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Intensive Cultural Resources Survey of the 6.6-acre Haden Road Tract, Cloverleaf, Harris County, Texas

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Texas Antiquities Permit No. 8115
HJN 170145 AR

Prepared for:

Harris County WCID No. 36
Houston, Texas

Prepared by:

Horizon Environmental Services, Inc.
Austin, Texas

July 2017

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MANAGEMENT SUMMARY

Horizon Environmental Services, Inc. (Horizon) was selected by Berg-Oliver Associates, Inc. (Berg Oliver) on behalf of Harris County Water Control Improvement District (WCID) No. 36 to conduct a cultural resources inventory survey and assessment for the proposed development of a wastewater treatment facility on the approximately 2.6-hectare (6.6-acre) Haden Road tract in Cloverleaf, Harris County, Texas. The currently undeveloped tract is located southeast of the intersection of Interstate Highway (IH) 10 and Haden Road. An unnamed tributary of Greens Bayou bisects the tract east to west. Based on historic-age aerials and topographic maps, no known development has occurred on the 2.7-hectare (6.6-acre) tract.

The proposed project is being sponsored by Harris County WCID No. 36. Funding is being provided through a community development block grant (CDBG) contributed by the Texas General Land Office (GLO). Because the proposed wastewater treatment facility is being sponsored by a public utility and subsidized by a political subdivision of the state of Texas, the 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 are required for the proposed undertaking. However, should any impacts occur to the unnamed tributary of Greens Bayou that flows through the proposed project area, permitting would be required by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). In this case, any portions of the overall project area that fall under the federal permit would also fall under the jurisdiction of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. 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.

On July 26, 2017, Horizon staff archeologist Briana Nicole Smith, 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 archeologist traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 2 shovel tests per acre for tracts between 3.0 and 10.0 acres in size. As such, a minimum of 13 shovel tests would be required within the 2.7-hectare (6.6-acre) project area. Horizon excavated a total of 15 shovel tests, thereby exceeding

the TSMASS for a project area of this size. The survey was conducted under Texas Antiquities Permit No. 8115.

Shovel testing revealed heavily disturbed artificial deposits of mottled sandy clay and dense clay sediments overlying the native clayey fluviomarine soils at depths of 20.0 to 40.0 centimeters (7.8 to 15.7 inches) below surface. Shovel tests were placed along both banks of the unnamed tributary of Greens Bayou. Ground surface visibility was low to moderate due to dense, ankle- to knee-high wild grasses and weeds, which cover the majority of the project area. The southwestern portion of the tract had less vegetation, allowing for better visibility of the heavily disturbed ground surface. Modern trash was abundant throughout the project area, which appears to be actively used as a dump site, and several shovel tests contained modern trash within the upper 20.0 centimeters. (7.8 inches). The majority of modern trash appears to have been dumped within the tree line that follows the southern boundary of the project area. The northernmost portion of the project area is disturbed from the construction of multiple storm water manholes.

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 Texas Historical Commission (THC) should be notified immediately.

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1.0 INTRODUCTION

Horizon Environmental Services, Inc. (Horizon) was selected by Berg-Oliver Associates, Inc. (Berg Oliver) on behalf of Harris County Water Control Improvement District (WCID) No. 36 to conduct a cultural resources inventory survey and assessment for the proposed development of a wastewater treatment facility on the approximately 2.6-hectare (6.6-acre) Haden Road tract in Cloverleaf, Harris County, Texas. The currently undeveloped tract is located southeast of the intersection of Interstate Highway (IH) 10 and Haden Road. An unnamed tributary of Greens Bayou bisects the tract east to west. Based on historic-age aerials and topographic maps, no known development has occurred on the 2.7-hectare (6.6-acre) tract (Figures 1 to 2).

The proposed project is being sponsored by Harris County WCID No. 36. Funding is being provided through a community development block grant (CDBG) contributed by the Texas General Land Office (GLO). Because the proposed wastewater treatment facility is being sponsored by a public utility and subsidized by a political subdivision of the state of Texas, the 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 are required for the proposed undertaking. However, should any impacts occur to the unnamed tributary of Greens Bayou that flows through the proposed project area, permitting would be required by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). In this case, any portions of the overall project area that fall under the federal permit would also fall under the jurisdiction of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. 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.

On July 26, 2017, Horizon staff archeologist Briana Nicole Smith, 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. 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 Texas Historical Commission's (THC) Rules of Practice and Procedure, Chapter 26, Section 27, and the Council of Texas Archeologists (CTA) Guidelines for Cultural Resources Management Reports.

