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Intensive Cultural Resources Survey of the Proposed San Antonio Water System E-19 Wastewater Project, Segment 2, San Antonio, Bexar County, Texas

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Texas Antiquities Permit No. 8068
HJN 160062.02 AR

Prepared for:

CP&Y, Inc.
San Antonio, Texas

Prepared by:

Horizon Environmental Services, Inc.
Austin, Texas

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MANAGEMENT SUMMARY

Horizon Environmental Services, Inc. (Horizon) was selected by the San Antonio Water System (SAWS), via its engineering contractor, Kimley Horn and Associates (KHA) and its environmental permitting contractor, CP&Y, Inc. (CP&Y), to conduct a cultural resources inventory survey and assessment for the proposed E-19 Wastewater Project, Segment 2, in northeastern San Antonio, Bexar County, Texas. The proposed undertaking would involve a combination of replacement of an existing gravity wastewater pipeline as well as new construction. The Segment 2 right-of-way (ROW) begins at a hike-and-bike path located within the Salado Creek Greenway approximately 0.3 kilometer (0.2 mile) southeast of the intersection of Nacogdoches Road and Salado Creek Drive. From this point, the ROW extends southward within an existing utility easement that passes through a storm water detention basin and between two residential subdivisions, runs along the western margin of the Northeast Baptist Hospital complex, and crosses Interstate (IH) Loop 410 and Salado Creek. The ROW then turns southeastward and runs within the existing Ira Lee Road ROW along the northern/eastern side of the road to County Road (CR) 368 (a.k.a. Austin Highway). From this point, the ROW continues southward within the existing ROW of Holbrook Road, running along the western side of the road, terminating approximately 0.5 kilometer (0.3 mile) northwest of the intersection of Holbrook Road and Rittiman Road. The ROW extends a total linear distance of 5.1 kilometers (3.2 miles) and ranges in width from approximately 19.8 to 76.2 meters (65.0 to 250.0 feet), with a typical width of approximately 24.4 meters (80.0 feet). The proposed undertaking would be constrained largely to the existing ROW of the wastewater line, though some new easements would be required. Overall, the project area covers an area of 14.1 hectares (34.9 acres).

The proposed project is being sponsored by SAWS, a public utility within the state of Texas. Furthermore, portions of the project area are located on ROW and land owned by the City of San Antonio (CoSA) and/or other public entities. Consequently, the proposed project falls under the jurisdiction of the Antiquities Code of Texas (Natural Resources Code, Title 9, Chapter 191). At this time, no federal funding, licenses, or permits have been identified for the proposed undertaking. As the project represents a publicly sponsored undertaking with the potential to impact potentially significant cultural resources, the project sponsor was required to perform a cultural resources inventory and assessment of the project area.

From June 22 to 23, 2017, Horizon archeological technicians Stephanie Mueller, Jacob Lyons, and Jared Wiersema, under the overall direction of Jeffrey D. Owens, Principal

Investigator, performed an intensive cultural resources survey of the project area to locate any cultural resources that potentially would be impacted by the proposed undertaking. Horizon's archeologists traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The majority of the project area consists of the utility easement of the existing wastewater line, and extensive prior impacts from construction, use, and maintenance of existing roadways, driveways, contractor yards, a storm water detention basin, parking lots, hike-and-bike trails and trailheads, and various overhead and subsurface utility lines were observed. Many segments of the existing wastewater line run within the ROWs of existing roadways that are typically quite narrow, with road shoulders and easements that often measure only a few feet in width.

In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 16 shovel tests per mile for linear project areas measuring up to 30.5 meters (100.0 feet) in width; as such, 51 shovel tests would be required within the 5.1-kilometer- (3.2-mile-) long project area. Horizon excavated a total of 68 shovel tests, thereby exceeding the TSMASS for a project area of this length. The pedestrian survey with shovel testing typically revealed shallow, heavily disturbed deposits of gravelly clay and clay loam sediments, and impenetrable gravel lenses were encountered in many shovel tests at depths ranging from 10.0 to 40.0 centimeters (3.9 to 12.2 inches) below surface.

Modern trash and construction debris were abundant throughout the project area, and sediments observed in most shovel tests were disturbed and contained road base gravels and/or modern trash. The southern end of the project area, located adjacent to Holbrook Road, passes within the designated boundaries of a previously recorded prehistoric archeological site, 41BX294, and the Salado Battlefield and Archeological Site National Register Historic District. Shovel testing within this portion of the project area revealed disturbed sediments mixed with modern debris, and no cultural resources or intact archeological deposits were observed within the boundaries of these two known cultural resources. The central portion of the project area, located adjacent to Ira Lee Road, passes within the boundary of a previously recorded multiple-component prehistoric and historic-age archeological site, 41BX474. One shovel test excavated on site 41BX474 contained several glass shards and a whiteware ceramic sherd of unknown age (modern or historic-age) and one aboriginal chert flake in surficial, disturbed sediments immediately adjacent to the Ira Lee Road pavement. Site 41BX474 has been largely destroyed as a result of ongoing urban development. An archeological significance testing project was conducted on site 41BX474 by the Center for Archaeological Research (CAR) of The University of Texas at San Antonio (UTSA) in 2014 that resulted in the determination that the site is ineligible for inclusion in the National Register of Historic Places (NRHP) (Muñoz 2014). Horizon concurs with the previous significance assessment for site 41BX474.

Based on the results of the archeological pedestrian survey conducted in June 2017, it was determined that a portion of the proposed sewer line ROW located between the eastbound IH Loop 410 frontage road on the north and Ira Lee Road on the south passes within or near the boundaries of a previously recorded, potentially significant, prehistoric archeological site. This site, known as the Granberg site, is roughly represented by trinomials 41BX17 and 41BX271, though the site boundaries have never been delineated. In response to concerns about potential

impacts to this site raised by CoSA's Office of Historic Preservation (OHP) and the Texas Historical Commission (THC), supplemental backhoe trenching was conducted within the Salado Creek floodplain in an area to the west of the known boundaries of the Granberg site. This segment of the proposed ROW measures approximately 263.7 meters (865.0 feet) in length and would involve installing a segment of new 152.4-centimeter-(60-inch-) diameter sewer pipeline in a 182.9-centimeter- (72.0-inch-) diameter casing via boring/tunneling (i.e., not open cut). On October 24, 2017, Horizon archeologists Jeffrey Owens (Principal Investigator), Eric Schroeder (geoarcheologist), Jared Wiersema (archeological technician and backhoe operator), and Foster Duncan (archeological technician) excavated three backhoe trenches within the segment of proposed ROW located within the modern, active floodplain of Salado Creek to determine whether or not any intact archeological deposits are present that may be disturbed via the proposed sewer line construction. Personnel from CoSA's OHP, the THC, SAWS, KHA, CP&Y, CoSA Parks, and CoSA Arborist were present during the trench excavations. These three trenches generally revealed a series of high-energy flood chute, overbank flood, and floodplain mud deposits consisting of poorly supported limestone gravels. Occasional battered chert flakes or cobbles were observed in the trench wall profiles or in screened sediment samples of excavated backfill, but no intact cultural features or archeological deposits were observed. Bedrock was encountered in two of the three trenches.

A fourth backhoe trench was originally proposed at the location of a proposed bore/tunnel box off the northern side of Ira Lee Road at the southern end of the segment of proposed sewer line ROW that traverses the Salado Creek floodplain. However, this proposed trench location fell within an active construction zone associated with a Bexar County bridge repair project and was not accessible for trenching in connection with the current project. Extensive open excavations associated with the Bexar County project were observed in the vicinity of the proposed bore/tunnel box that revealed deep deposits of reddish-brown, gravelly, alluvial sediments. Horizon and OHP personnel inspected these exposed soil profiles on October 24, 2017, and no cultural resources were observed within them. As such, attempts to excavate the fourth backhoe trench at this location were abandoned.

Based on the results of the survey-level investigations documented in this report, no significant cultural resources would be affected by the proposed undertaking. In accordance with 36 CFR 800.4, Horizon has made a reasonable and good-faith effort to identify historic properties within the project area. No cultural resources were identified that meet the criteria for designation as SALs according to 13 TAC 26. Horizon recommends a finding of "no historic properties affected," and no further archeological work is recommended in connection with the proposed undertaking. However, human burials, both prehistoric and historic, are protected under the Texas Health and Safety Code. In the event that any human remains or burial objects are inadvertently discovered at any point during construction, use, or ongoing maintenance in the project area, even in previously surveyed areas, all work should cease immediately in the vicinity of the inadvertent discovery, and the OHP/THC should be notified immediately.

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1.0 INTRODUCTION

Horizon Environmental Services, Inc. (Horizon) was selected by the San Antonio Water System (SAWS), via its engineering contractor, Kimley Horn and Associates (KHA) and its environmental permitting contractor, CP&Y, Inc. (CP&Y), to conduct a cultural resources inventory survey and assessment for the proposed E-19 Wastewater Project, Segment 2, in northeastern San Antonio, Bexar County, Texas (Figures 1 and 2). The proposed undertaking would involve a combination of replacement of an existing gravity wastewater pipeline as well as new construction. The Segment 2 right-of-way (ROW) begins at a hike-and-bike path located within the Salado Creek Greenway approximately 0.3 kilometer (0.2 mile) southeast of the intersection of Nacogdoches Road and Salado Creek Drive. From this point, the ROW extends southward within an existing utility easement that passes through a storm water detention basin between two residential subdivisions, runs along the western margin of the Northeast Baptist Hospital complex, and crosses Interstate (IH) Loop 410 and Salado Creek. The ROW then turns southeastward and runs within the existing Ira Lee Road ROW along the northern/eastern side of the road to County Road (CR) 368 (a.k.a. Austin Highway). From this point, the ROW continues southward within the existing ROW of Holbrook Road, running along the western side of the road, terminating approximately 0.5 kilometer (0.3 mile) northwest of the intersection of Holbrook Road and Rittiman Road. The ROW extends a total linear distance of 5.1 kilometers (3.2 miles) and ranges in width from approximately 19.8 to 76.2 meters (65.0 to 250.0 feet), with a typical width of approximately 24.4 meters (80.0 feet). The proposed undertaking would be constrained largely to the existing ROW of the wastewater line, though some new easements would be required. Overall, the project area covers an area of 14.1 hectares (34.9 acres).

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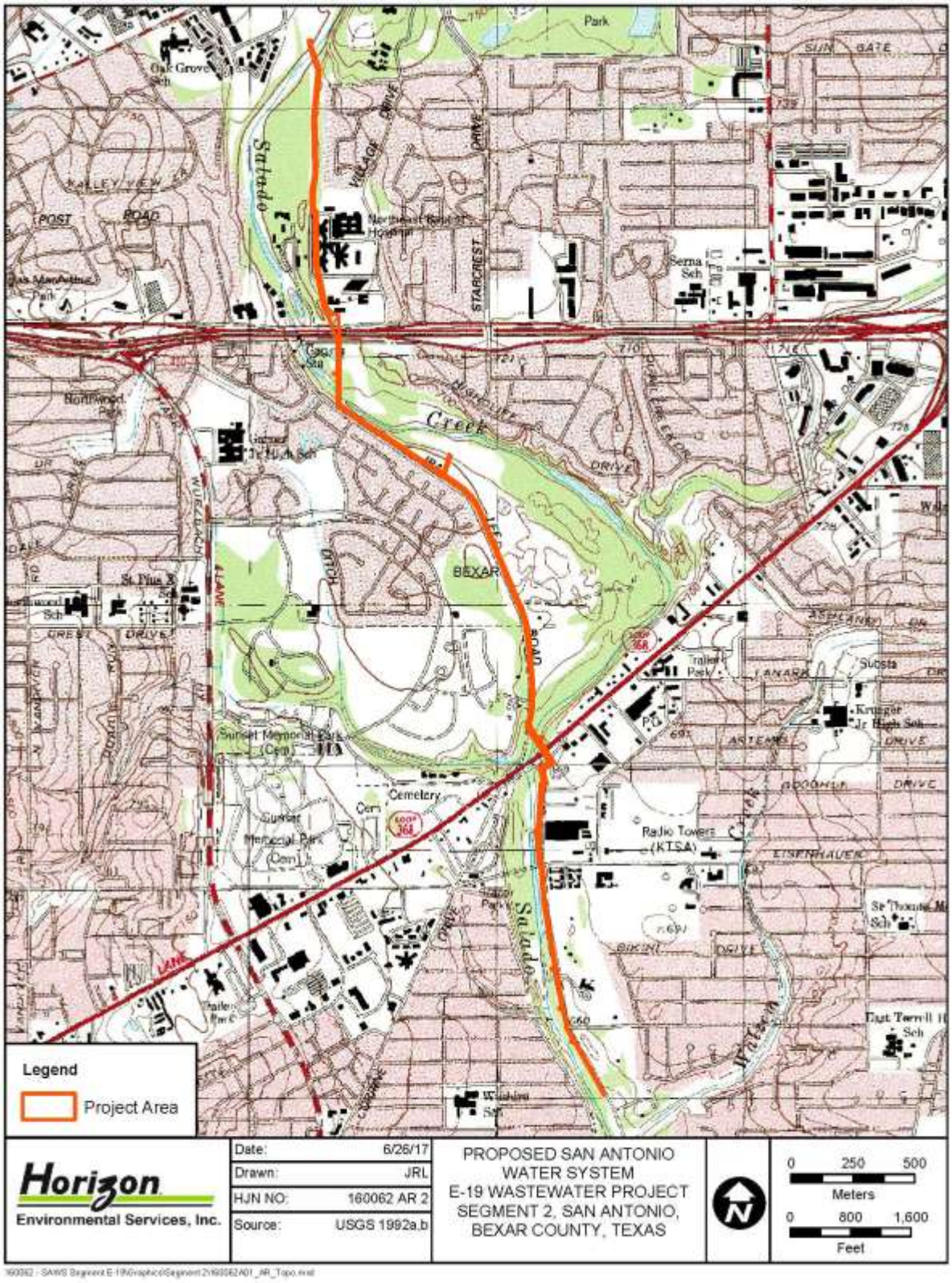

