Volume 2018 Article 118

2018

Archeological and Historical Investigations of the Proposed 28.7-acre Sweeny Hospital Tract, Sweeny, Brazoria County, Texas

Jeffrey D. Owens

Eugene Foster

Archeological and Historical Investigations of the Proposed 28.7-acre Sweeny Hospital Tract, Sweeny, Brazoria County, Texas

Archeological and Historical Investigations of the Proposed 28.7-acre Sweeny Hospital Tract, Sweeny, Brazoria County, Texas

By:

Jeffrey D. Owens and Eugene Foster

Texas Antiquities Permit No. 8134
HJN 170157 AR

Prepared for:

Berg-Oliver Associates, Inc.
Houston, Texas

Prepared by:

Horizon Environmental Services, Inc.
Austin, Texas

April 2018

Archeological and Historical Investigations of the Proposed 28.7-acre Sweeny Hospital Tract, Sweeny, Brazoria County, Texas

By:

Jeffrey D. Owens and Eugene Foster

Prepared for:

Berg-Oliver Associates, Inc.
14701 St. Mary's Lane, Suite 400
Houston, Texas 77079

Prepared by:

Horizon Environmental Services, Inc.
1507 S. Interstate 35
Austin, Texas 78741

Jeffrey D. Owens, Principal Investigator
HJN 170157 AR

Texas Antiquities Permit No. 8134

April 2018

MANAGEMENT SUMMARY

Horizon Environmental Services, Inc. (Horizon) was selected by Berg-Oliver Associates, Inc. (BOA), on behalf of the Sweeny Hospital District, to conduct a cultural resources inventory survey and assessment for the proposed development of an approximately 11.6-hectare (28.7-acre) tract in Sweeny, Brazoria County, Texas. The proposed tract consists of a largely undeveloped, lightly wooded parcel bounded on the north by County Road (CR) 524 (a.k.a. Main Street) and on the south by Stevenson Slough. The proposed project would involve the construction of a new hospital that represents a single-site replacement facility for an existing community hospital. The Area of Potential Effect (APE) for direct effects consists of the entire 11.6-hectare (28.7-acre) tract within which construction would occur, and the APE for indirect effects would include an assessment of possible viewshed impacts to any historic-age buildings (i.e., 50 years of age or older) on parcels adjacent to the construction site.

The proposed undertaking is being sponsored by the Sweeny Hospital District, a political subdivision of the state of Texas; as such, the proposed project falls under the jurisdiction of the Antiquities Code of Texas (Natural Resources Code, Title 9, Chapter 191). In addition, the project would utilize funding provided by the US Department of Agriculture (USDA); consequently, the project also falls under the jurisdiction of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. As the proposed project represents a publicly sponsored undertaking, the project sponsor is required to provide the lead federal agency and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, with an opportunity to review and comment on the project's potential to adversely affect historic properties listed on or considered eligible for listing on the National Register of Historic Places (NRHP) under the NHPA and/or for designation as State Antiquities Landmarks (SAL) under the Antiquities Code of Texas.

On August 9, 2017 and April 9, 2018, Horizon Project Archeologists Briana Smith and Charles E. Bludau, Jr., under the overall direction of Jeffrey D. Owens, Principal Investigator, performed an intensive archeological survey of the APE for direct effects to locate any archeological resources that potentially would be impacted by the proposed undertaking. Horizon's archeologists traversed the tract and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The APE is located on a gentle, south-facing coastal upland flat adjacent to Stevenson Slough that ultimately discharges into the San Bernard River. The tract is undeveloped, and vegetation consists largely of ankle- to knee-high grasses

with scattered oak trees, with dense stands of palmettos lining the banks of the slough to the south. The tract appears to have been used primarily as a cattle pasture in the recent past, though it may also have been used as cropland at one time.