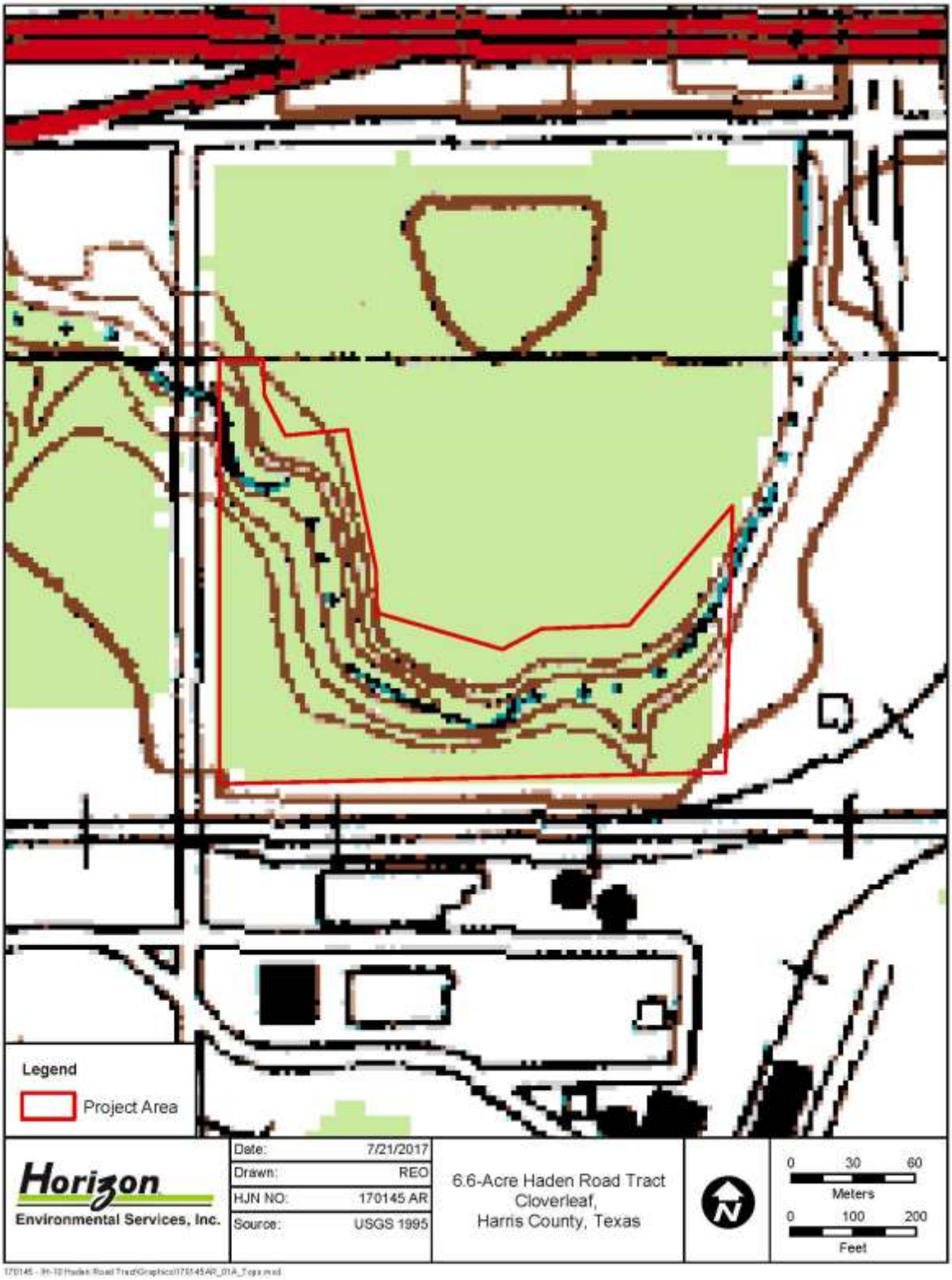

Figure 1. Location of Project Area on USGS Topographic Map

Figure 2. Location of Project Area on Aerial Photograph

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, and Appendix A summarizes shovel test data.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSIOGRAPHY AND HYDROLOGY

The project site is located approximately 2.3 kilometers (km) (1.4 miles) north of Buffalo Bayou in southwestern Harris County, Texas. Harris County is situated on the Gulf Coastal Plain in southeastern Texas, and the project site is located about 37.0 km (23.0 miles) west of Trinity Bay, an inlet of the Gulf of Mexico formed by the confluence of Buffalo Bayou and the San Jacinto River between Houston and Baytown, Texas. The Gulf of Mexico represents a structural basin formed by lithosphere deformation. The Texas 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 Houston area is underlain by rocks and unconsolidated sediments that are quite young in a geological sense, ranging from modern to Miocene in age. These consist predominantly of a series of fluviodeltaic bodies 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 sea level low stand. The oldest rocks in this fill are of Late Cretaceous age. As a result of the geometry of basin filling, successively younger rock units crop out in subparallel bands from the basin margin toward the modern coastline.

The project site is situated on a low-lying coastal depression within a heavily developed area. An unnamed tributary of Greens Bayou traverses the tract and discharges into Greens Bayou approximately 0.7 km (0.4 miles) to the west. Greens Bayou flows southwestward into Buffalo Bayou, which flows generally eastward and discharges into the Gulf of Mexico near Baytown, Texas. Elevations across the project site are relatively flat, averaging approximately 5.0 meters (16.4 feet) above mean sea level (amsl).

2.2 GEOLOGY AND GEOMORPHOLOGY

The project site is underlain by the Beaumont Formation (Fisher 1982). The Beaumont, or Prairie, terrace is the youngest continuous coastwise terrace fronting the modern Gulf (Abbott 2001). The Beaumont Formation consists of clay, silt, and fine sand arranged in spatial patterns that reflect the distribution of fluvial (e.g., channel, point bar, levee, and backswamp) and

mudflat/coastal marsh facies (Van Siclen 1985). Sandy deposits associated with littoral facies are also frequently considered part of the Beaumont. Many investigators (cf. DuBar et al. 1991; Fisk 1938, 1940) have correlated the Beaumont terrace with the Sangamon Interglacial (ca. 130 to 75 thousand years ago [kya]), although age estimates range from Middle Wisconsinan (Alford and Holmes 1985) to 100 to 600 kya (Blum and Price 1994). While debate about the temporal affiliations of and correlations among the deposits that underlie the major coastline terraces remain active, they are of little direct geoarcheological relevance because virtually all investigators agree that these deposits considerably predate the earliest demonstrated dates of human occupation in North America.

The tract is underlain by the Blacliff-Urban land complex, 0 to 1% slopes (Table 1; Figure 3) (NRCS 2017). These soils typically consist of clayey fluviomarine deposits with limited areas of mixed artificial fills associated with the urban land component. No Holocene-age alluvial sediments are mapped within the tract.

In southeast Texas, aboriginal archeological sites are commonly encountered in upland settings and adjacent to major streams and rivers, and historic-age sites may occur in virtually any physiographic setting. Other things being equal, the physiographic setting of the project area on a coastal flat adjacent to a prominent stream system would suggest that the survey area possesses at least moderate potential for archeological resources. The lack of standing structures within the project area suggests a reduced potential for historic-age architectural and archeological resources.

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). While the paleoclimatic history of the coastal region remains unclear, Bryant and Holloway (1985) present a sequence of climatic change for nearby east-central Texas that includes three separate climatic periods—the Wisconsin Full Glacial Period (22,500 to 14,000 B.P.), the Late Glacial Period (14,000 to 10,000 B.P.), and the Post-Glacial Period (10,000 B.P. to present). Evidence

Table 1. Summary of Mapped Soils within Project Area

NRCS Soil Code	Soil Name	Parent Material	Typical Profile (inches)
BadA	Bacliff-Urban land complex, 0 to 1% slopes	Bacliff Clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock Urban land Mixed artificial fills	Bacliff 0-9: Clay 9-35: Clay 35-48: Clay 48-80: Clay Urban land Variable

Source: NRCS 2017

NRCS = Natural Resources Conservation Service

Figure 3. Distribution of Soil Types Mapped within Project Area

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. 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 6000 to 5000 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.

The modern climate of the upper Texas coast, including the region surrounding Houston, is classified as subtropical humid (Abbott 2001; Larkin and Bomar 1983), forming a transitional zone between the humid southeastern US and the semiarid to arid west. The climate reflects the influences of latitude, low elevation, and proximity to the Gulf of Mexico, which combine with the urban heat island formed by the tremendous concentration of asphalt and concrete to give the Houston area a notorious modern climate that is oppressively warm and moist throughout much of the year. As a result of proximity to the Gulf and the abundance of surface water, humidity in the early morning can approach 100% even on cloudless summer days, and it often exceeds 50% even on the warmest afternoons. Largely as a consequence of the relatively high humidity characteristic of the region, temperature patterns exhibit a moderate annual range and a modest diurnal range that increases slightly with distance from the coast. Average monthly high temperature ranges from a low of 17 to 19°Celcius (°C) (59 to 63°Fahrenheit [°F]) in January to a high of 38 to 40°C (89 to 96°F) in August. Average monthly lows range from 4 to 9°C (38 to 47°F) in January to 25 to 29°C (72 to 79°F) in July and August. Annually, average low temperatures range from 15 to 21°C (56 to 65°F), and average high temperatures range from 27 to 29°C (75 to 79°F) (Abbott 2001; Larkin and Bomar 1983).