Figure 1. Location of Project Area on USGS Topographic Map

Figure 2. Location of Project Area on Aerial Photograph

cultural resources that potentially would be impacted by the proposed undertaking. On October 24, 2017, Horizon archeologists Jeffrey D. Owens (Principal Investigator), Eric Schroeder (geoarcheologist), Jared Wiersema (archeological technician and backhoe operator), and Foster Duncan (archeological technician) excavated three supplemental backhoe trenches within a segment of the proposed ROW that traverses the modern, active Salado Creek floodplain. Personnel from CoSA's Office of Historic Preservation (OHP), the Texas Historical Commission (THC), SAWS, KHA, CP&Y, CoSA Parks, and CoSA Arborist were present during the trench excavations. The cultural resources investigation consisted of an archival review, an intensive pedestrian survey of the project area, and the production of a report suitable for review by the State Historic Preservation Officer (SHPO) in accordance with the THC's Rules of Practice and Procedure, Chapter 26, Section 27, and the Council of Texas Archeologists (CTA) Guidelines for Cultural Resources Management Reports.

Following this introductory chapter, Chapters 2.0 and 3.0 present the environmental and cultural backgrounds, respectively, of the project area. Chapter 4.0 describes the results of background archival research, and Chapter 5.0 discusses cultural resources survey methods. Chapter 6.0 presents the results of the cultural resources survey, and Chapter 7.0 presents cultural resources management recommendations for the project. Chapter 8.0 lists the references cited in the report, Appendix A summarizes shovel test data, and Appendix B summarizes backhoe trench data.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSIOGRAPHY AND HYDROLOGY

The project area is located in northeastern San Antonio in Bexar County in south-central Texas near the common junction of three significant physiographic provinces—the Edwards Plateau, the Balcones Canyonlands, and the Gulf Coastal Plain. The Edwards Plateau and Balcones Escarpment are associated with a great fault system that arcs across Texas to form a distinct boundary between uplands composed primarily of limestone bedrock and lower plains composed mostly of softer rocks. In places, this boundary is marked by an abrupt scarp (the Balcones Escarpment) and in others by a more gradational ramp, but the entire length of this transition zone is a major ecotone in terms of topography, bedrock, hydrology, soil, vegetation, and animal life.

The Gulf Coastal Plain, which extends as far north as the Ouachita uplift in southern Oklahoma and westward to the Balcones Escarpment, consists of seaward-dipping bodies of sedimentary rock, most of which are of terrigenous clastic origin, that reflect the gradual infilling of the basin from its margins (Abbott 2001). The fluviodeltaic sedimentary rocks are arranged in an offlapped sequence, with interdigitated and capping eolian, littoral, and estuarine facies making up a relatively minor component of the lithology. Major bounding disconformities between these formations are usually interpreted to represent depositional hiatuses that occurred during periods of low sea level. The oldest rocks in this sequence are of Late Cretaceous age.

Hydrologically, the project area is situated within the San Antonio River basin. The project area is situated on the terraces of Salado Creek. Salado Creek flows generally southwards into the San Antonio River, which in turn southeastwards across the Gulf Coastal Plain, ultimately discharging into the Gulf of Mexico southeast of Victoria, Texas. Elevations within the project area slope down gradually from north to south from approximately 201.2 to 213.4 meters (660.0 to 700.0 feet) above mean sea level (amsl).

2.2 GEOLOGY AND GEOMORPHOLOGY

In general, the bedrock throughout central Texas is composed of Late Cretaceous formations that dip slightly to the east and are predominantly composed of calcareous clay, shale, limestone, and marl, with a small portion of sandstone (Barnes 1983). These geologic units are

overlain in some areas by unconsolidated Quaternary alluvial floodplain and fluviatile terrace deposits. On the surface, these formations weather into a rounded, gently rolling topography with a few bluff faces exposed in stream valleys where more resistant strata are present.

Specifically, the project area is situated on Holocene-age fluviatile terrace deposits (Qt), which consist of gravel, sand, silt, and clay extending southeastwards from the Edwards Plateau (Barnes 1983). Stream valleys below the Balcones Escarpment tend to be entrenched and lack active floodplains, and terrace structures are typically located above flood level along entrenched streams, resulting in preservation of fluviatile morphology in point bars, oxbows, and abandoned channel segments. The nearby Edwards Formation is composed of hard, micritic limestone beds, some of which are chert-bearing. Other beds are extensively burrowed and weathered into "honeycombed" porous rock. Caverns and sinkholes are known to occur throughout central and southwestern Texas in the Edwards Formation and Austin Chalk limestones, but they are not especially common. The nearby Edwards Limestone constitutes one of the largest chert resources on the Great Plains (Frederick and Ringstaff 1994; Frederick et al. 1994), and expansive outcrops of Edwards Group chert are often accompanied by extensive aboriginal lithic scatters created during raw material procurement (or "quarrying") activities. In the absence of aggrading depositional environments, such lithic procurement sites are typically restricted to the deflated modern ground surface, on which the native limestone bedrock is typically exposed over large areas.

Soils in Bexar County, Texas, formed from the underlying sedimentary formations, including limestone, chalky limestone, chalk, shaly clay, marly clay, sandy clay, calcareous clay, sand, and sandstone (Taylor et al. 1991). Alluvial deposits of recent or ancient age occur along the principal rivers and streams of the county, but soil thickness in upland environments is typically minimal, and extensive bedrock outcrops are commonly exposed on the modern ground surface.

The project area traverses a mosaic of soil units characteristic of alluvial terrace and paleoterrace settings in the region (Figure 3; Table 1) (NRCS 2017). These soils are composed of a mix of vertisols, soils with a high content of shrinking and swelling clay sediments, and mollisols, base-rich mineral soils that typically have molllic epipedons. Both soil families are characteristic of grassland and savanna settings. Most of the soil types within the project area are composed of calcareous clayey, sandy, any loamy alluvium found on Pleistocene-age terraces, and some historical gravel quarrying activities are indicated by the Pits and Quarries, 1 to 90% slopes (Pt), soil unit off the eastern side of Ira Lee Road north of Austin Highway. Archeological remains associated with soils of Holocene age possess potential to contain archeological materials on the modern ground surface and at depth, though the antiquity of most of the soil units mapped within the project area suggests that any cultural resources would be present on the modern ground surface or in relatively shallow subsurface contexts. No buried paleosols are mapped within the project area.

2.3 CLIMATE

Evidence for climatic change from the Pleistocene to the present is most often obtained through studies of pollen and faunal sequences (Bryant and Holloway 1985; Collins 1995). Bryant and Holloway (1985) present a sequence of climatic change for nearby east-central Texas from

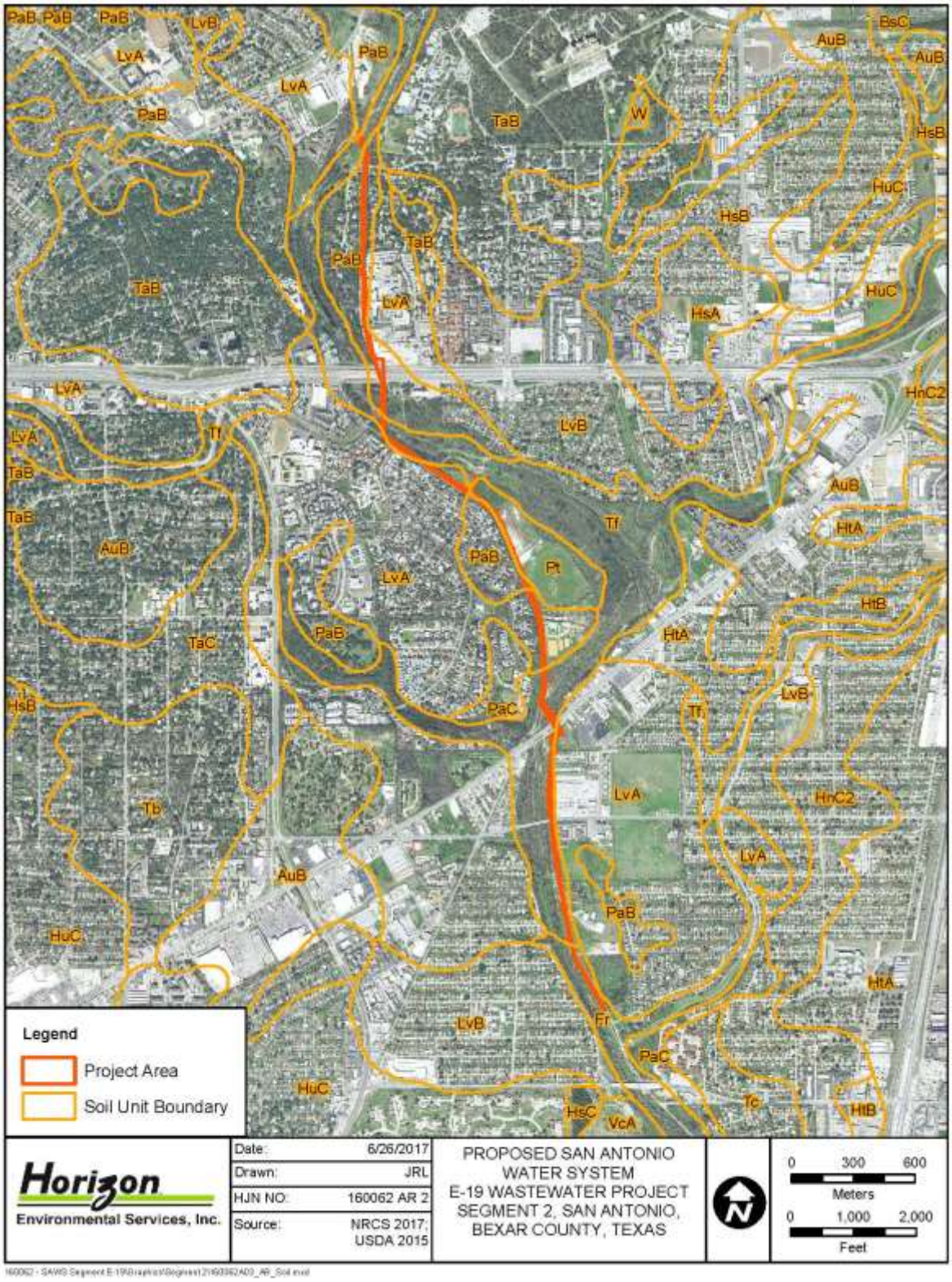

Figure 3. Distribution of Soil Types Mapped within Project Area

Table 1. Summary of Mapped Soils within Project Area

NRCS Soil Code	Soil Name	Parent Material	Typical Profile (inches)
Fr	Loire clay loam, 0 to 2% slopes, occasionally flooded	Loamy alluvium on floodplains	0-25: Clay loam 25-35: Clay loam 35-56: Loam 56-80: Fine sandy loam
LvA	Lewisville silty clay, 0 to 1% slopes	Calcareous clayey alluvium derived from mudstone on stream terraces	0-17: Silty clay (Ap) 17-44: Silty clay (Bk1) 44-61: Silty clay (Bk2)
PaB	Patrick soils, 1 to 3% slopes, rarely flooded	Clayey and sandy alluvium of Quaternary age derived from mixed sources on paleoterraces	0-17: Clay loam 17-60: Very gravelly sand
Pt	Pits and Quarries, 1 to 90% slopes	Artificial excavations; may be backfilled with various fills	0-80: Variable
Tf	Tinn and Frio soils, 0 to 1% slopes, frequently flooded	Clayey alluvium of Holocene age derived from mixed sources on floodplains	0-8: Clay 8-65: Clay 65-80: Clay

Source: NRCS 2017

NRCS = Natural Resources Conservation Service

the Wisconsin Full Glacial period (22,500 to 14,000 years Before Present [B.P.]) through the Late Glacial period (14,000 to 10,000 years B.P.) to the Post-Glacial period (10,000 years B.P. to present). Evidence from the Wisconsin Full Glacial period suggests that the climate in east-central Texas was considerably cooler and more humid than at present. Pollen data indicate that the region was more heavily forested in deciduous woodlands than during later periods (Bryant and Holloway 1985). The Late Glacial period was characterized by slow climatic deterioration and a slow warming and/or drying trend (Collins 1995). In east-central Texas, the deciduous woodlands were gradually replaced by grasslands and post oak savannas (Bryant and Holloway 1985). During the Post-Glacial period, the east-central Texas environment appears to have been more stable than during the Late Glacial. The deciduous forests had long since been replaced by prairies and post oak savannas. The drying and/or warming trend that began in the Late Glacial period continued into the mid-Holocene, at which point there appears to have been a brief amelioration to more mesic conditions lasting from roughly 6,000 to 5,000 years B.P. Recent studies by Bryant and Holloway (1985) indicate that modern environmental conditions in east-central Texas were probably achieved by 1,500 years ago.

