO SANTO & OLD CATHOLIC CEMETERY: NEW CITY BLOCK 14487, LOT 7**	
City: **SAN ANTONIO**	County: **BEXAR**
Part II. Information relating to person in charge of disinterment	
Name: **PAUL SHAWN MARCEAUX, PH.D**	License Number: -
Name and Address: **DIRECTOR, CENTER FOR ARCHAEOLOGICAL RESEARCH, UTSA ONE UTSA CIRCLE, SAN ANTONIO, TEXAS 78249**	
Part III. Authorization	
Permission is granted to move the body from the present place of burial to: **SUNSET MEMORIAL PARK** **SAN ANTONIO, BEXAR COUNTY, STATE OF TEXAS**	
Date: 3/20/2017	Signature of State Registrar
LCIS	

VS - 2219 REV. 9/04 The penalty for knowingly making a false statement in this form can be 2 - 10 years in prison afine of up to $10,000. (Section 195, Health and Safety Code)

DISINTERMENT PERMIT

DEPARTMENT OF STATE HEALTH SERVICES, TEXAS VITAL STATISTICS

Part I. Information relating to the deceased:	
Full Name of Deceased: **MULTIPLE, UNABLE TO BE DETERMINED**	Date of Death: **UNKNOWN**
Place of Death: **BEXAR COUNTY, SAN ANTONIO, TEXAS**	State File Number: - -
Name of Cemetery: **ABANDONED CEMETERIES – CAMPO SANTO & OLD CATHOLIC CEMETERY: NEW CITY BLOCK 14487, LOT 7**	
City: **SAN ANTONIO**	County: **BEXAR**
Part II. Information relating to person in charge of disinterment	
Name: **PAUL SHAWN MARCEAUX, PH.D**	License Number: -
Name and Address: **DIRECTOR, CENTER FOR ARCHAEOLOGICAL RESEARCH, UTSA** **ONE UTSA CIRCLE, SAN ANTONIO, TEXAS 78249**	
Part III. Authorization	
Permission is granted to move the body from the present place of burial to: **SUNSET MEMORIAL PARK** **SAN ANTONIO, BEXAR COUNTY, STATE OF TEXAS**	
Date: 3/20/2017	Signature of State Registrar
LCIS	

VS - 2219 REV. 9/04 The penalty for knowingly making a false statement in this form can be 2 - 10 years in prison afine of up to $10,000. (Section 195, Health and Safety Code)

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Appendix D: Amended Order on Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes

CAUSE NO: 2017CI01502

	§	IN THE DISTRICT COURT
	§	
EX PARTE	§	
	§	166th JUDICIAL DISTRICT
ABANDONED CEMETERY	§	
	§	
	§	BEXAR COUNTY, TEXAS

AMENDED ORDER ON
PETITION FOR REMOVAL OF REMAINS FROM ABANDONED CEMETERY
AND FOR REMOVAL OF DEDICATION FOR CEMETERY PURPOSES

CHRISTUS Santa Rosa Healthcare Corporation ("CHRISTUS Santa Rosa") filed its Petition for Removal of Remains from Abandoned Cemetery and for Removal of Dedication for Cemetery Purposes on January 26, 2017. An Order was entered on March 22, 2017. In compliance with that Order, CHRISTUS Santa Rosa subsequently resumed excavations and disinterred remains consistent with the Order. However, following the unanticipated discovery of significant additional remains located on the subject property, after consulting with descendant and historical groups, consistent with their request, CHRISTUS Santa Rosa has opted to not further remove the remains from the abandoned cemetery, to rebury the remains previously disinterred, and to preserve the cemetery designation. Therefore, CHRISTUS Santa Rosa has moved this Court for modification of the prior order. Having considered CHRISTUS Santa Rosa's Motion for Modification, this Court hereby grants same.

IT IS THEREFORE ORDERED:

1. All prior orders in this matter are replaced by this Amended Order.
2. The cemetery designation affecting the subject property is preserved.

3. CHRISTUS Santa Rosa will re-inter within the cemetery on the subject property the previously disinterred remains from the cemetery that are currently located at UTSA Center for Archeological Research.

SIGNED AND ENTERED THIS DATE: AUG 2 5 2017

STEPHANI A. WALSH
Presiding Judge
HONORABLE JUDGE PRESIDING 45th District Court
Bexar County, Texas

Appendix E: Magnetometer Survey Results

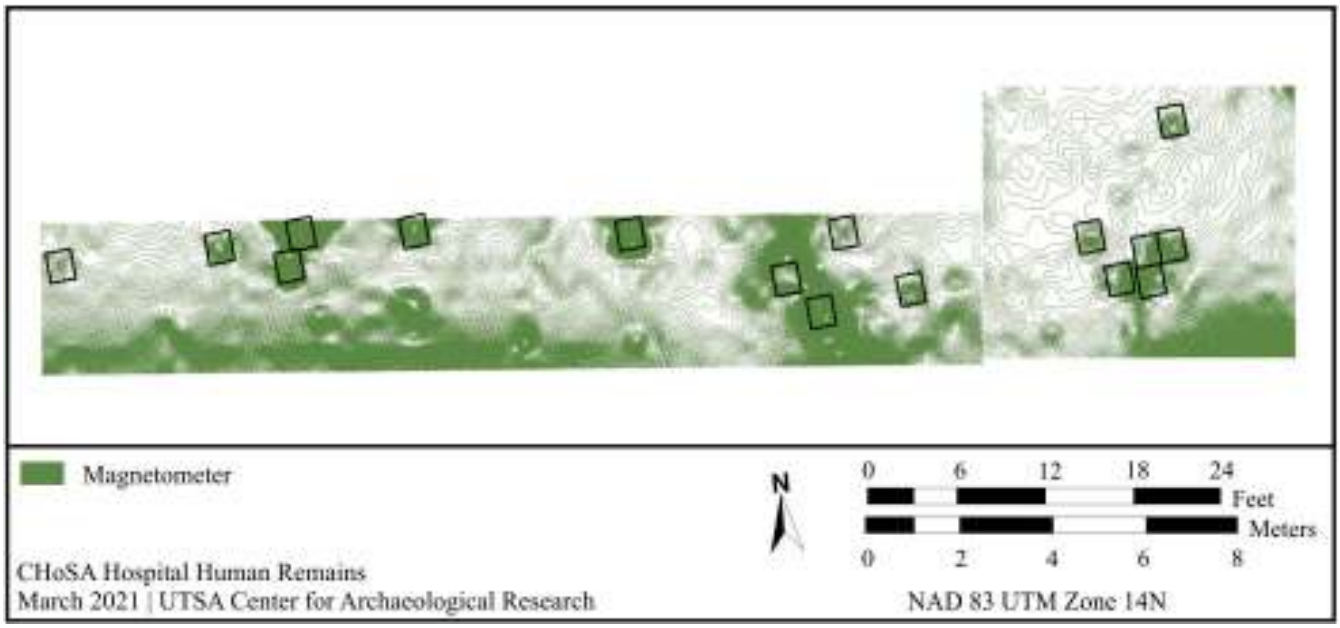

Figure E-1. Magnetometer Survey Results.