The Houston region experiences 2 precipitation peaks throughout the year (Abbott 2001; Wheeler 1976). The first occurs in the late spring (i.e., May to June) due to the passage of infrequent cold fronts that spawn chains of powerful frontal thunderstorms. The second occurs in the late summer to early autumn (i.e., August to September) due to the incidence of tropical storms and hurricanes from the Atlantic and, occasionally, Pacific oceans. In contrast, winter and early spring are relatively dry, and high summer rainfall is dominated by convectional thunderstorms that are relatively brief and localized, albeit frequently intense. Average annual precipitation varies from a low of approximately 101.6 centimeters (40.0 inches) to a high of more than 132.1 centimeters (52.0 inches). Average monthly precipitation varies from less than 5.1 to 7.centimeters (2.0 to 3.0 inches) in March to more than 19.1 centimeters (7.5 inches) occurring locally on the coast during September. Almost all of the measurable precipitation falls as rain—snowfall is extremely rare, occurring in measurable amounts in only 1 in 10 years.

2.4 FLORA AND FAUNA

Harris County is situated near the southeastern edge of the Texas biotic province (Blair 1950), an intermediate zone between the forests of the Austroriparian and Carolinian provinces and the grasslands of the Kansas, Balconian, and Tamaulipan provinces. Some species reach the limits of their ecological range within the Texas province. McMahon et al. (1984) further define four broad communities that characterize that portion of the Texas biotic province that lies on the Gulf Coastal Plain: (1) coastal marsh/barrier island, (2) coastal prairie, (3) coastal gallery forest, and (4) pine-hardwood forest (cf. Abbott 2001:24-26).

The coastal marsh/barrier island category includes well-drained, sandy, coastal environments and saline and freshwater wetlands in the coastal zone (Abbott 2001:24). Marsh vegetation is typical of areas that are seasonally wet and have substrates composed primarily of sands and silts, clays, or organic decomposition products. Vegetation assemblages are strongly controlled by texture, salinity, frequency and duration of inundation, and depth of the seasonal water table. Sandy, relatively well-drained, freshwater environments are typically dominated by little bluestem, switchgrass, Florida paspalum, and brownseed paspalum. Wetter environments are often dominated by marshhay cordgrass, seashore saltgrass, saggitaria, bulrushes, smooth cordgrass, seashore paspalum, seashore dropseed, olney bulrush, saltmarsh bulrush, saltmarsh aster, longtom, sprangletop, burhead, arrowhead, coastal waterhyssop, needlegrass rush, and other sedges and rushes. Slightly higher, better-drained environments are characterized by such taxa as seashore saltgrass, seashore paspalum, gulfdune paspalum, shoregrass, gulf cordgrass, red lovegrass, bushy sea-oxey, and glasswort. A variety of fauna are characteristic of the shore zone. Important larger taxa include raccoon, nutria, alligators, turtles, swamp rabbit, and many birds, including ducks, geese, herons, and many smaller species. Aquatic taxa, including a wealth of fish and shellfish adapted to brackish to hypersaline conditions, are also important in the coastal zone.

The coastal prairie category consists primarily of grasses with minor amounts of forbs and woody plants in areas that are not saturated on a seasonal basis (Abbott 2001:24-26). This community is characteristic of upland areas and grades into the pine-hardwood forest to the north and east and into the coastal marsh/barrier island to the south. A wide variety of grasses are found in the prairie environments, but the principal taxa include big bluestem, little bluestem, indiangrass, eastern grama, switchgrass, brownseed paspalum, sideoats grama, silver bluestem, buffalograss, threeawn, and Texas wintergrass. Common forbs include Maximilian sunflower, Engelman daisy, blacksalmon, penstemon, dotted gayfeather, bundleflower, yellow neptunia, snoutbean, prairie clover, tickclover, wildbean, western indigo, paintbrush, bluebonnet, ragweed, croton, milkweed, vetch, verbena, and winecup. Woody plants occurring in the coastal prairie include mesquite, honey locust, huisache, eastern baccharis, sesbania, live oak, elm, hackberry, bumelia, and coralberry. The frequency of trees increases dramatically as the coastal prairie grades into the pine-hardwood forest, forming an open woodland environment with common stands of hardwood trees and occasional pines. The coastal prairie is home to a diverse fauna, including coyote, white-tailed deer, skunks, cottontail rabbit, many small rodents, amphibians, reptiles, and a variety of permanent and migratory birds. Bison and pronghorn were also present at various times in the past.

The coastal gallery forest consists of diverse, principally deciduous trees and associated understory in floodplains and streams that traverse the outer coastal plain (Abbott 2001:26). Important taxa include water oak, pecan, poplar, American elm, cedar elm, sugarberry, ash, loblolly pine, post oak, cherrybark oak, mulberry, swamp chestnut oak, willow oak, sweetgum, hawthorn, dogwood, hickory, bois d'arc, sassafras cypress, willow, cottonwood, and sumac. Shrubs and vines such as mustang grape, greenbriar, yaupon, coralberry, possumhaw, elderberry, honeysuckle, dewberry, and blackberry are common in the understory, as are grasses such as little bluestem, big bluestem, and indiangrass. The fauna of the gallery forest include white-tailed deer, opossum, raccoon, squirrel, turkey, a variety of small mammals and rodents, turtles, snakes, and many birds. Black bear was also present at various times in the past, and a number of fish and a few varieties of shellfish are present in the streams.

The pine-hardwood forest is characterized by a mix of coniferous and deciduous trees, including longleaf pine, shortleaf pine, loblolly pine, post oak, red oak, white oak, blackjack oak, willow oak, and live oak (Abbott 2001:26). Riparian environments often support larger deciduous trees like pecan, cottonwood, hickory, beech, and American elm. Understory vegetation varies from relatively open to quite dense, and consists of shrubs, vines, forbs, and young trees. Common shrubs include acacia, yaupon, mayhaw, wild persimmon, myrtle, greenbriar, Virginia creeper, blackberry, dewberry, trumpet vine, gourd, and poison ivy. A variety of fauna is also present, including white-tailed deer, opossum, raccoon, squirrel, rabbit, mink, skunk, various small rodents, turtles, reptiles, and many different birds. Black bear was also present at times in the past, and bison and pronghorn were occasionally present in the transition zone to the coastal prairie environment.

3.0 CULTURAL BACKGROUND

The project site is located within the Southeast Texas Archeological Region, a 21-county area extending from the Colorado River on the west to the Sabine River on the east and measuring about 199.5 km (124.0 miles) inland from the Gulf of Mexico coastline. Much of the archeological record in Southeast Texas represents an interface between the Southern Great Plains and the Southeastern Woodlands (Aten 1983, 1984; Patterson 1995; Story 1990). Further distinctions are often made between the inland and coastal margin subregions of Southeast Texas. These two subregions are somewhat culturally distinct, and the inland subregion has a much longer chronological record. The coastal margin of Southeast Texas comprises a zone about 25.7 km (16.0 miles) inland from the coast that covers the area influenced by Gulf tidal flows on the salinity of streams, lakes, and bays. Considerable ecological variability characterizes this subregion, including woodlands, coastal prairie, lakes, wetlands, marine coastline, and barrier islands. The inland subregion also encompasses considerable ecological diversity, including mixed woodlands, coastal prairies, and dense piney woods.