Bexar County is now located within the South-Central Climatic Division. The modern climate is typically dry to subhumid with long, hot summers and short, mild winters. The climate is influenced primarily by tropical Maritime air masses from the Gulf of Mexico, but it is modified by polar air masses. Tropical Maritime air masses predominate throughout spring, summer, and fall. Modified polar air masses are dominant in winter and provide a continental climate characterized by considerable variations in temperature.

On average throughout the past century, precipitation and temperature manifest regional clines with mean annual precipitation totals declining fairly regularly from east to west and mean annual temperature declining equally evenly from northwest to southeast (Larkin and Bomar 1983:18, 50). Regional temperature ranges from 4 to 36 degrees Celsius (°C) (39 to 96 degrees Fahrenheit (°F), with an average annual temperature of 18°C (64 F).

Average annual precipitation in the region is approximately 78.7 centimeters (31.0 inches). Two annual precipitation peaks, which typically occur in May and September, are associated with frontal storms that form when southward-moving cool air masses collide with warm, moist air masses moving inland from the Gulf of Mexico (Bomar 1983; Carr 1967). The topographic discontinuity along the Balcones Escarpment lies directly in the path of the Gulf storm trace and increases the lift in convective storms to produce extreme amounts of rainfall (Baker 1975). Two extreme examples are the excess of 91.4 centimeters (36.0 inches) of rain that fell within an 18-hour period in the vicinity of Thrall, Texas, in September 1921, and the 55.9-centimeter (22.0-inch) deluge that fell in less than three hours near O'Harris, Texas in May 1935 (Baker 1975). Lower rainfall amounts are characteristic of winter and late summer. In winter, frontal storms pass so frequently that there is little time for moisture to increase, and prevailing upper-level winds from west to east often dominate over meridional flow, meaning that much of the available moisture is derived from the Pacific rather than from the Gulf of Mexico. In summer, cool fronts rarely penetrate into the region, and rainfall occurs primarily as localized, thermal convective storms.

2.4 BIOTA

The project area is located in the Balconian Biotic Province on the southern fringes of the Edwards Plateau (Blair 1950). The Edwards Plateau and associated Balcones Escarpment is characterized by a mixture of species from the Austroriparian, Tamaulipan, Chihuahuan, and Kansan, Balconian provinces. While three vegetational regions are recognized by Tharp (1939) within the limits of the Balconian Province, the project area is situated in the oak-cedar region that corresponds to the dissected southern and eastern part of the Edwards Plateau.

Fifty-seven species of mammals are known from the Balconian Province, though none of these species are restricted to this province. Common mammalian species include white-tailed deer, opossum, eastern cottontail rabbit, raccoon, striped skunk, hispid cotton rat, white-footed mouse, nine-banded armadillo, and fox squirrel. Common bird species include northern bobwhite, eastern meadowlark, mourning dove, killdeer, field sparrow, red-tailed hawk, turkey vulture, belted kingfisher, and mockingbird. Reptile and amphibian species common to this biotic zone include six-lined racerunner, rat snake, eastern hognose snake, Gulf Coast toad, Texas spiny lizard, rough green snake, copperhead, western diamondback rattlesnake, green tree frog, Blanchard's cricket frog, diamondback water snake, Houston toad, and green anole. Although small herds of bison and antelope were common during the late prehistoric and early historic periods, these species are no longer native to this region (Jurney et al. 1989:13-14).

3.0 CULTURAL BACKGROUND

The project area is located near the southern boundary of Prewitt's (1981, 1985) Central Texas Archeological Region. The indigenous human inhabitants of central Texas practiced a generally nomadic hunting and gathering lifestyle throughout all of prehistory, and, in contrast to much of the rest of North America, mobility and settlement patterns do not appear to have changed markedly through time in this region.

3.1 PALEOINDIAN PERIOD (CA. 12,000 TO 8,500 YEARS B.P.)

The initial human occupations in the New World can now be confidently extended back before 12,000 B.P. (Dincauze 1984; Haynes et al. 1984; Kelly and Todd 1988; Lynch 1990; Meltzer 1989). Evidence from Meadowcroft Rockshelter in Pennsylvania suggests that humans were present in Eastern North America as early as 14,000 to 16,000 years ago (Adovasio et al. 1990), while more recent discoveries at Monte Verde in Chile provide unequivocal evidence for human occupation in South America by at least 12,500 years ago (Dillehay 1989, 1997; Meltzer et al. 1997). Most archeologists have historically discounted claims of much earlier human occupation during the Pleistocene glacial period. However, recent investigations of the Buttermilk Creek Complex in Bell County, Texas, have raised the possibility that a pre-Clovis culture may have been present in North America as early as 15,500 years ago (Waters et al. 2011).

The earliest generalized evidence for human activities in Central Texas is represented by the PaleoIndian period (12,000 to 8500 B.P.) (Collins 1995). This stage coincided with ameliorating climatic conditions following the close of the Pleistocene epoch that witnessed the extinction of herds of mammoth, horse, camel, and bison. Cultures representing various periods within this stage are characterized by series of distinctive, relatively large, often fluted, lanceolate projectile points. These points are frequently associated with spurred end scrapers, gravers, and bone foreshafts. PaleoIndian groups are often inferred to have been organized into egalitarian bands consisting of a few dozen individuals that practiced a fully nomadic subsistence and settlement pattern. Due to poor preservation of floral materials, subsistence patterns in Central Texas are known primarily through the study of faunal remains. Subsistence focused on the exploitation of plants, small animals, fish, and shellfish, even during the PaleoIndian period. There is little evidence in this region for hunting of extinct megafauna, as has been documented elsewhere in North America. Rather, a broad-based subsistence pattern appears to have been practiced throughout all prehistoric time periods. In Central Texas, the PaleoIndian stage is divided into two periods based on recognizable differences in projectile point styles. These

include the Early PaleoIndian period, which is recognized based on large, fluted projectile points (i.e., Clovis, Folsom, Dalton, San Patrice, and Big Sandy), and the Late PaleoIndian period, which is characterized by unfluted lanceolate points (i.e., Plainview, Scottsbluff, Meserve, and Angostura).

3.2 ARCHAIC PERIOD (CA. 8,500 TO 1,200 YEARS B.P.)

The onset of the Hypsithermal drying trend marks the beginning of the Archaic period (8500 to 1200 B.P.) (Collins 1995). This climatic trend marked the beginning of a significant reorientation of lifestyle throughout most of North America, but this change was far less pronounced in Central Texas. Elsewhere, the changing climatic conditions and corresponding decrease in the big game populations forced people to rely more heavily upon a diversified resource base composed of smaller game and wild plants. In Central Texas, however, this hunting and gathering pattern is characteristic of most of prehistory. The appearance of a more diversified tool kit, the development of an expanded groundstone assemblage, and a general decrease in the size of projectile points are hallmarks of this cultural stage. Material culture shows greater diversity during this broad cultural period, especially in the application of groundstone technology.

Traditionally, the Archaic period is subdivided into Early, Middle, and Late subperiods. Changes in projectile point morphology are often used as markers differentiating these three subperiods, though other changes in material culture occurred as well. Perhaps most markedly, burned rock middens appear during the Middle Archaic subperiod, continuing into the Late Archaic subperiod, and large cemeteries appear during the Late Archaic subperiod. In addition, the increasing density of prehistoric sites through time is often considered to constitute evidence of population growth, though differential preservation probably at least partially accounts for the lower numbers of older sites.

3.3 LATE PREHISTORIC PERIOD (CA. 1,200 TO 350 YEARS B.P.)

The onset of the Late Prehistoric period (1200 to 350 B.P.) (Collins 1995) is defined by the appearance of the bow and arrow. In Central Texas, pottery also appears during the Late Prehistoric period (though ceramics appear earlier in Southeast Texas). Use of the atlatl (i.e., spearthrower) and spear was generally discontinued during the Late Prehistoric period, though they continued to be used in the inland subregion of Southeast Texas along with the bow and arrow through the Late Prehistoric period (Patterson 1980, 1995; Wheat 1953). In Texas, unifacial arrow points appear to be associated with a small prismatic blade technology. The Late Prehistoric period is generally divided into two phases, the Austin and Toyah phases. Austin phase sites occur earliest to the north, which has led some researchers (e.g., Prewitt 1985) to suggest that the Austin-phase populations of Central Texas were migrants from the north, and lack the ceramic industry of the later Toyah phase.

3.4 HISTORIC PERIOD (CA. 350 YEARS B.P. TO PRESENT)

The first European incursion into what is now known as Texas was in 1519, when Álvarez de Pineda explored the northern shores of the Gulf of Mexico. In 1528, Cabeza de Vaca crossed

south Texas after being shipwrecked along the Texas Coast near Galveston Bay. However, European settlement did not seriously disrupt native ways of life until after 1700. The first half of the 18th century was the period in which the fur trade and mission system, as well as the first effects of epidemic diseases, began to seriously disrupt the native cultures and social systems. This process is clearly discernable at the Mitchell Ridge site on Galveston Island in Galveston County, Texas, where burial data suggest population declines and group mergers (Ricklis 1994), as well as increased participation on the part of the Native American population in the fur trade. By the time that heavy settlement of Texas began in the early 1800s by Anglo-Americans, the indigenous Indian population was greatly diminished.

The first Europeans to explore the Bexar County region came with an expedition in 1691 led by Domingo Terán de los Ríos and Fray Damián Massanet, who evidently reached the San Antonio River near where the San Juan Capistrano Mission was later founded.[1] Nearby, they found a group of Payaya Indians living on the riverbank. The Indians, as Massanet recorded in his diary, called the place Yanaguana; he, however, renamed the site San Antonio de Padua to celebrate the memorial day of St. Anthony—June 13.

The next group of Spanish explorers, an expedition led by two Franciscans, fathers Antonio de San Buenaventura y Olivares and Isidro Félix de Espinosa, and a military officer, Pedro de Aguirre, did not reach the area until April 1709. Much impressed by the setting and the availability of water, they noted that the area might make a promising site for future settlement. In 1714, Louis Juchereau de St. Denis crossed the region on his way to San Juan Bautista. Espinosa again visited the site in 1716 on his way to east Texas with the expedition of Domingo Ramón and this time recommended San Pedro Springs as a mission site. Near that spot, in May 1718, Martín de Alarcón led the expedition that founded San Antonio de Valero Mission and San Antonio de Béxar (or Béjar) Presidio, named for Viceroy Balthasar Manuel de Zúñiga y Guzmán Sotomayor y Sarmiento, second son of the duke of Bexar. By the end of the winter of 1718, numerous Indians of the Jamrame, Payaya, and Pamaya groups had joined the mission. In 1720, Fray Antonio Margil de Jesús founded the San José y San Miguel de Aguayo Mission a short distance to the south. Another mission, San Francisco Xavier de Naxara, was established in 1722 but proved unsuccessful and was merged with San Antonio de Valero in 1726. In 1724, the San Antonio de Valero mission compound, originally founded on the banks of San Pedro Creek (possibly at site 41BX1968), was moved to Alamo Plaza. In 1731, after the removal of the missions from east Texas, three additional missions—Nuestra Señora de la Purísima Concepción de Acuña, San Francisco de la Espada, and San Juan Capistrano—were founded along the San Antonio River.

During the 1720s, the Spanish population of the area was about 200, including 53 soldiers and their families and four civilians with their families. On March 9, 1731, 55 Canary Islanders arrived at Bexar, and the villa of San Fernando de Béxar became the first municipality in the Spanish province of Texas. The five missions, together with the presidio and the villa of San Fernando, constituted the most important Spanish concentration in Texas. By the mid-1730s, the

[1] The following discussion of Bexar County history is excerpted from TSHA (2017).

total population of the area was some 900, including 300 Spanish and 600 Indian converts. An epidemic in 1738 and 1739 devastated the missions, killing perhaps three-quarters of the Indian population. At Mission San Antonio de Valero alone, only 182 of 837 Indians who had been baptized survived. By 1740, however, the missions' populations began to recover. The number of converts at the five missions reached more than 500, as many of the indigenous Coahuilatecan peoples living in the region fled to them as a refuge from the Apaches and Comanches.

The missions developed as self-supporting communities, each ringed with farmland irrigated by a comprehensive system of acequias, or irrigation ditches. Crops included grain, cotton, flax, beans, sugarcane, and vegetables. Each of the missions also maintained sizable herds of cattle, sheep, and goats on extensive ranchlands located around Bexar. Governor Manuel M. de Salcedo described Mission Concepción's ranch in 1809 as comprising some 38 square miles and extending east and northeast from the mission to Cibolo Creek. An inventory in 1756 recorded that the Concepción ranch had 700 cattle, 1,800 sheep, and large herds of goats and horses.

Both the missions and the villa of Bexar were subject to sporadic attacks of Apaches and Comanches; nearly a quarter of the Spanish who died between 1718 and 1731 were reportedly victims of Apache attacks. A truce was signed with the Apaches in August 1749, but occasional attacks by Comanches and Apaches continued well into the 19th century.

In 1772, the government offices of Spanish Texas were moved from Los Adaes to Bexar, and some of the east Texas settlers also moved. Nonetheless, Bexar remained a small frontier outpost, as Father Juan A. Morfi described in a report of the late 1770s, with "fifty-nine houses of stone and mud, seventy-nine of wood, all poorly built without a preconceived plan. The whole town," he continued, "resembles a poor village rather than the capital of a province."

After the secularization of the missions in 1793 and 1794, they gradually became satellite civilian communities under the authority of the town of Bexar. The mission lands were distributed to the few remaining Indians and the increasing number of Spanish settlers; most of the better land nearest the settled areas was controlled by the town's elite, which was made up of the descendants of the original Canary Islanders and presidial soldiers. The complex network of irrigation systems that had been operated by the missions was partially abandoned, and, by 1815, the amount of irrigated farmland had declined markedly.

Despite the downturn brought on by the secularization of the Spanish missions, San Antonio de Béxar continued to be an overwhelmingly agricultural community. Subsistence farming was the rule. The largest number of cultivators worked small family plots, though many farms were also worked by tenant farmers or day laborers. The elite landowners increased the size of their holdings after the secularization of the missions, and some of the largest ranchers exported horses and cattle to Coahuila or Louisiana.

During the late colonial period, Bexar continued to serve as the capital of the province of Texas as well as the main shipping point for supplies headed for Nacogdoches and La Bahía. Between 1811 and 1813, the city was also the center of revolutionary activity against Spanish rule. In 1811, a former militia captain, Juan Bautista de Las Casas, following the lead of Miguel

Hidalgo y Costilla in Mexico, mounted an insurrection in Bexar that quickly spread throughout the province of Texas. Las Casas's band of followers, which included the poorer soldiers and civilians of the lower social stratum who resented the rule of the Spanish elite, scored early successes, arresting the governor and his military staff and seizing the property of the most ardent royalists. On March 1, 1811, however, some of the conservative military officers and clergy supported by the *isleños* (aristocratic descendents of the original Canary Island settlers) staged a counterrevolution. Las Casas was captured in Chihuahua and executed, and his head was salted and shipped in a box to Bexar for display on Military Plaza in an attempt to dissuade others from taking up his cause.

After Las Casas's death, the leadership of the insurrectionists fell to Bernardo Gutiérrez de Lara, who led an army of Mexican revolutionaries and sympathetic Americans from Louisiana who seized San Antonio in the spring of 1813 and proclaimed Texas an independent state. In August, however, royalist forces commanded by José Joaquín Arredondo succeeded in routing the insurrectionists and restoring order. Arredondo's victory was followed by a period of reprisals that included confiscation, detentions, and executions; in San Antonio alone, loyalists shot 327 supporters of the rebellion.

In the wake of the rebellion, the population of Bexar and the surrounding region fell markedly and did not begin to grow again until the end of the decade. By 1820, however, Bexar had some 2,000 inhabitants, with slightly more females (1,021) than males (973); several hundred more lived on ranches in the outlying countryside. During the 1830s, the population again increased slightly, although the number of inhabitants in Bexar declined as more town dwellers moved out to adjoining farms and ranches.

Soon after the first Anglo-American colonists came to Texas in 1821, San Antonio became the western outpost of settlement. In 1824, Texas and Coahuila were united into one state with the capital at Saltillo; a Department of Bexar was created with a political chief to have authority over the Texas portion of the state. During the late 1820s and early 1830s, increasing numbers of American settlers began moving to San Antonio, though the city remained predominantly Mexican at the beginning of the Texas Revolution.

In late October 1835, Texan and Tejano volunteers laid siege to the city, which was garrisoned by the Mexican army under Martín Perfecto de Cos. On December 10, after fierce hand-to-hand fighting, it was occupied by Texan and Tejano forces. San Antonio was retaken by government forces commanded by Antonio López de Santa Anna during the battle of the Alamo on March 6 of the following year. After the subsequent defeat of Santa Anna's army in the battle of San Jacinto, the city was reoccupied by Texan forces, but the area, claimed by both sides, continued to be fought over. In March 1842, six years after Texas independence, Mexican general Rafael Vásquez briefly occupied San Antonio, and, in September of the same year, Adrián Woll led another Mexican invasion force that seized the city.

Because of the uncertainty posed by the frequent invasions, San Antonio and the surrounding area were largely depopulated. Many settlers fled during the Runaway Scrape of 1836 or during subsequent attacks and did not return in large numbers until after Texas joined

the Union. As late as 1844, San Antonio had only some 1,000 residents, 90% of whom were of Mexican descent.

The newly formed Bexar County covered much of the western edge of settlement in Texas. During the late Mexican period, Texas had been divided into four departments, with the department of Bexar stretching from the Rio Grande to the Panhandle and as far west as El Paso. With the winning of Texas independence, the departments became counties, and on December 20, 1836, Bexar County was established, with San Antonio as county seat. Since 1860, when the partitioning of Bexar County began, 128 counties have been carved from the original county.

Despite the steady growth of the population in the late 1840s, fueled by large numbers of immigrants from the Old South and from Germany, Bexar County was still a sparsely populated region during the early years of statehood. In 1850, the county had a total population of 5,633, 3,488 of whom lived in San Antonio. The economy, as during the Spanish and Mexican periods, was still based on ranching and subsistence agriculture. Most of the farms were small; on the eve of the Civil War only one farm in the county was larger than 404.7 hectares (1,000.0 acres), and most were smaller than 20.2 hectares (50.0 acres). The main source of revenue for the county was trade carried on by team trains between San Antonio and Mexico and New Orleans. A number of German and Anglo immigrants opened mercantile establishments in the city, but there was little in the way of industry. In 1860, the county had only 28 manufacturing establishments with 135 employees.

In contrast to many other areas of Texas, slaves played only a minor role in the Bexar County economy. In 1850, there were only 419 African Americans living in the county, 30 of whom were free. By 1860, the number of slaves had grown to 1,395, or slightly less than 10% of the county's total population. Most of the county’s 294 slaveholders owned five or fewer slaves, and only two owned more than 40.

Bexar County, with its large German population, was a center for antislavery sentiment. Nevertheless, county residents voted for secession 827 to 709 (54% for, 46% against). On February 16, 1861, General David E. Twiggs, commander of the federal Department of Texas, which was headquartered in San Antonio, surrendered all United States forces, arms, and equipment to a committee of local secessionists backed by a large force of Texas Rangers under Major Benjamin McCulloch. Although Bexar County escaped the destruction that devastated other parts of the South, the war years were difficult for the county's citizens, who were forced to deal with the lack of markets and wild fluctuations in Confederate currency, as well as with concern for those on the battlefield. With many of the men away fighting, the county and the surrounding region experienced an upsurge of cattle rustling and other crimes, and a committee of vigilantes organized "necktie parties" for bandits, cattle thieves, and Union sympathizers.

After the war San Antonio was occupied by Union soldiers, but the county was spared much of the political violence that consumed other parts of Texas. The war and its aftermath, however, had a serious effect on the county’s economy. Land prices fell significantly—by as much as half—and most of the county’s businesses suffered. Many of the county’s farms also fell idle. The amount of improved farmland declined by more than 60% between 1860 and 1870,

from 5,543.0 to 2,244.4 hectares (13,697.0 to 5,546.0 acres). With little tax money coming in, San Antonio and county officials were unable to fund many services. Public sanitation suffered, and as a result the county had a serious cholera outbreak in 1866.

Except for San Antonio, which continued to be a commercial and military center, the county remained scantily settled and undeveloped. Most of the population continued to be concentrated in the San Antonio River valley, with only a few small settlements in the northern, eastern, and western parts of the county. Economic recovery did not begin until the late 1860s and early 1870s with the start of the great cattle drives. Because Bexar County was located at the northern apex of the diamond-shaped area that was the original Texas cattle kingdom, it became an increasingly important center for the ranching industry. By 1870, the number of beef cattle in the county reached 55,325, nearly double the figure for 1860. A sharp increase in the price of wool and the large amount of free range west and south of the city also spurred the development of sheep ranching, particularly in the decade between 1870 and 1880.

The economic recovery, however, found its most important stimulus with the arrival of the first railroad, the Galveston, Harrisburg and San Antonio Railway, which reached San Antonio in February 1877. The completion of the rail link with the coast made the shipment of local products far easier and helped to fuel a rapid growth in population. The number of inhabitants in the county, which had grown by less than 2,000 between 1860 and 1870, nearly doubled over the next decade, increasing from 16,043 in 1870 to 30,470 in 1880. Many of the new residents were recent immigrants from Europe and Mexico. Of the total population in 1880, 7,912 were foreign-born, with the largest numbers coming from Mexico (3,498), Germany (2,621), Ireland (471), England (334), and France (293). After the Civil War, the county's black population also grew dramatically as many freed slaves settled in and around San Antonio. By 1880, the number of African-American inhabitants had reached 3,867, nearly three times what it had been in 1860.

In 1881, a second railroad, the International-Great Northern, reached the city from the northeast. The completion of the two railroads not only brought new prosperity, but helped to change the physical face of the county. Before the 1870s, most visitors had been struck by the fact that San Antonio and environs, despite relatively large numbers of English, Irish, and Germans, still more resembled a Mexican community than an American one. The influx of new settlers and manufactured building products gradually transformed the city and county, altering its appearance to more closely resemble that of other communities in Texas. The changing character of Bexar was perhaps most tellingly revealed in 1890, when for the first time the number of the county's inhabitants born in Germany (4,039) actually outnumbered those who had been born in Mexico (3,561).

The construction of the railroads also stimulated the establishment or greatly spurred the growth of numerous new communities, including Macdona, Von Ormy, Cassin, Atascosa, Thelma, Beckman, Luxello, Converse, and Kirby, though the overwhelming majority of the county's inhabitants still lived in San Antonio.

The 1880s also saw many new industries. By 1887, San Antonio listed among its businesses three bookbinderies, four breweries, three carriage factories, four ice factories, three tanneries, one wool-scouring plant, and an iron foundry. Between 1880 and 1890, employees in

manufactures in the county grew from 362 to 2,518. After the turn of the century, the manufacturing sector continued to show impressive growth. By 1920, the county had 328 factories employing 6,860 persons.

Despite the area's relatively diversified economy, the depression hit Bexar County hard. By the mid-1930s, many people were out of work and very glad of the New Deal programs that gave them work paving streets and building bridges, sewers, and parks. Among the largest projects of the period were the renovation of La Villita and the San Antonio missions, and the construction of the Paseo del Rio along the San Antonio River in the center of the city.