The human inhabitants of Southeast Texas practiced a generally nomadic hunting and gathering lifestyle throughout all of prehistory. While many of the same labels are used to denote Southeast Texas cultural/chronological periods, the timeframe and cultural characteristics of Southeast Texas culture periods are often different than in neighboring regions. For instance, the Archaic and Late Prehistoric time periods are different in Central and Southeast Texas, and Central Texas lacks the Early Ceramic period that has been defined for Southeast Texas.

Mobility and settlement patterns do not appear to have changed markedly through time in Southeast Texas. Inland sites are usually found near a water source, usually exhibit evidence of reoccupation through time, have well-defined intrasite activity areas, tend not to be associated with satellite activity sites or separate base camps, and exhibit a range of subsistence-related activities. Inland sites also tend to contain modest pottery assemblages, fired clay balls (at some sites), abundant lithic material, and an absence of shell tools. Coastal sites tend to consist of multicomponent *Rangia* shell middens that contain oyster shell tools, large quantities of pottery (in later cultural components), numerous bone tools, and only a few lithic artifacts.

3.1 PALEOINDIAN PERIOD (10,000 TO 5000 B.C.)

The initial human occupations in the New World can now be confidently extended back before 10,000 B.C. (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 Southeast Texas is represented by the PaleoIndian period (10,000 to 5000 B.C.) (Patterson 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 Southeast Texas are known primarily through the study of faunal remains. Subsistence focused on the exploitation of 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 during all prehistoric time periods.

In Southeast Texas, the PaleoIndian stage is divided into two periods based on recognizable differences in projectile point styles (Patterson 1995). These include the Early PaleoIndian period (10,000 to 8000 B.C.), which is recognized based on large, fluted projectile points (i.e., Clovis, Folsom, Dalton, San Patrice, and Big Sandy), and the Late PaleoIndian period (8000 to 5000 B.C.), which is characterized by unfluted lanceolate points (i.e., Plainview, Scottsbluff, Meserve, and Angostura).

3.2 ARCHAIC PERIOD (5000 B.C. TO A.D. 100)

The onset of the Hypsithermal drying trend signaled the beginning of the Archaic stage (5000 B.C. to A.D. 100) (Patterson 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 Southeast 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 Southeast 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. In Southeast Texas, the Early Archaic period (5000 to 3000 B.C.) is marked by the presence of Bell, Carrollton, Morrill, Trinity, Wells, and miscellaneous Early Stemmed projectile points. The Bell point is the only type in this period that is closely associated with the Southern Plains. Many of the latter point types continue into the Middle Archaic period (3000 to 1500 B.C.) and several new types appear, including Bulverde, Lange, Pedernales, Williams, Travis, and probably the Gary-Kent series. The Late Archaic period (1,500 B.C. to A.D. 100) is characterized by Gary, Kent, Darl, Yarbrough, Ensor, Ellis, Fairland, Palmillas, and Marcos points.

In the western part of inland Southeast Texas, a Late Archaic mortuary tradition developed in the lower Brazos and Colorado river valleys and in the intervening area (Hall 1981; Patterson 1995). Organized burial practices actually started during the Middle Archaic period but reached full development in the Late Archaic with the use of exotic grave goods such as boatstones and bannerstones (probably used as atlatl weights), stone gorgets, corner-tang knives, stingray spines, shark teeth, and marine shell beads and pendants. Other burial practices included the systematic orientation of burial direction, body position, use of red ochre, and use of locally made grave goods, such as longbone implements and bone pins. Most burials are found in extended supine position, though some extended prone and bundle burials are also known. Burial direction is usually consistent within single sites but varies from site to site. Patterson et al. (1993) report that at least 11 sites are associated with this mortuary tradition in Austin, Fort Bend, and Wharton counties.

3.3 EARLY CERAMIC PERIOD (A.D. 100 TO 600)

The use of pottery did not start uniformly throughout Southeast Texas. Pottery manufacture appears to have diffused into this region from adjacent regions, primarily from the east along the coastal margin. Aten (1983:297) argues that pottery was being manufactured on the coastal margin of the Texas-Louisiana border by about 70 B.C., in the Galveston Bay area by about A.D. 100, in the western part of the coastal margin by about A.D. 300, and in the Conroe-Livingston inland area by about A.D. 500. The practice of pottery manufacture appears to have progressed first along the coastal margin and then moved inland (Patterson 1995). Southeastern Texas ceramic chronologies are best known in the Galveston Bay area, where Aten (1983) established a detailed chronological sequence.

The earliest ceramic periods in the Galveston Bay and neighboring Sabine Lake areas appear to be approximately contemporaneous with the earliest ceramic periods of the lower Mississippi Valley (Aten 1984). Early assemblages contain substantial quantities of Tchefuncte ceramics. In the Sabine Lake region, grog-tempered varieties of Baytown Plain and Marksville Stamped are common, while grog-tempered ceramics do not occur in the Galveston Bay area 129 km (80 mi) to the west until several hundred years later. With the principal exception of a few Tchefuncte ceramic types, other southern Louisiana ceramics are not found on the Gulf coast west of the Sabine Lake area.

Goose Creek sandy-paste pottery was used throughout Southeast Texas and somewhat farther north in the Early Ceramic, Late Prehistoric, and the early part of the Historic periods (Aten 1984; Patterson 1995; Pertulla et al. 1995). The Goose Creek series is the primary utility ware

throughout the prehistoric sequence in Southeast Texas, though it gives way to Baytown Plain for about 200 years during the transition between the Late Prehistoric and Historic periods before once again becoming predominant into the Historic period (Aten 1984). A minor variety, Goose Creek Stamped, occurs only in the Early Ceramic period (Aten 1983). Three other minor pottery types—Tchefuncte (Plain and Stamped), Mandeville, and O'Neal Plain *variety Conway* (Aten 1983)—were used only during the Early Ceramic period. The Mandeville and Tchefuncte types are characterized by contorted paste and poor coil wedging. Mandeville has sandy paste (like Goose Creek), while Tchefuncte paste has relatively little sand. Given their technological similarities, Mandeville and Tchefuncte may represent different clay sources rather than distinct pottery types (Patterson 1995). The bone-tempered pottery that characterizes ceramic assemblages elsewhere in Texas is not common in Southeast Texas.