Beginning in the second half of the 19th century, San Antonio also developed as an important military center. The San Antonio Arsenal was opened in 1858, and, in 1878, the city deeded 36.4 hectares (90.0 acres) to the federal government for what eventually became Fort Sam Houston. During World War I, Kelly and Brooks fields (which later became Kelly Air Force Base and Brooks Air Force Base) were established to train pilots, and Camp Bullis and Camp Travis were opened. At the end of the war, a part of Kelly Field became Duncan Field, and, in 1931, Randolph Field was established as a primary flight training base. During World War II, Duncan Field was reintegrated with Kelly, and Camp Normoyle, a motor base, was added.

During World War II, Bexar County's already large military presence grew even more, as the area's bases became an important center for the training of army air corps cadets under the auspices of the San Antonio Aviation Cadet Center. At the height of the war, more than 21,000 civilian war workers were employed at Kelly Field alone. After the war, the presence of so many military personnel continued to bring changes to the county. Thousands of returning veterans enrolled in local colleges and universities, and many others, attracted by the area during their service years, moved to the city. San Antonio also developed into a major retirement center for military families, drawn by the relatively low cost of living and the access to the two large area military medical centers, Wilford Hall and Brooke Army Medical Center. Since the end of the Second World War, the economy of the area has continued to depend heavily on a large federal payroll from the various military bases and research facilities, and from the large number of retired military residents.

4.0 ARCHIVAL RESEARCH

Prior to initiating fieldwork, Horizon performed background archival research on the THC's online *Texas Archeological Sites Atlas* (TASA) for information on previously recorded cultural resources sites and historic properties in and near the proposed project area as well as previous cultural resources investigations conducted in the vicinity of the proposed project area. Based on this archival research, 25 known archeological sites, two cemeteries, and two historic districts listed on the National Register of Historic Places (NRHP) are located within a 1.6-kilometer (1.0-mile) radius of the project area (Figure 4; Table 2) (NPS 2017; THC 2017).

Three of the known cultural resources—41BX294, 41BX474, and the Salado Battlefield and Archeological Site NRHP historic district—are mapped as falling within the project area.

The southern end of the proposed linear project area, roughly the area between Walzem Creek on the south and Judivan Drive on the north, falls within the known boundaries of two previously documented cultural resources—the Salado Battlefield and Archeological Site historic district and prehistoric archeological site 41BX294. The Salado Battlefield and Archeological Site is a historic district listed on the NRHP that represents the estimated location of the Battle of Salado Creek. Fought on September 17 or 18, 1842 (accounts differ), the Battle of Salado Creek was a decisive engagement between the Texas Rangers, under the command of Colonel Mathew Caldwell, and an army of Mexican soldiers and Cherokee warriors, under the command of General Adrián Woll, that resulted in the retreat of Mexican forces toward the Hondo River. The mapped boundaries of the Salado Battlefield and Archeological Site, as reflected in the delineated boundaries of the NRHP historic district, were reconstructed based on sketch maps of the battlefield and are understood to represent an approximation of the extent of the battlefield. A plaque commemorating the Battle of Salado Creek stands in a small park near the southern end of the project area (Figure 5). The plaque is engraved with the following narrative:

> The Battle of the Salado, decisive in Texas history, was fought here, September 18, 1842. Col. Mathew Caldwell and Capt. John C. Hays, commanding a force of Texas volunteers, opposed the Mexican army under General Adrian Woll that had captured San Antonio, and, with the loss of only one man, checked the last Mexican invasion of Texas and thereby prevented the capture of Austin, capital of the Republic of Texas (Erected by the State of Texas 1936).

SENSITIVE ARCHEOLOGICAL SITE LOCATION INFORMATION OMITTED

Figure 4. Locations of Known Cultural Resources within 1.0 Mile of Project Area

Table 2. Summary of Known Cultural Resources within 1.0 Mile of Project Area

Site No./Name	Site Type	NRHP/SAL Eligibility Status[1]	Distance/Direction from Project Area	Potential to be Impacted by Project?
Archeological Sites				
41BX17	Aboriginal burned rock midden with burials (Middle to Late Archaic)	Ineligible within investigated area	78.0 feet northeast	No
41BX229	Aboriginal burned rock midden	Undetermined	91.0 feet east	No
41BX271	Aboriginal burned rock midden with burials (Middle to Late Archaic)	Determined ineligible within surveyed area	120.0 feet east	No
41BX294	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	Within project area	Yes
41BX305	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.4 mile southeast	No
41BX389	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	1.0 mile south	No
41BX422	Aboriginal lithic scatter (undetermined prehistoric)	Recommended ineligible	0.8 mile southeast	No
41BX473	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	120.0 feet west	No
41BX474	Aboriginal campsite (Late Archaic to Late Prehistoric)	Determined ineligible	Within project area	Yes
41BX477	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	440.0 feet southeast	No
41BX478	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.2 mile northeast	No
41BX479	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.1 mile northeast	No
41BX480	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.2 mile east	No
41BX481	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.2 mile east	No
41BX482	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.2 mile northeast	No
41BX841	Aboriginal campsite (undetermined prehistoric)	Determined ineligible within surveyed area	0.4 miles northeast	No
41BX880	Aboriginal lithic scatter (undetermined prehistoric)/ Historic-age artifact scatter (undetermined historic)	Recommended ineligible	0.7 mile southwest	No

Table 2. Summary of Known Cultural Resources within 1.0 Mile of Project Area (cont.)

Site No./Name	Site Type	NRHP/SAL Eligibility Status[1]	Distance/Direction from Project Area	Potential to be Impacted by Project?
Archeological Sites (cont.)				
41BX1007	Aboriginal campsite (Late Prehistoric)	Undetermined	0.2 mile west	No
41BX1764	Aboriginal lithic scatter (Late Prehistoric)	Determined ineligible	1.0 mile west	No
41BX1765	Aboriginal lithic scatter (Late Archaic)	Determined ineligible	20.0 feet west	No
41BX1766	Aboriginal campsite (undetermined prehistoric)	Determined ineligible	13.0 feet east	No
41BX1884	Aboriginal lithic scatter (undetermined prehistoric)	Undetermined	0.3 mile east	No
41BX2041	Aboriginal petroglyph (undetermined prehistoric); Possible historic-age wagon ruts incised in limestone bedrock (undetermined historic)	Recommended ineligible	61.0 feet east	No
41BX2058	Aboriginal lithic scatter (undetermined prehistoric)/ Historic-age artifact scatter (undetermined historic)	Determined ineligible	1.0 mile southeast	No
41BX2126	Aboriginal lithic scatter (undetermined prehistoric)	Recommended ineligible	0.5 mile west	No
Listed NRHP Historic Properties				
Fort Sam Houston National Cemetery	Cemetery	Listed on NRHP	0.3 mile southwest	No
Salado Battlefield and Archeological Site	Historic-age site of the Battle of the Salado (September 18, 1842)	Listed on NRHP	Within project area	Yes
Cemeteries				
Agudas Achim Memorial Gardens (BX-C107)	Cemetery	N/A	0.1 mile west	No
Sunset Memorial Cemetery (BX-C028)	Cemetery	N/A	0.5 mile west	No

[1] *Determined eligible/ineligible* = Site determined eligible/ineligible by SHPO
Recommended eligible/eligible = Site recommended as eligible/ineligible by site recorder and/or sponsoring agency but eligibility has not been determined by SHPO
Undetermined = Eligibility not assessed or no information available

NRHP National Register of Historic Places

SAL State Antiquities Landmark

SHPO State Historic Preservation Office

Prehistoric archeological site 41BX294 was originally recorded by Thomas Hester in 1975 as an extensive scatter of aboriginal lithic artifacts located on the floodplain and adjacent terrace at the confluence of Salado and Walzem creeks. The full extent of the site was not evaluated and likely extended into an area now covered by a residential subdivision. No temporally diagnostic artifacts were observed, and the depth of archeological deposits was not evaluated. The mapped boundaries of archeological site 41BX294 fall within the delineated boundaries of the Salado Battlefield and Archeological Site within the southern end of the project area. The NRHP eligibility of site 41BX294 has never been assessed and is currently considered to be undetermined.

Site 41BX474 is a multiple-component aboriginal and historic-age archeological site located on a narrow, steeply sloping paleoterrace between Ira Lee Road and Salado Creek. The aboriginal component of the site consists of a scatter of lithic debitage, burned rocks, chipped stone tools, and temporally diagnostic projectile points dating to the Late Archaic and Late Prehistoric periods. The historic-age component consists of a scatter of historic-age domestic

Figure 5. Battle of Salado Plaque Located near Southern End of Project Area

debris of unknown age. Originally recorded in 1977 and subsequently reinvestigated on at least two subsequent occasions in 2007 and 2014, the site has been described as containing a relatively high density of aboriginal artifacts. However, aboriginal and historic-age cultural materials are mixed with modern trash in disturbed sediments. An archeological significance testing project was conducted on site 41BX474 in 2014 by the Center for Archaeological Research (CAR) of The University of Texas at San Antonio in connection with the proposed construction of the Salado Creek Greenway hike-and-bike trail system. Based on those investigations, site 41BX474 was determined to be ineligible for inclusion in the NRHP.

An additional six archeological sites—41BX17/271, 41BX229, 41BX473, 41BX1765, 41BX1766, and 41BX2041—are mapped as being located in close proximity (36.6 meters [120.0 feet] or less) to the project area. One of these sites, 41BX17/271 (the Granberg) site, is located adjacent to and potentially within a portion of the project area located off the southern side of the eastbound IH Loop 410 frontage road.

The Granberg site is located on a small knoll overlooking the eastern bank of Salado Creek. The site was originally recorded as two separate sites, 41BX17 (Granberg I) and 41BX271 (Granberg II), though subsequent investigations suggested that the sites are part of the same complex, and the trinomials have consequently been combined. The site was initially discovered in 1962 when Harvey Kohnitz discovered prehistoric human remains while monitoring excavations for a CoSA water main trench. The burials were excavated by Mardith Schuetz and volunteers from the Witte Museum in an early example of salvage archeology in Texas that predated the inception of federal and state historic preservation legislation (Scheutz 1966). In addition to salvaging the human remains, manual excavations undertaken at the time uncovered midden deposits containing artifacts and cultural features dating from the Middle to Late Archaic. Additional excavations were conducted on the site in 1973 and 1974 by the Southern Texas Archaeological Association (STAA) under the supervision of Thomas Hester, and a UTSA archeological field school continued work on the site in 1979, though a full report of these investigations has not been produced. In 2007, a cultural resources survey was conducted for the proposed Salado Creek Greenway hike-and-bike trail system for CoSA (Muñoz 2008). During this survey, three backhoe trenches were excavated within the footprint of what is now the Tobin Park Trailhead parking lot that revealed up to 1.5 meters (5.0 feet) of fill overlying archeological deposits in the area located closest to the current project area. Most recently, UTSA's CAR conducted archeological significance testing excavations on the Granberg site in connection with a roadway improvement project along IH Loop 410 sponsored by the Texas Department of Transportation (TxDOT) (Muñoz et al. 2011). Based on the CAR/TxDOT investigations, the investigated portion of the Granberg site was determined to be ineligible for inclusion in the NRHP and for designation as an SAL. However, the boundaries of the Granberg site have never been delineated, and uninvestigated portions of the site are considered to be of undetermined NRHP/SAL eligibility. However, based on the known findings from the site, CoSA's OHP believes the site to be eligible for inclusion in the NRHP and for designation as an SAL (Kay Hindes, personal communication).

The rest of the known cultural resources are located well beyond the boundaries of the project area and would have no potential to experience any disturbances as a result of the proposed undertaking.

Numerous prior cultural resources surveys have been conducted in the vicinity of the project area, though only one prior survey covered any portion of the current project area. This prior linear survey, conducted in 2007 for the proposed Salado Creek Greenway project, followed the channel of Salado Creek and crossed the current area at three locations (Muñoz 2008).

5.0 SURVEY METHODOLOGY

From June 22 to 23, 2017, Horizon archeological technicians Stephanie Mueller, Jacob Lyons, and Jared Wiersema, under the overall direction of Jeffrey D. Owens, Principal Investigator, performed an intensive cultural resources survey of the project area to locate any cultural resources that potentially would be impacted by the proposed undertaking. Horizon's archeologists traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The majority of the project area consists of the utility easement of the existing wastewater line, and extensive prior impacts from construction, use, and maintenance of existing roadways, driveways, contractor yards, a storm water detention basin, parking lots, hike-and-bike trails and trailheads, and various overhead and subsurface utility lines were observed. Many segments of the existing wastewater line run within the ROWs of existing roadways that are typically quite narrow, with road shoulders and easements that often measure only a few feet in width (Figures 6 to 13).

In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 16 shovel tests per mile for linear project areas measuring up to 30.5 meters (100.0 feet) in width; as such, 51 shovel tests would be required within the 5.1-kilometer- (3.2-mile-) long project area. Horizon excavated a total of 68 shovel tests, thereby exceeding the TSMASS for a project area of this length (Figure `14). The pedestrian survey with shovel testing revealed shallow, heavily disturbed deposits of gravelly clay and clay loam sediments, and impenetrable gravel lenses were encountered in many shovel tests at depths ranging from 10.0 to 40.0 centimeters (3.9 to 12.2 inches) below surface. The Universal Transverse Mercator (UTM) coordinates of all shovel tests were determined using hand-held Garmin ForeTrex global positioning system (GPS) devices based on North American Datum of 1983 (NAD 83). Specific shovel test data are included in Appendix A.

Modern trash and construction debris was abundant throughout the project area, and sediments observed in most shovel tests were disturbed and contained road base gravels and/or modern trash. The linear corridor of the project area passes within the boundaries of three previously documented cultural resources. The southern end of the project area, located adjacent to Holbrook Road, passes within the designated boundaries of a previously recorded prehistoric archeological site, 41BX294, and the Salado Battlefield and Archeological Site National Register Historic District. The central portion of the project area, located adjacent to Ira Lee Road, passes within the boundary of a previously recorded multiple-component prehistoric and historic-age

Figure 6. Hike-and-Bike Path in Southern Portion of Project Area (Facing North)

Figure 7. Typical View of Holbrook Road Portion of Project Area (Facing South)

Figure 8. Trailhead in L.B. Tobin Park North of Austin Highway (Facing Southeast)

Figure 9. Contractor Yard at Holbrook Road and Austin Highway (Facing Southeast)

Figure 10. Typical View of Ira Lee Road Portion of Project Area (Facing Southeast)

Figure 11. Condos Adjacent to Ira Lee Road Portion of Project Area (Facing Northwest)

Figure 12. View of Existing Wastewater Easement North of Loop 410 (Facing Southeast)

Figure 13. Storm Water Detention Basin within Northern Portion of Project Area (Tennis Court Installed by Local Landowner) (Facing South)

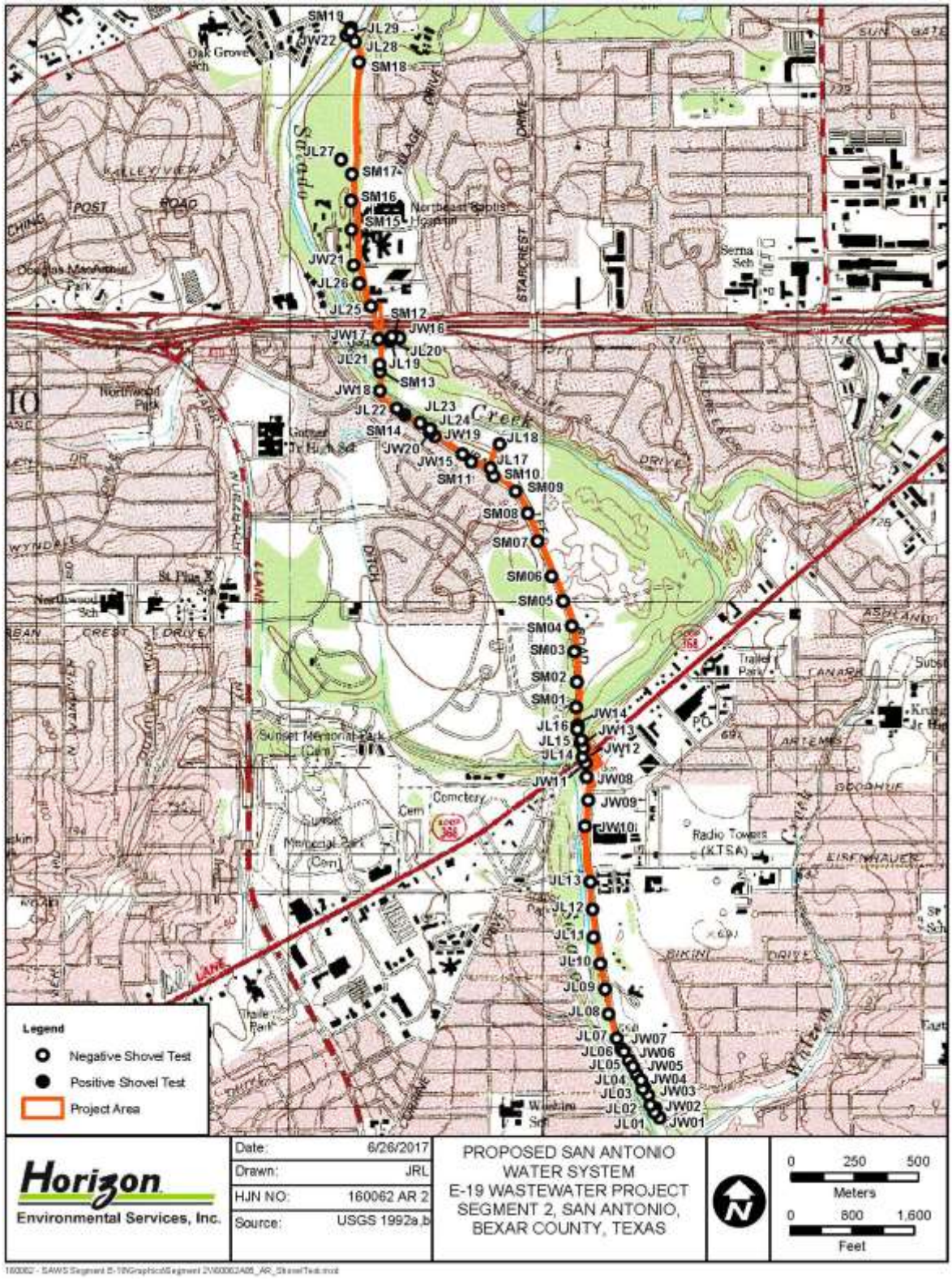

Figure 14. Locations of Shovel Tests Excavated within Project Area

archeological site, 41BX474. Horizon tightened the shovel testing interval from 100.0 meters (328.0 feet) to 30.0 meters (98.4 feet) within the portions of the current project area that passed within the previously delineated boundaries of these three cultural sites in order to increase the chances of encountering cultural resources associated with these three sites.

An additional six archeological sites—41BX17/271, 41BX229, 41BX473, 41BX1765, 41BX1766, and 41BX2041—are mapped as being located in close proximity (36.6 meters [120.0 feet] or less) to the project area. Horizon's archeologists took extra care inspecting the portions of the current project area located near the mapped locations of these previously recorded sites, either excavating extra shovel tests, taking extra time to examine the modern ground surface, or both.

Based on the results of the archeological pedestrian survey conducted in June 2017, it was determined that a portion of the proposed sewer line ROW located between the eastbound IH Loop 410 frontage road on the north and Ira Lee Road on the south passes within or near the boundaries of a previously recorded, potentially significant, prehistoric archeological site. This site, known as the Granberg site, is roughly represented by trinomials 41BX17 and 41BX271, though the site boundaries have never been delineated. In response to concerns about potential impacts to this site raised by the CoSA's OHP and the THC, supplemental backhoe trenching was conducted within the Salado Creek floodplain in an area to the west of the known boundaries of the Granberg site. This segment of the proposed ROW measures approximately 263.7 meters (865.0 feet) in length along the proposed alignment of the proposed new 152.4-centimeter-(60-inch-) diameter gravity sanitary sewer line and would involve installing a segment of new 152.4-centimeter-(60-inch-) diameter sewer pipeline in a 182.9-centimeter- (72.0-inch-) diameter casing via boring/tunneling (i.e., not open cut). On October 24, 2017, Horizon archeologists Jeffrey Owens (Principal Investigator), Eric Schroeder (geoarcheologist), Jared Wiersema (archeological technician and backhoe operator), and Foster Duncan (archeological technician) excavated three backhoe trenches within the segment of proposed ROW located within the modern, active floodplain of Salado Creek to determine whether or not any intact archeological deposits are present that may be disturbed via the proposed sewer line construction (Figure 15). Personnel from CoSA's OHP, THC, SAWS, KHA, CP&Y, CoSA Parks, and CoSA Arborist were present during the trench excavations.

Backhoe trenches were excavated using a 0.6-meter- (2.0-foot-) wide bucket with a flat edge, and trenches generally measured approximately 4.2 meters (14.0 feet) in length. Excavation of backhoe trenches was monitored by Horizon archeologists as well as by personnel from the CoSA's OHP, the THC, SAWS, KHA, CP&Y, CoSA Parks, and CoSA Arborist. Trench walls, floors, and spoil piles were inspected during and after excavation for evidence of archeological materials, distinctive stratigraphic anomalies, and/or soil discolorations that may be indicative of past cultural activities. Horizon personnel recorded notes on the stratigraphic character of soil deposits observed in trench walls, though at no time did any personnel enter a backhoe trench that was more than 1.2 meters (4.0 feet) deep per current Occupational Safety and Health Administration (OSHA) guidelines. The UTM coordinates of all backhoe trenches were determined using hand-held Garmin ForeTrex GPS devices based on NAD 83. Specific backhoe trench data are included in Appendix B.

Figure 15. Locations of Backhoe Trenches Excavated within Project Area

In addition, a sample of sediments excavated from backhoe trenches was screened through 0.64-centimeter (0.25-inch) hardware cloth to ensure the capture of any cultural materials present within the excavated matrix. Approximately 0.8 cubic meter (29.0 cubic feet) of sediment was screened from BHT 1, 0.6 cubic meter (20.0 cubic feet) of sediment from BHT 2, and 1.0 cubic meter (36.0 cubic feet) of sediment from BHT 3.

A fourth backhoe trench was originally planned at the location of a proposed bore/tunnel box off the northern side of Ira Lee Road at the southern end of the segment of proposed sewer line ROW that traverses the Salado Creek floodplain. However, this proposed trench location fell within an active construction zone associated with a Bexar County bridge repair project and was not accessible for trenching in connection with the current project. However, extensive open excavations associated with the Bexar County project were observed in the vicinity of the proposed bore/tunnel box that revealed deep deposits of reddish-brown, gravelly, alluvial sediments. Horizon and OHP personnel inspected these exposed soil profiles on October 24, 2017, and no cultural resources were observed within them. As such, attempts to excavate the fourth backhoe trench at this location were abandoned.

During the survey, field notes were maintained on terrain, vegetation, soils, landforms, survey methods, and shovel test results. Digital photographs were taken, and a photographic log was maintained. Horizon employed a non-collection policy for cultural resources. Diagnostic artifacts (e.g., projectile points, ceramics, historic materials with maker's marks) and non-diagnostic artifacts (e.g., lithic debitage, burned rock, historic glass, and metal scrap) were described, sketched, and/or photo-documented in the field and replaced in the same location in which they were found.

The survey methods employed during the survey represented a "reasonable and good-faith effort" to locate significant archeological sites within the project area as defined in 36 Code of Federal Regulations (CFR) 800.3.

6.0 RESULTS OF INVESTIGATIONS

6.1 RESULTS OF PEDESTRIAN SURVEY AND SHOVEL TESTING

From June 22 to 23, 2017, Horizon archeological technicians Stephanie Mueller, Jacob Lyons, and Jared Wiersema, under the overall direction of Jeffrey D. Owens, Principal Investigator, performed an intensive cultural resources survey of the project area to locate any cultural resources that potentially would be impacted by the proposed undertaking. Horizon's archeologists traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The majority of the project area consists of the utility easement of the existing wastewater line, and extensive prior impacts from construction, use, and maintenance of existing roadways, driveways, contractor yards, a storm water detention basin, parking lots, hike-and-bike trails and trailheads, and various overhead and subsurface utility lines were observed. Many segments of the existing wastewater line run within the ROWs of existing roadways that are typically quite narrow, with road shoulders and easements that often measure only a few feet in width. In addition, Horizon excavated a total of 68 shovel tests, thereby exceeding the TSMASS for a project area of this length.