3.4 LATE PREHISTORIC PERIOD (A.D. 600 TO 1500)

The onset of the Late Prehistoric period (A.D. 600 to 1500) (Patterson 1995) is defined by the appearance of the bow and arrow. Elsewhere in Texas, pottery also appears during the latter part of the Late Prehistoric period, but, as already discussed, ceramics appear earlier in Southeast Texas. Along the coastal margin of 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 along with the bow and arrow through the Late Prehistoric period (Ensor and Carlson 1991; Keller and Weir 1979; Patterson 1980, 1995; Wheat 1953). In fact, Patterson (1995:254) proposes that use of the bow and arrow started in Southeast Texas as early as the end of the Middle Archaic period, using unifacial arrow points that consisted of marginally retouched flakes. In contrast, Prewitt (1981) argues for a generalized date of adoption of the bow-and-arrow hunting system at about the same time (ca. A.D. 600) in Central and Southeast Texas. In Southeast Texas, unifacial arrow points appear to be associated with a small prismatic blade technology. Bifacial arrow point types include Alba, Catahoula, Perdiz, and Scallorn. A serial sequence for these point types has not been established in Southeast Texas, though Scallorn points appear to predate Perdiz points throughout the rest of Texas.

Grog- (i.e., crushed-sherd-) tempered pottery was used in the Late Prehistoric and Protohistoric periods in Southeast Texas. The grog-tempered varieties include San Jacinto Plain and Baytown Plain *variety Phoenix Lake*. San Jacinto pottery contains a relatively small proportion of small-sized temper, while Baytown Plain has larger amounts of sherd pieces that are often visible on vessel surfaces. As previously mentioned, sandy-paste Goose Creek pottery remained in use throughout the Late Prehistoric period. Rockport Plain and Asphalt Coated pottery from the Central Texas Coast (Ricklis 1995) are found at a few sites in Southeast Texas during the Late Prehistoric and Protohistoric periods.

3.5 PROTOHISTORIC PERIOD (A.D. 1500 TO 1700)

For the most part, Protohistoric and early Historic Indian sites in Southeast Texas have not been articulated with the ethnographic record (Story 1990:258). Similarly, reconciling the ethnographic record to prehistoric Indian groups in this region is problematic. Late Prehistoric and Historic population movements further complicate this issue. Aten (1983) has reconstructed

the territories of native groups present in this region in the early 18th century, including the Akokisa, Atakapa, Bidai, Coco (possibly Karankawa), and Tonkawa. The presence of the Tonkawa in Southeast Texas may be due to their rapid expansion from Central Texas in the 17th and 18th centuries (Newcomb 1993:27). The Karankawa Indians are thought to have occupied the coastal margin of this region as far east as Galveston Island and the corresponding mainland (Aten 1983). Judging by the scarcity of Rockport pottery on sites east of the San Bernard River, the ethnic association of the Karankawa Indians with the Coco tribe may be in doubt.

Protohistoric and Historic Indian sites may not be systematically recognized as such because few aboriginal artifact types changed from the Late Prehistoric to the Historic periods (Patterson 1995). Only a few non-European artifact types are useful in identifying Historic Indian sites, including Bulbar Stemmed and Guerrero arrow points and possibly Fresno and Cuney points after A.D. 1500 (Hudgins 1986). Historic period Indian sites are usually identified by the presence of glass and metal artifacts, gunflints, and European types of pottery.

3.6 HISTORIC PERIOD (CA. A.D. 1700 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, Álvar Núñez 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 culture and social systems. This process is clearly discernable at the Mitchell Ridge site, where the 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 heavy settlement of Texas began in the early 1800s by Anglo-Americans, the indigenous Indian population was greatly diminished. The Alabama-Coushatta Indians who currently reside in Southeast Texas are migrants who were displaced from the east in the late 18th to early 19th centuries (Newcomb 1961).

Although Spain claimed the Texas Gulf Coast, few Europeans visited the future Harris County between 1528 and 1821[1]. It is possible that de Vaca ascended the San Jacinto River from Galveston Island around 1529 to trade with the woodland Indians, but his adventures failed to stimulate interest in the Texas coast. A few French traders from Louisiana visited Indians living on Spring Creek between the 1730s and 1745, but they established no settlements. A Spanish mission and presidio complex, El Orcoquisac, was maintained near the mouth of the Trinity from 1756 to 1771 to monitor and oppose the intrusion of foreigners. In 1746, Captain Joaquín de Orobio y Basterra from La Bahía visited the Orcoquisac villages along Spring Creek while looking for French traders. He reported the lack of roads or maps and on his return blazed a trail westward to find the Old San Antonio Road, on which he had traveled to Nacogdoches on his way to the lower Trinity and San Jacinto rivers. The first Anglo-Americans to explore Harris County were

[1] The following history of Harris County, Texas, is adapted from TSHA (2017).

members of the various filibustering expeditions launched from New Orleans between 1815 and 1820 to aid the Mexican Republicans rebelling against Spain. Using Galveston Island and Bolivar Peninsula as a base, the men belonging to the expeditions and encampments of Louis Michel Aury, Francisco Xavier Mina, Jean Laffite, and James Long looked around the San Jacinto estuary for future home sites—their expected reward for freeing Mexico from Spain. Some of these men were among the pioneer settlers arriving by boat from Louisiana in early 1822, just after the Mexican War of Independence.

Responding to Stephen F. Austin's advertisements, the families wrongly assumed that the San Jacinto estuary was part of his *empresario* grant. Some moved to the Brazos River in 1824, but merchants and boatmen remained to exploit what turned out to be the best transportation system in Texas and to petition successfully for inclusion in the Austin grant. Since Galveston Island and the Gulf shore were forbidden to Anglo settlement, Harris County was the southeastern border of the colony. The pioneers found no Indians living in the future Harris County. In July 1824, a state land commissioner, the Baron de Bastrop, arrived and spent two months issuing 29 titles to settlers, even though surveys were incomplete. The pioneers, including Nathaniel Lynch, William Scott, and John R. Harris, chose sites along Buffalo Bayou, the San Jacinto River, and the San Jacinto estuary. Between 1828 and 1833, when Austin's colonization effort virtually ended, 23 more families secured titles elsewhere in the county, usually along watercourses. In 1826, John R. Harris laid out Harrisburg on his league where Brays Bayou joined Buffalo Bayou, the head of navigation. He opened a store and built a saw and grist mill, while his brothers captained vessels between there and New Orleans and even Tampico.

By 1833, Harrisburg was an established port of entry for immigrants and freight destined for the upper Brazos River communities of San Felipe and Washington. Moreover, it was the hub for east-to-west roads. Eastward from Harrisburg in 1830, travelers crossed the San Jacinto River on Lynch's Ferry on their way to Anahuac, Liberty, or Nacogdoches. Opposite Harrisburg, a road paralleled Buffalo Bayou heading northwest to a community on Spring Creek, then forked for the Brazos villages. A third important road followed the south bank of Brays Bayou for 24.1 km (15.0 miles) to a community on Oyster Creek near the site of present-day Stafford in Fort Bend County. This area was known as the San Jacinto District from 1824 until 1833, when it was renamed the Harrisburg District. From 1824 through 1827, Humphrey Jackson was the alcalde for the San Jacinto District, which stretched from Lynchburg on the San Jacinto River to the site of present-day Richmond on the west, and from Spring Creek to Clear Creek. Jackson reported to Stephen F. Austin until 1828, when the newly instituted *ayuntamiento* at San Felipe relieved the *empresario* and *comisarios* were named. The final stage of development under the Mexican system occurred on December 30,1835, when the General Council set the boundaries of Harrisburg Municipality.