Modern trash and construction debris were abundant throughout the project area, and sediments observed in most shovel tests were disturbed and contained road base gravels and/or modern trash. The southern end of the project area, located adjacent to Holbrook Road, passes within the designated boundaries of a previously recorded prehistoric archeological site, 41BX294, and the Salado Battlefield and Archeological Site National Register Historic District (Figure 16). Shovel testing within this portion of the project area revealed disturbed sediments mixed with modern debris, and no cultural resources or intact archeological deposits were observed within the boundaries of these two known cultural resources. The central portion of the project area, located adjacent to Ira Lee Road, passes within the boundary of a previously recorded multiple-component prehistoric and historic-age archeological site, 41BX474 (Figure 17). One shovel test excavated on site 41BX474 contained several glass shards and a whiteware ceramic sherd of unknown age (modern or historic-age) and one aboriginal chert flake in surficial, disturbed sediments immediately adjacent to the Ira Lee Road pavement. Site 41BX474 has been largely destroyed as a result of ongoing urban development and has been previously determined to be ineligible for inclusion in the NRHP and/or for designation as AN SAL. Horizon concurs with the previous significance assessment for site 41BX474.

No other cultural resources, historic or prehistoric, were observed during the survey.

Figure 16. Mapped Location of Site 41BX294 within Project Area (Facing North)

Figure 17. Mapped Location of Site 41BX474 within Project Area (Facing Southeast)

6.2 RESULTS OF BACKHOE TRENCHING AND GEOARCHEOLOGICAL ASSESSMENT

The Granberg site (41BX17/271) is located on the left bank of Salado Creek in San Antonio just a few miles downstream from where the creek originates from Edwards aquifer springs in southwestern Kendal County. The creek meanders across its bedrock-defined channel, emerging from the Balcones Escarpment and onto the adjacent south Texas plain. Its gradient significantly decreases as it flows through a relatively broad and gently sloping alluvial valley now dominated by alluvial sediments of Quaternary age. The stream continues on its southward course until it finally joins with the San Antonio River approximately 24.1 kilometers (15.0 miles) downstream from the Granberg site.

Previous geoarcheological investigations of the Granberg site (41BX17/271) were undertaken in 2006 as part of an NRHP and SAL testing and significance assessment investigation for potential impacts associated with IH Loop 410 roadway improvements (Munoz et al. 2011). The previous investigators defined at least six truncated valley fills (Strata 1 to 6) consisting of predominantly matrix-supported gravel deposits that comprise the modern alluvial valley of Salado Creek. In the area adjacent to the Salado Creek channel, these middle to late Holocene-age deposits can be buried under as much as 2.0 meters (6.6 feet) of modern fill; however, as distance from the channel increases, they become progressively shallower. At higher elevations up along the flanking valley walls, these modern fills grow progressively thinner and locally drape gravelly sands, silts, and clays of middle to late Holocene age (Strata 7 to 9) (Munoz et al. 2011:54). In the vicinity of the Granberg site, they occur at about 1.0 to 1.5 meters (3.3 to 5.0 feet) below surface and have been found to contain cultural features and artifacts of Middle to Late Archaic age.

Backhoe trenching during the current investigation included three trenches (BHTs 1, 2, and 3) excavated on the modern, active floodplain of Salado Creek. BHT 1 was placed at the upper end of the creek adjacent to a paved hike-and-bike path west of the Tobin Park Trailhead and near the IH Loop 410 bridge over Salado Creek. BHTs 2 and 3 were excavated in a forested area at lower elevations approximately 100.0 and 150.0 meters (328.0 and 492.0 feet), respectively, south of BHT 1. All trenches exposed 2.0-meter- (6.6-foot-) deep sediment profiles. Limestone bedrock was encountered at the bottom of BHTs 2 and 3 (see Appendix B).

The stratigraphy encountered in the trench profiles was quite complex, representing as many as six individual strata consisting of a series of high-energy flood chute, overbank flood deposits, and floodplain muds. Individual profile descriptions and photographs are presented in Appendix B, but overall the high-energy deposits consist of matrix-supported, poorly sorted limestone gravels with an occasional battered chert flake or cobble observed in profiles and in screened sediments. The fine matrix ranges from very dark grayish-brown (10YR 3/2) to brown (10YR 4/3) loamy to sandy clays. Soil structure was largely compact with most pores being plugged with elluviated calcium carbonate ($CaCO_3$) expressed in the form of fine threads. BHT 3 presented somewhat of an exception in comparison with the other two trenches, as it was placed closer to the modern channel and consisted almost exclusively of fine-grained floodplain muds with only occasional small gravels dispersed throughout the profile. In almost all cases, bedding planes were largely preserved, indicating a relatively recent depositional history. A few isolated

pieces of chert debitage were observed in the trench profiles and in screened sediments. However, as these artifacts were found in gravel deposits and exhibited evidence of battering and polishing, they are considered tertiary deposits that were likely transported from some distance upstream. Given the relatively low elevation of the trenches, the preserved bedding planes, weak soil development, stratigraphy that correlates well with the upper strata defined during prior geoarcheological investigations (Munoz et al. 2011), and the lack of primary archeological deposits, it would appear that the proposed sewer line alignment will be installed in floodplain deposits of modern age.

A fourth backhoe trench was originally proposed at the location of a proposed bore/tunnel box off the northern side of Ira Lee Road at the southern end of the segment of proposed sewer line ROW that traverses the Salado Creek floodplain. However, this proposed trench location fell within an active construction zone associated with a Bexar County bridge repair project and was not accessible for trenching in connection with the current project. Extensive open excavations associated with the Bexar County project were observed in the vicinity of the proposed bore/tunnel box that revealed deep deposits of reddish-brown, gravelly, alluvial sediments (Figures 18 to 21). These reddish-brown alluvial deposits appear to correlate with the "red alluvial gravels" originally identified by Shuetz (1966) and further discussed by Munoz et al. (2011), which have been determined to contain Archaic-age archeological deposits on the nearby Granberg site (41BX17/271). Horizon and OHP personnel inspected these exposed soil profiles on October 24, 2017, and no cultural resources were observed within them. As such, attempts to excavate the fourth backhoe trench at this location were abandoned.

Figure 18. Sewer Manhole under Construction along Ira Lee Road (Facing West)

Figure 19. Profile 1 of Alluvial Gravels at Active Construction Site (Facing North)

Figure 20. Profile 2 of Alluvial Gravels at Active Construction Site (Facing South)

Figure 21. Profile 3 of Alluvial Gravels at Active Construction Site (Facing South)

7.0 SUMMARY AND RECOMMENDATIONS

7.1 CONCEPTUAL FRAMEWORK

The archeological investigations documented in this report were undertaken with 3 primary management goals in mind:

- Locate all historic and prehistoric archeological resources that occur within the designated survey area.
- Evaluate the significance of these resources regarding their potential for designation as SALs.
- Formulate recommendations for the treatment of these resources based on their SAL evaluations.

At the survey level of investigation, the principal research objective is to inventory the cultural resources within the APE and to make preliminary determinations of whether or not the resources meet one or more of the pre-defined eligibility criteria set forth in the state and/or federal codes, as appropriate. Usually, management decisions regarding archeological properties are a function of the potential importance of the sites in addressing defined research needs, though historic-age sites may also be evaluated in terms of their association with important historic events and/or personages. Under the Antiquities Code of Texas, archeological resources are evaluated according to criteria established to determine the significance of archeological resources for designation as SALs.

Analyses of the limited data obtained at the survey level are rarely sufficient to contribute in a meaningful manner to defined research issues. The objective is rather to determine which archeological sites could be most profitably investigated further in pursuance of regional, methodological, or theoretical research questions. Therefore, adequate information on site function, context, and chronological placement from archeological and, if appropriate, historical perspectives is essential for archeological evaluations. Because research questions vary as a function of geography and temporal period, determination of the site context and chronological placement of cultural properties is a particularly important objective during the inventory process.

7.2 ELIGIBILITY CRITERIA FOR LISTING AS A STATE ANTIQUITIES LANDMARK

The criteria for determining the eligibility of a prehistoric or historic cultural property for designation as an SAL are presented in Chapter 191, Subchapter D, Section 191.092 of the Antiquities Code of Texas, which states that SALs include:

> Sites, objects, buildings, artifacts, implements, and locations of historical, archeological, scientific, or educational interest including those pertaining to prehistoric and historical American Indians or aboriginal campsites, dwellings, and habitation sites, their artifacts and implements of culture, as well as archeological sites of every character that are located in, on, or under the surface of any land belonging to the State of Texas or to any county, city, or political subdivision of the state are state antiquities landmarks and are eligible for designation.

For the purposes of assessing the eligibility of a historic property for designation as an SAL, a historic site, structure, or building has historical interest if the site, structure, or building:

1. [W]as the site of an event that has significance in the history of the United States or the State of Texas;
2. [W]as significantly associated with the life of a famous person;
3. [W]as significantly associated with an event that symbolizes an important principle or ideal;
4. [R]epresents a distinctive architectural type and has value as an example of a period, style, or construction technique; or,
5. [I]s important as part of the heritage of a religious organization, ethic group, or local society.

The Antiquities Code of Texas establishes the THC as the legal custodian of all cultural resources, historic and prehistoric, within the public domain of the State of Texas. Under Part II of Title 13 of the Texas Administrative Code (13 TAC 26), the THC may designate a historic building, structure, cultural landscape, or non-archeological site, object, or district as an SAL if it meets at least on one of following criteria:

A. [T]he property is associated with events that have made a significant contribution to the broad patterns of our history, including importance to a particular cultural or ethnic group;

B. [T]he property is associated with the lives of persons significant in our past;

C. [T]he property embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction;

D. [T]he property has yielded, or may be likely to yield, information important in Texas culture or history.

Furthermore, the THC may designate an archeological site as an SAL if the site meets one or more of the following criteria:

1. [T]he site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information;
2. [T]he site's archeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interests of the site;
3. [T]he site possesses unique or rare attributes concerning Texas prehistory and/or history;
4. [T]he study of the site offers the opportunity to test theories and methods of preservation, thereby contributing to new scientific knowledge; or,
5. [T]he high likelihood that vandalism and relic collecting has occurred or could occur, and official landmark designation is needed to ensure maximum legal protection, or alternatively further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected.

7.3 SUMMARY OF INVENTORY RESULTS

Horizon's archeologists traversed the project area and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. In addition, Horizon excavated 68 shovel tests and three backhoe trenches, thereby exceeding the TSMASS for a project area of this length. The pedestrian survey with shovel testing revealed typically shallow, heavily disturbed deposits of clay and clay loam sediments, and impenetrable gravel lenses were encountered in many shovel tests at depths ranging from 10.0 to 40.0 centimeters (3.9 to 12.2 inches) below surface. Supplemental backhoe trenching conducted on the modern, active floodplain of Salado Creek revealed a series of high-energy flood chute, overbank flood, and floodplain mud deposits consisting of poorly supported limestone gravels. Occasional battered chert flakes or cobbles were observed in the trench wall profiles or in screened sediment samples of excavated backfill, but no intact cultural features or archeological deposits were observed. Bedrock was encountered in two of the three trenches (see Appendix B).

Modern trash and construction debris were abundant throughout the project area, and sediments observed in most shovel tests were disturbed and contained road base gravels and/or modern trash. The southern end of the project area, located adjacent to Holbrook Road, passes within the designated boundaries of a previously recorded prehistoric archeological site, 41BX294, and the Salado Battlefield and Archeological Site National Register Historic District. Shovel testing within this portion of the project area revealed disturbed sediments mixed with modern debris, and no cultural resources or intact archeological deposits were observed within the boundaries of these two known cultural resources. The central portion of the project area, located adjacent to Ira Lee Road, passes within the boundary of a previously recorded multiple-component prehistoric and historic-age archeological site, 41BX474. One shovel test excavated on site 41BX474 contained several glass shards and a whiteware ceramic sherd of unknown age (modern or historic-age) and one aboriginal chert flake in surficial, disturbed sediments immediately adjacent to the Ira Lee Road pavement. Site 41BX474 has been largely destroyed

as a result of ongoing urban development. An archeological significance testing project was conducted on site 41BX474 by UTSA's CAR in 2014 that resulted in the determination that the site is ineligible for inclusion in the NRHP (Muñoz 2014). Horizon concurs with the previous significance assessment for site 41BX474.

7.4 MANAGEMENT RECOMMENDATIONS

Based on the results of the survey-level investigations documented in this report, no potentially significant cultural resources would be affected by the proposed undertaking. In accordance with 36 CFR 800.4, Horizon has made a reasonable and good-faith effort to identify historic properties within the project area. No cultural resources were identified that meet the criteria for designation as SALs according to 13 TAC 26. Horizon recommends a finding of "no historic properties affected," and no further archeological work is recommended in connection with the proposed undertaking. However, human burials, both prehistoric and historic, are protected under the Texas Health and Safety Code. In the event that any human remains or burial objects are inadvertently discovered at any point during construction, use, or ongoing maintenance in the project area, even in previously surveyed areas, all work should cease immediately in the vicinity of the inadvertent discovery, and the OHP/THC should be notified immediately.