Harrisburg Municipality was the home of both President David G. Burnet and Vice President Lorenzo de Zavala of the new Republic of Texas. They were elected by the delegates at Washington after midnight on March 16, 1836, and the next morning left for Harrisburg, where water transportation offered an escsurvey area if the Mexican army should win. On March 25, the group reached Harrisburg, where the president conducted business for the next two weeks. Burnet and his bride had moved to Lynchburg from New Jersey in 1831 with equipment for a

steam sawmill that he built on the San Jacinto River above Lynch's Ferry. Declining to claim a headright, he bought land from Lynch for his home on a small bay below the ferry. He was not chosen to represent his neighborhood in 1832, 1833, 1835, or 1836 because of his pro-Mexican views. Delegates, torn by rivalries, chose him because he was not a delegate. Zavala, a refugee from Santa Antonio López de Santa Anna's wrath, bought a house on the north side of Buffalo Bayou below Harrisburg in August 1835, and his New York-born second wife and two children joined him in December. The republic's officials evacuated Harrisburg by steamboat to Lynchburg on April 12, when word arrived that Santa Anna's troops were crossing the Brazos below Richmond. The steamboat *Cayuga* later took the officials and their families to Galveston Island. A constant stream of refugees from the upper Brazos settlements had been crossing Harrisburg Municipality since mid-March en route to the US.

Santa Anna and his advance units reached Harrisburg at midnight on 14 April and, after a day of looting, set fire to the settlement on 16 April. The general dispatched a cavalry troop to Morgan's Point on April 16 that almost captured the Burnet family. The battle of San Jacinto took place on April 20 and 21 opposite Zavala's house on widow Peggy McCormick's farm, where perhaps 600 dead soldiers remained unburied when neither commander ordered interment.

Harrisburg County was formed by the First Congress on December 22, 1836. The lawmakers also named Andrew Briscoe chief justice, and the infant city of Houston the county seat and national capital. The county encompassed the territory of the old municipality plus Galveston Island (the mainland was attached to Brazoria County) until May 1838, when its modern boundaries were established. In December 1839, Congress changed the name to Harris County in honor of John R. Harris. The county briefly lost its northwest corner in 1841 when Spring Creek residents tried to form a separate county. The first county court, convened in February 1837, was composed of the chief justice (called the county judge after 1861), the sheriff, the clerk, and two justices of the peace who served as associate justices.

Harrisburg recovered from the Mexican Revolution slowly. By 1853, it had a steam mill and was the terminus for the Buffalo Bayou, Brazos, and Colorado Railway, which crossed the county to Stafford's Point to facilitate the shipment of cotton and sugar. Five other railroads followed before the Civil War. The Galveston, Houston, and Henderson connected the island to the mainland, while the Texas and New Orleans constructed tracks along the north side of Buffalo Bayou to Liberty and Orange, thus enabling Confederate troops from Harris County to reach the Neches River on their way to Virginia. The Houston and Texas Central ran west from town to Cypress, Hockley, and Hempstead. The Houston Tap and Brazoria linked Houston with the Buffalo Bayou, Brazos, and Colorado south of town and had a line to Columbia to serve the Brazoria County sugar plantations.

Early settlers in Harris County were mainly southerners bringing their black slaves. Besides cultivating field crops, some of the African Americans worked the cattle on the open-range ranches, particularly in the area south of Buffalo Bayou, which remained ranching country into the early 20th century. By the 1840s, a number of Germans and French had immigrated to Harris County. Both groups included city-dwelling artisans, merchants, and farmers—some Catholic, some Protestant. Many of the immigrant agrarians settled north and west of Houston and established successful truck and dairy farms that drew Europeans through the turn of the

century. Contrary to legend, few Mexican prisoners chose to remain in Harris County when all were released on April 21, 1837 by President Sam Houston. The 1850 US census revealed no Mexican-born males of the right age in Harris County or surrounding counties. A few Mexican families lived in Houston in the 1880s. It was the economic opportunities offered by the Houston Ship Channel and the railroads, combined with the unsettled political conditions following the Mexican Revolution, that brought Mexicans to Houston. Most settled in the city close to their work and the Catholic churches.

While the first settlers lived along the streams, those arriving after the Civil War chose sites along the railroads that crisscrossed Harris County. By 1890, land developers in the Midwest had purchased land along the new North Galveston, Houston, and Kansas City Railroad, which ran east from Houston along the south side of Buffalo Bayou towards Morgan's Point and south to the mouth of Clear Creek. They expected to attract other Midwesterners to raise fruit, berries, and vegetables or just to seek relief from cold winters. Pasadena, Deer Park, and La Porte were established in 1892, and Seabrook followed in 1900. South Houston, Genoa, and Webster developed along the Galveston, Houston, and Henderson Railroad after the 1870s. Around the turn of the century, Japanese were invited to the Webster area to develop rice farms on the flat prairies and also at a site on a branch line of the Gulf, Colorado, and Santa Fe Railway south of Houston that became Mykawa. Between 1911 and 1936, the Galveston-Houston Electric Railway, called the Interurban, ran parallel to the Galveston, Houston, and Henderson Railroad and provided 30-minute service from Webster to Houston.

In the 1960s, the land east of Webster became the home of the National Aeronautics and Space Administration (NASA) Manned Spacecraft Center, renamed the Lyndon B. Johnson Space Center in 1973. Houston quickly annexed the area. The development changed the rural aspect of the area when several new towns sprang up along the north shore of Clear Lake, the largest being Clear Lake City.

Northern Harris County developed similarly. After the Civil War, other railways such as the Houston and Great Northern, the Trinity and Brazos Valley, the Houston East and West Texas, and the Burlington-Rock Island entered north Harris County to converge on Houston. The lumbering and farming interests established small towns such as Spring and Tomball along the tracks. The population of Humble, near the Houston East and West Texas Railway, increased with the oil boom at Moonshine Hill in 1905.

Harris County east of the San Jacinto River remained an agricultural community focusing on rice culture in the 1890s. Its only commercial developments were small boatyards at Lynchburg and Goose Creek and a brick factory on Cedar Bayou that mushroomed during the 1880s to supply a building boom in Galveston. Between 1903 and 1907, oil was discovered on the eastern shore of the San Jacinto estuary at Goose Creek and Tabbs Bay. Migrant roughnecks and their families moved to the area and established a temporary boomtown amid the derricks between 1915 and 1917. The shantytown was replaced in 1917 by Pelly, which was built on private land above the noisy and dirty oil camp. In 1919, Ross Sterling and his Humble Oil and Refining Company (now ExxonMobil) built a refinery on the San Jacinto above the mouth of Goose Creek. The site was bordered by the Humble company town, Baytown, for workers, and a middle-class enclave, Goose Creek, for executives and others. Pelly and Goose Creek vied for

dominance, and after Humble sold the company houses to the workers beginning in the late 1920s, the three towns consolidated to become the "Tri-Cities" in the 1930s and finally to be renamed Baytown in 1948. Eastern Harris County also had an electric interurban train, the Houston-North Shore Railroad, which in 1925 connected the three towns to Crosby and ran along the north side of Buffalo Bayou to downtown Houston.

The development of Harris County as an industrial power began in 1911, when voters approved the formation of the Harris County Ship Channel Navigation District. Authorized by Congress and approved by the state legislature, the district could improve the waterway and manage the waterfront within the county. It immediately issued bonds to widen and deepen the channel to make the Houston port accessible to oceangoing vessels. In 1914, the USACE finished deepening the existing 80.5-km- (50.0-mile-) long channel to 7.6 meters (25.0 feet) from the Gulf through Galveston Bay and up the San Jacinto River and Buffalo Bayou to the district's turning basin at the Port of Houston. By 1918, petroleum refineries began locating along Buffalo Bayou and the San Jacinto River, as did various other industries. Since that time, the channel has been deepened to 15.2 meters (50.0 feet) and widened to accommodate larger vessels. The very profitable Harris County Navigation District owns the wharves and warehouses around the turning basin (about 3.2 km [2.0 miles] above old Harrisburg), the Long Reach docks, and various other facilities, including a bulk handling plant at Greens Bayou, the terminal railroad, and the container facility at the Bayport industrial complex below Morgan's Point. In addition, in the 1950s, the district joined national and state governments to build the Washburn Tunnel under Buffalo Bayou from Pasadena to the north side and the Baytown-La Porte tunnel beneath the San Jacinto River to reduce the number of hazardous automobile ferries. Exports from the port include rice, wheat, grain sorghums, cotton, caustic soda, cement, and petroleum products. Imports include crude oil, iron ore, molasses, coffee, gypsum, and automobiles.

Another venture authorized by Harris County voters was the Harris County Domed Stadium, which was completed in 1965 and has been leased to the Houston Sports Association. The Astrodome, the first stadium of its kind, was touted as the "Eighth Wonder of the World." The county also maintains two public hospitals in Houston and, since 1935, has worked to control flooding through the Harris County Flood Control District.

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, no previously recorded archeological sites, cemeteries, or historic properties listed on the NRHP have been recorded within a 1.6 kilometer (1.0 mile) radius of the project area. No prior cultural resources surveys have been conducted within the project area. A few small cultural resources surveys were conducted to the west of the proposed project area, all of which yielded negative results (THC 2017).

A review of historical aerial photographs and topographic maps containing the proposed project area revealed that it was heavily wooded as early as 1944. Vegetation was completely cleared from the tract in 2002. No structures are visible on historical imagery within the project area at any time between 1944 and the present.

5.0 SURVEY METHODOLOGY

On July 26, 2017, Horizon staff archeologist Briana Nicole Smith, 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 archeologist traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. Ground surface visibility was low to moderate due to dense, ankle- to knee-high wild grasses and weeds, which cover the majority of the project area. The southwestern portion of the tract had less vegetation, allowing for better visibility of the heavily disturbed ground surface. Modern trash was abundant throughout the project area, which appears to be actively used as a dump site, and several shovel tests contained modern trash within the upper 20.0 centimeters (7.8 inches). The majority of modern trash appears to have been dumped within the tree line that follows the southern boundary of the project area. The northernmost portion of the project area is disturbed from the construction of multiple storm water manholes (Figures 4 to 9).

In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 2 shovel tests per acre for tracts between 3.0 and 10.0 acres in size. As such, a minimum of 13 shovel tests would be required within the 2.7-hectare (6.6-acre) project area. Horizon excavated a total of 15 shovel tests, thereby exceeding the TSMASS for a project area of this size (Figure 10). In general, shovel tests measured approximately 30.0 centimeters (11.8 inches) in diameter, and all sediments were screened through 6.35-millimeter (mm) (0.25-in) hardware cloth.

Shovel testing revealed heavily disturbed artificial deposits of mottled sandy clay and dense clay sediments overlying the native clayey fluviomarine soils at depths of 20.0 to 40.0 centimeters (7.8 to 15.7 inches) below surface. Shovel tests were placed along both banks of the unnamed tributary of Greens Bayou.

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 to be described, sketched, and/or photo-documented in the field and replaced in the same location in

Figure 4. View of Disturbed Ground Surface within Project Area, Facing Down

Figure 5. Unnamed Tributary of Greens Bayou, Facing Southeast

Figure 6. Modern Trash Dump Located South of Tributary, Facing East

Figure 7. General View of Project Area From East End of Tract, Facing West

Figure 8. Storm Water Manholes Located at Northern End of Project Area, Facing West

Figure 9. Modern Trash within Tree Line at Southeastern Corner of Tract, Facing Down