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APPENDIX A:

Shovel Test Data

Table A-1. Shovel Test Summary Data

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
JL1	556411	3262180	0-30+	Disturbed rocky very dark gray brown/clay loam	None
JL2	556396	3262209	0-30+	Disturbed rocky very dark gray brown clay loam	None
JL3	556364	3262271	0-30	Rocky grayish-brown silty clay loam	None
			30-40+	Mottled dark orange/yellowish-brown compact clay with decaying caliche	None
JL4	556357	3262305	0-20	Gravelly dark grayish-brown sandy clay loam	None
			20+	Limestone gravels	None
JL5	556326	3262360	0-20	Gravelly dark grayish-brown sandy clay loam	None
			20+	Limestone gravels	None
JL6	556291	3262417	0-30	Gravelly dark grayish-brown sandy clay loam	None
			30+	Limestone gravels	None
JL7	556261	3262470	0-15	Gravelly dark grayish-brown sandy loam	None
			15+	Limestone gravels	None
JL8	556231	3262567	0-30	Gravelly dark grayish-brown sandy loam	None
			30+	Limestone gravels	None
JL9	556217	3262666	0-15	Gravelly dark brown sandy loam	None
			15+	Limestone gravels	None
JL10	556197	3262765	0-5+	Limestone gravels	None
JL11	556170	3262870	0-25	Gravelly dark brown sandy loam	None
			25-35+	Limestone gravels	None
JL12	556167	3262980	0-5+	Limestone gravels	None
JL13	556157	3263088	0-5+	Limestone gravels	None
JL14	556132	3263617	0-10+	Disturbed brown sand	None
JL15	556122	3263648	0-40	Dark grayish-brown silty clay loam	None
			40+	Very dense grayish-brown hydric clay	None
JL16	556106	3263690	0-30	Dark gray silty clay loam	None
			30-40+	Very dark grayish-brown hydric clay	None
JL17	555764	3264721	0-5	Gravelly dark brown sandy loam	None
			5+	Limestone gravels	None

Table A-1. Shovel Test Summary Data (cont.)

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
JL18	555801	3264815	0-5	Gravelly dark brown sandy loam	None
			5+	Limestone gravels	None
JL19	555368	3265225	0-5	Compact rocky dark brown sandy clay loam	None
			5+	Limestone gravels	None
JL20	555375	3265239	0-15	Compact rocky very dark brown loamy clay	None
			15+	Limestone gravels	None
JL21	555327	3265129	0-15	Compact rocky very dark brown loamy clay	None
			15+	Limestone gravels	None
JL22	555394	3264955	0-10+	Heavily deflated dark brown rocky sandy loam	None
JL23	555487	3264900	0-10+	Heavily deflated dark brown rocky sandy loam	None
JL24	555526	3264875	0-10	Light brown gravelly sandy loam	None
			10-25	Dark brown sandy clay loam	None
			25-45+	Black gravelly dense loamy clay	None
JL25	555292	3265358	0-30	Gravelly dark brown sandy clay loam	None
			30+	Limestone gravels	None
JL26	555246	3265449	0-10	Gravelly dark brown sandy clay loam	None
			10+	Limestone gravels	None
JL27	555175	3265937	0-10+	Gravelly dark brown sandy clay loam	None
JL28	555229	3266404	0-5	Rocky light grayish-brown sandy loam	None
			5+	Limestone gravels	None
JL29	555211	3266442	0-30	Rocky dark brown sandy loam	None
			30+	Limestone gravels	None
JW1	556431	3262159	0-20	Very dark gray brown rocky clay	None
			20+	Limestone gravels	None
JW2	556414	3262197	0-15	Very dark gray brown rocky clay	None
			15+	Limestone gravels	None
JW3	556387	3262247	0-20	Very dark gray brown rocky clay	None
			20+	Limestone gravels	None

Table A-1. Shovel Test Summary Data (cont.)

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
JW4	556369	3262281	0-20	Very dark gray brown rocky clay	None
			20+	Limestone gravels	None
JW5	556341	3262330	0-30	Grayish-brown silty clay	None
			30+	Limestone gravels	None
JW6	556310	3262384	0-20	Brown rocky sand	None
			20+	Dark gray rocky clay	None
JW7	556280	3262432	0-35	Grayish-brown silty clay	None
			35+	Limestone gravels	None
JW8	556143	3263503	0-5+	Disturbed brown silty loam	None
JW9	556149	3263411	0-10	Disturbed gravels and asphalt	None
			10+	Dark brown rocky clay	None
JW10	556136	3263307	0-20+	Dark brown rocky clay	None
JW11	556140	3263558	0-10+	Dark brown rocky clay	None
JW12	556128	3263580	0-30+	Grayish-brown silty clay	None
JW13	556120	3263636	0-80+	Grayish-brown silty clay	None
JW14	556108	3263705	0-40+	Dense black clay	None
JW15	555655	3264775	0-20+	Grayish-brown silty clay	None
JW16	555405	3265234	0-20	Rocky black clay	None
			20+	Limestone gravels	None
JW17	555324	3265229	0-10	Rocky black clay	None
			10+	Limestone gravels	None
JW18	555328	3265025	0-10	Rocky black clay	None
			10+	Limestone gravels	None
JW19	555545	3264846	0-40	Very dark brown rocky clay loam	None
			40+	Limestone gravels	None
JW20	555525	3264864	0-5	Grayish-brown silty clay	None
			5+	Limestone gravels	None
JW21	555224	3265521	0-10	Grayish-brown silty clay	None
			10+	Limestone gravels	None
JW22	555197	3266428	0-5+	Limestone gravels	None
SM1	556102	3263777	0-10	Dark brown gravelly clay	None
SM2	556105	3263877	0-30	Dark brown gravelly clay	None

Table A-1. Shovel Test Summary Data (cont.)

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
SM3	556095	3263996	0-40	Yellowish-brown compact gravelly clay	None
SM4	556085	3264097	0-10	Compact dark brown gravelly clay	None
SM5	556050	3264195	0-30	Compact dark brown gravelly clay	None
SM6	556006	3264294	0-30	Compact dark brown gravelly clay	None
SM7	555949	3264431	0-15	Compact dark brown gravelly clay	None
SM8	555912	3264542	0-10	Compact dark brown gravelly clay	None
SM9	555864	3264629	0-30	Compact dark brown gravelly clay with red mottles	None
SM10	555777	3264689	0-10	Dark brown gravelly clay	None
SM11	555688	3264746	0-15	Dark brown gravelly clay	None
SM12	555389	3265242	0-15	Dark gray gravelly clay	None
SM13	555328	3265103	0-45	Dark brown sandy clay with $CaCO_3$ inclusions	None
SM14	555426	3264931	0-35	Dark brown sandy clay loam (disturbed; adjacent to Ira Lee Road)	2 clear glass shards, 1 brown chert flake, 1 whiteware sherd, 1 brown glass shard
			35-40	Dark brown gravelly sandy clay	None
SM15	555218	3265881	0-10	Dark brown gravelly sandy clay	None
SM16	555244	3266321	0-15	Dark brown gravelly sandy clay	None
SM17	555228	3266304	0-5	Dark brown gravelly sandy clay	None

[1] All UTM coordinates are located in Zone 14 and utilize the North American Datum of 1983 (NAD 83).

$CaCO_3$ = Calcium carbonate

cmbs = Centimeters below surface

ST = Shovel test

UTM = Universal Transverse Mercator

APPENDIX B:

Backhoe Trench Data

Table B-1. Backhoe Trench 1 (BHT-1)

Trench No.: 1
UTM Coordinates[1]: 555322 E, 3265238 N
Comment: Trench was oriented east to west and measured 4.3 meters (14.0 feet) in length. Trench was excavated off the southern side of a paved hike-and-bike trail that leads westward from the Tobin Park Trailhead parking lot near the Interstate Loop 410 eastbound frontage road bridge over Salado Creek.

Zone	Depth (cmbs)	Description	Comments
III	0-50	Very dark grayish-brown (10YR 3/2) gravelly clay loam; poorly sorted, subangular and tabular gravel clasts; common fine roots; compact; $CaCO_3$ threads; C horizon	Modern fill; no cultural materials
II	50-100	Dark grayish brown (10YR 4/2) loamy clay; few, fine, well sorted gravel lenses; many fine slickensides, fine to medium subangular; $CaCO_3$ threads; 2C horizon	Modern flood chute deposits; one large, edge-damaged, highly polished cortical flake
I	100-200	Brown (10YR 4/3) gravelly clay loam with medium-fine gravels; occasional fine gravel lenses; abundant $CaCO_3$ isopachous rinds on bottom of gravel clasts; 3C horizon	Modern overbank flood deposits; one large, edge-damaged, highly polished blade

$CaCO_3$ = Calcium carbonate
cmbs = centimeters below surface

Figure B-1. Photographic Overview of BHT-1 (Facing West)

Figure B-2. Photographic Profile of BHT-1 (Facing Southwest)

Table B-2. Backhoe Trench 2 (BHT-2)

Trench No.: 2
UTM Coordinates[1]: 555324 E, 3265137 N
Comment: Trench was oriented east to west and measured 4.3 meters (14.0 feet) in length. Trench was excavated in a forested area on the Salado Creek floodplain approximately 15.0 meters (49.2 feet) northeast of the creek channel.

Zone	Depth (cmbs)[1]	Description	Artifacts
V	0-10, 0-80	Very dark grayish-brown (10YR 3/2) loamy clay with occasional fine-medium gravels; $CaCO_3$ threads; fine angular blocky peds; common fine roots; few lenses of dark yellowish-brown (10YR 4/4) sandy loam; A horizon	Modern overbank flood deposits
IV	10-35, 80-100	Very dark grayish-brown (10YR 3/2) gravel-supported loamy clay; poorly sorted gravels; BC horizon	Modern flood chute deposits
III	35-70, 100-130	Dark yellowish-brown (10YR 4/4) gravel-supported loamy clay; poorly sorted gravels; C horizon	Modern flood chute deposits
II	70-130, 130-155	Dark grayish-brown (10YR 4/2) loamy clay; poorly sorted matrix-supported gravels; compact; C horizon	Modern flood chute deposits
I	130-185, 155-185	Brown (10YR 4/3) gravel-supported loamy clay; gravels poorly sorted; C horizon	Modern floodplain chute deposits

[1] Depths represent tops and bottoms of sloping strata at opposite ends of trench.

$CaCO_3$ = Calcium carbonate

cmbs = centimeters below surface

Figure B-3. Photographic Overview of BHT-2 (Facing West)

Figure B-4. Photographic Profile of BHT-2 (Facing Northeast)

Table B-3. Backhoe Trench 3 (BHT-3)

Trench No.: 3
UTM Coordinates[1]: 555322 E, 3265100 N
Comment: Trench was oriented east to west and measured 4.3 meters (14.0 feet) in length. Trench was excavated in a forested area on the Salado Creek floodplain approximately 65.0 meters (213.2 feet) northeast of the creek channel.

Zone	Depth (cmbs)	Description	Artifacts
VI	0-25	Very dark grayish brown (10YR 3/2) clay loam; many fine roots; fine-medium subangular blocky to compact; few gravels; A horizon	Modern floodplain muds; likely infilled channel; bovine metatarsus fragment found in root zone
V	25-50	Brown (10YR 4/3) clay loam with $CaCO_3$ threads plugging pores; compact; AB horizon	Modern floodplain muds; likely infilled channel
IV	50-70	Dark grayish-brown (10YR 3/2) clay loam; pores plugged with $CaCO_3$, many carbonate threads; compact; C horizon	Modern floodplain muds; likely infilled channel
III	70-125	Brown (10YR 4/3) loamy clay; pores plugged with many $CaCO_3$ threads; compact; C horizon	Modern floodplain muds; likely infilled channel
II	125-145	Matrix-supported gravel lens; $CaCO_3$ on bottom of gravels; gravels exhibit FeMn staining	Modern flood chute deposit
I	145-200	Dark gray (10YR 3/5) clay loam; many $CaCO_3$ threads plugged pores; C horizon	Modern floodplain muds; likely infilled channel

$CaCO_3$ = Calcium carbonate
cmbs = centimeters below surface
FeMn = Ferromanganese

Figure B-5. Photographic Overview of BHT-3 (Facing West)

Figure B-6. Close-up View of BHT-3 (Facing West)