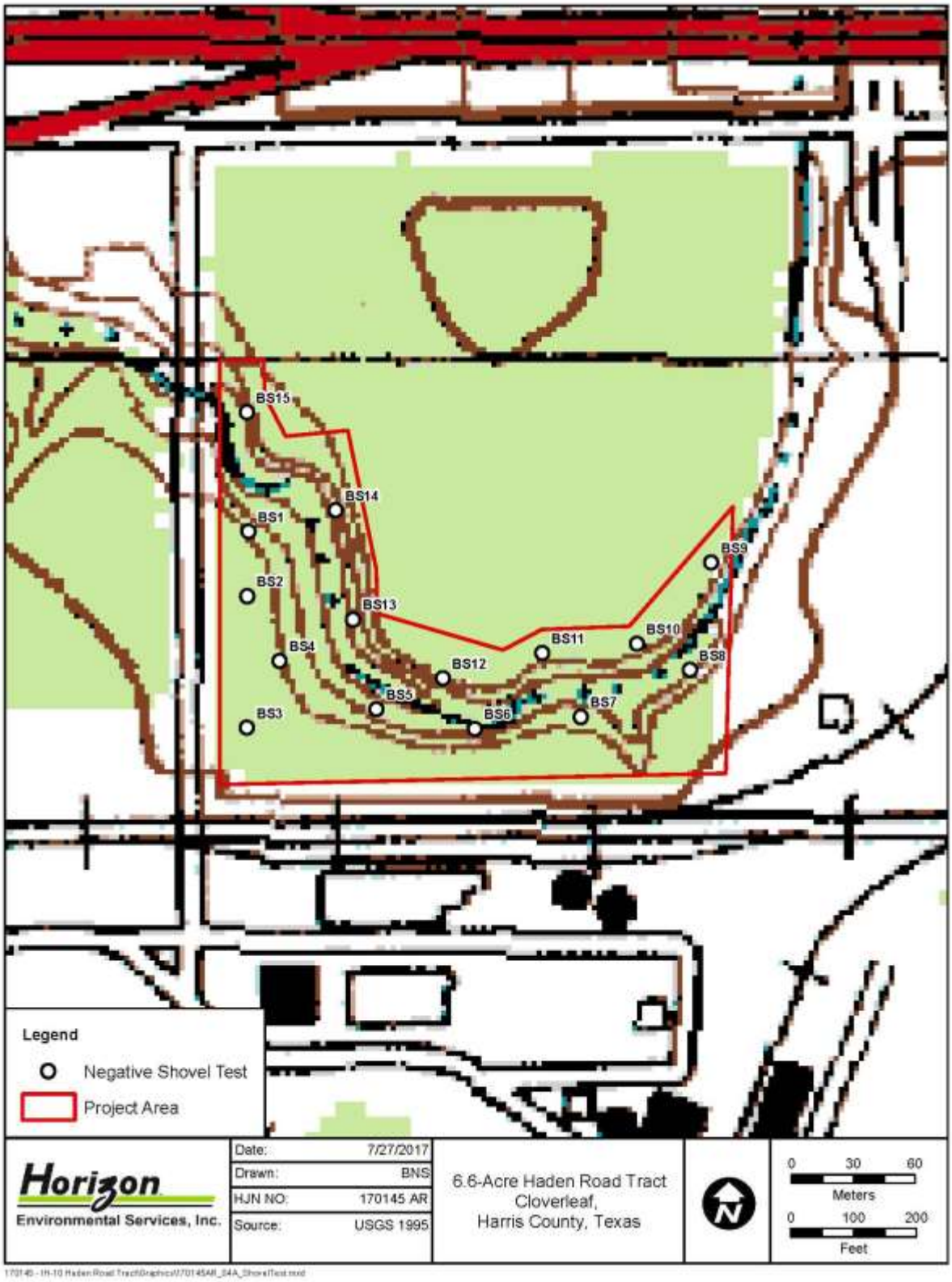

Figure 10. Location of Shovel Tests Excavated within Project Area

which they were found. As no cultural resources were observed during the survey, the collections policy was not brought into play.

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

On July 26, 2017, Horizon staff archeologist Briana Nicole Smith, 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 archeologist traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 2 shovel tests per acre for tracts between 3.0 and 10.0 acres in size. As such, a minimum of 13 shovel tests would be required within the 2.7-hectare (6.6-acre) project area. Horizon excavated a total of 15 shovel tests, thereby exceeding the TSMASS for a project area of this size.

Shovel testing revealed heavily disturbed artificial deposits of mottled sandy clay and dense clay sediments overlying the native clayey fluviomarine soils at depths of 20.0 to 40.0 centimeters (7.8 to 15.7 inches) below surface. Shovel tests were placed along both banks of the unnamed tributary of Greens Bayou. Ground surface visibility was low to moderate due to dense, ankle- to knee-high wild grasses and weeds, which cover the majority of the project area. The southwestern portion of the tract had less vegetation, allowing for better visibility of the heavily disturbed ground surface. Modern trash was abundant throughout the project area, which appears to be actively used as a dump site, and several shovel tests contained modern trash within the upper 20.0 centimeters. (7.8 inches). The majority of modern trash appears to have been dumped within the tree line that follows the southern boundary of the project area. The northernmost portion of the project area is disturbed from the construction of multiple storm water manholes.

No cultural resources, historic-age or prehistoric, were identified within the survey area as a result of the survey.

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 project area 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 archeologist traversed the project area on foot and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources and excavated 15 shovel tests, thereby exceeding the TSMASS for a project area of this size. The pedestrian survey with shovel testing revealed heavily disturbed artificial deposits of mottled sandy clay and dense clay sediments overlying the native clayey fluviomarine soils at depths of 20.0 to 40.0 centimeters (7.8 to 15.7 inches) below surface. Modern trash was abundant throughout the project area, which appears to be actively used as a dump site, and several shovel tests contained modern trash within the upper 20.0 centimeters. (7.8 inches). The majority of modern trash appears to have been dumped within the tree line that follows the southern boundary of the project area. The northernmost portion of the project area is disturbed from the construction of multiple storm water manholes.

No cultural resources, historic-age or prehistoric, were identified within the survey area as a result of the survey.

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 THC should be notified immediately.

8.0 REFERENCES CITED

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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			
BS1	289137	3295118	0-30+	Mottled dark grayish-brown, dark yellowish-brown, and reddish-brown clay (contains modern trash)	None
BS2	289136	3295087	0-30	Mottled pale brown, dark grayish-brown, and yellowish-brown sandy clay	None
			30-40+	Mottled yellowish-red, very dark gray, and dark yellowish-brown clay	None
BS3	289136	3295023	0-30	Mottled pale brown and yellowish-brown sandy clay	None
			30-50+	Very dark gray clay with some yellowish-brown clay mottles and iron inclusions	None
BS4	289152	3295055	0-40+	Mottled yellowish-red, dark grayish-brown, and yellowish-brown clay	None
BS5	289199	3295032	0-20	Mottled pale brown and brownish-yellow sandy clay	None
			20-40+	Dark gray clay	None
BS6	289246	3295023	0-40+	Light gray moist clay with yellowish-brown and yellowish-red clay mottles (hydric soil)	None
BS7	289298	3295028	0-25	Very dark grayish-brown clay	None
			25-40+	Dark yellowish-brown dense clay	None
BS8	289350	3295051	0-20	Very dark brown gravelly sandy clay loam (contains modern trash)	None
			20+	Dense artificial gravels	None
BS9	289361	3295103	0-35+	Mottled very dark grayish-brown and dark yellowish-brown clay	None
BS10	289325	3295064	0-50	Mottled dark grayish-brown and dark yellowish-brown sandy clay	None
			50-60+	Mottled pale brown, yellowish-brown, dark grayish-brown, and black wet sandy clay	None
BS11	289279	3295059	0-30	Mottled dark grayish-brown and yellowish-brown clay	None
			30-40+	Very dark grayish-brown clay with some yellowish-brown and yellowish-red clay mottles	None
BS12	289231	3295047	0-40+	Mottled very dark gray, yellowish-brown, pale brown, and yellowish-red clay (contains modern trash)	None

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

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
BS13	289187	3295076	0-30	Mottled dark grayish-brown and dark yellowish-brown sandy clay	None
			30-40+	Mottled very dark gray and dark yellowish-brown clay	None
BS14	289179	3295128	0-20	Mottled dark grayish-brown and dark yellowish-brown clay	None
			20-40+	Mottled light gray and yellowish-brown dense clay	None
BS15	289136	3295176	0-30+	Mottled very dark grayish-brown and dark yellowish-brown dense clay	None

[1] All UTM coordinates are located in Zone 15 and utilize the North American Datum of 1983 (NAD 83).

cmbs = Centimeters below surface

ST = Shovel test

UTM = Universal Transverse Mercator