In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 1 shovel test per 0.8 hectare (2.0 acres) for project areas between 4.5 and 40.5 hectares (11.0 and 100.0 acres) in size; as such, a total of 14 shovel tests would be required within the 11.6-hectare (28.7-acre) APE for direct effects. Horizon exceeded the TSMASS by excavating a total of 16 shovel tests. The pedestrian survey and shovel testing revealed that sediments in the APE consist of deep silty loam or loam overlying silty clay at average depths of 60.0 to 80.0 centimeters (23.6 to 31.5 inches) below surface in the southern portion of the tract near the slough. Sediments in the northern portion of the tract were shallower, consisting mainly of silty clay loam or clay loam overlying clay or compact silty clay at a depth of approximately 40.0 centimeters (15.7 inches) below surface. Shovel testing was capable of fully penetrating Holocene-age sediments with the potential to contain archeological deposits. No archeological resources, prehistoric or historic-age, were observed on the modern ground surface or within any of the shovel tests excavated during the survey of the APE for direct effects. The archeological survey has been conducted under Texas Antiquities Permit No. 8134.

On August 8, 2017, Horizon historian Eugene Foster conducted a reconnaissance-level historical resources inventory survey of the APE for indirect effects. The reconnaissance-level survey was conducted to identify NRHP-listed and NRHP-eligible historic properties that may be affected by the proposed undertaking. The APE for non-archeological resources included the project tract as well as all adjoining property parcels. Eleven historic-age resources (i.e., 50 years of age or older) were recorded within the APE for indirect effects, though no historic-age resources are present within the APE for direct effects. The 11 historical resources include two commercial/industrial buildings and nine single-family residences constructed between 1950 and 1967. All of the 11 historical resources within the APE, individually and as a group, are recommended as not eligible for inclusion in the NRHP.

Based on the results of the survey-level investigations of the APE documented in this report, no potentially significant cultural resources would be affected by the proposed undertaking. In accordance with 36 Code of Federal Regulations (CFR) 800.4, Horizon has made a reasonable and good-faith effort to identify historic properties within the APE. No cultural resources were identified that meet the criteria for inclusion in the NRHP according to 36 CFR 60.4 or for designation as SALs according to 13 TAC 26, and no further archeological investigations or historical research are recommended in connection with the proposed undertaking. However, it should be noted that human burials 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 APE, even in previously surveyed areas, all work should cease immediately at the location of the inadvertent discovery until a qualified archeologist can assess the find, and the THC should be notified of the discovery.

TABLE OF CONTENTS

LIST OF FIGURES

Page

LIST OF TABLES

Page

1.0 INTRODUCTION

Horizon Environmental Services, Inc. (Horizon) was selected by Berg-Oliver Associates, Inc. (BOA), on behalf of the Sweeny Hospital District, to conduct a cultural resources inventory survey and assessment for the proposed development of an approximately 11.6-hectare (28.7-acre) tract in Sweeny, Brazoria County, Texas. The proposed tract consists of a largely undeveloped, lightly wooded parcel bounded on the north by County Road (CR) 524 (a.k.a. Main Street) and on the south by Stevenson Slough. The proposed project would involve the construction of a new hospital that represents a single-site replacement facility for an existing community hospital. The Area of Potential Effect (APE) for direct effects consists of the entire 11.6-hectare (28.7-acre) tract within which construction would occur, and the APE for indirect effects would include an assessment of possible viewshed impacts to any historic-age buildings (i.e., 50 years of age or older) on parcels adjacent to the construction site.

The proposed undertaking is being sponsored by the Sweeny Hospital District, a political subdivision of the state of Texas; as such, the proposed project falls under the jurisdiction of the Antiquities Code of Texas (Natural Resources Code, Title 9, Chapter 191). In addition, the project would utilize funding provided by the US Department of Agriculture (USDA); consequently, the project also falls under the jurisdiction of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. As the proposed project represents a publicly sponsored undertaking, the project sponsor is required to provide the lead federal agency and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, with an opportunity to review and comment on the project's potential to adversely affect historic properties listed on or considered eligible for listing on the National Register of Historic Places (NRHP) under the NHPA and/or for designation as State Antiquities Landmarks (SAL) under the Antiquities Code of Texas.

On August 9, 2017 and April 9 2018, Horizon Project Archeologists Briana Smith and Charles E. Bludau, Jr., under the overall direction of Jeffrey D. Owens, Principal Investigator, performed an intensive archeological survey of the APE for direct effects to locate any archeological resources that potentially would be impacted by the proposed undertaking. On August 8, 2017, Horizon historian Eugene Foster conducted a reconnaissance-level historical resources inventory survey of the APE for indirect effects.

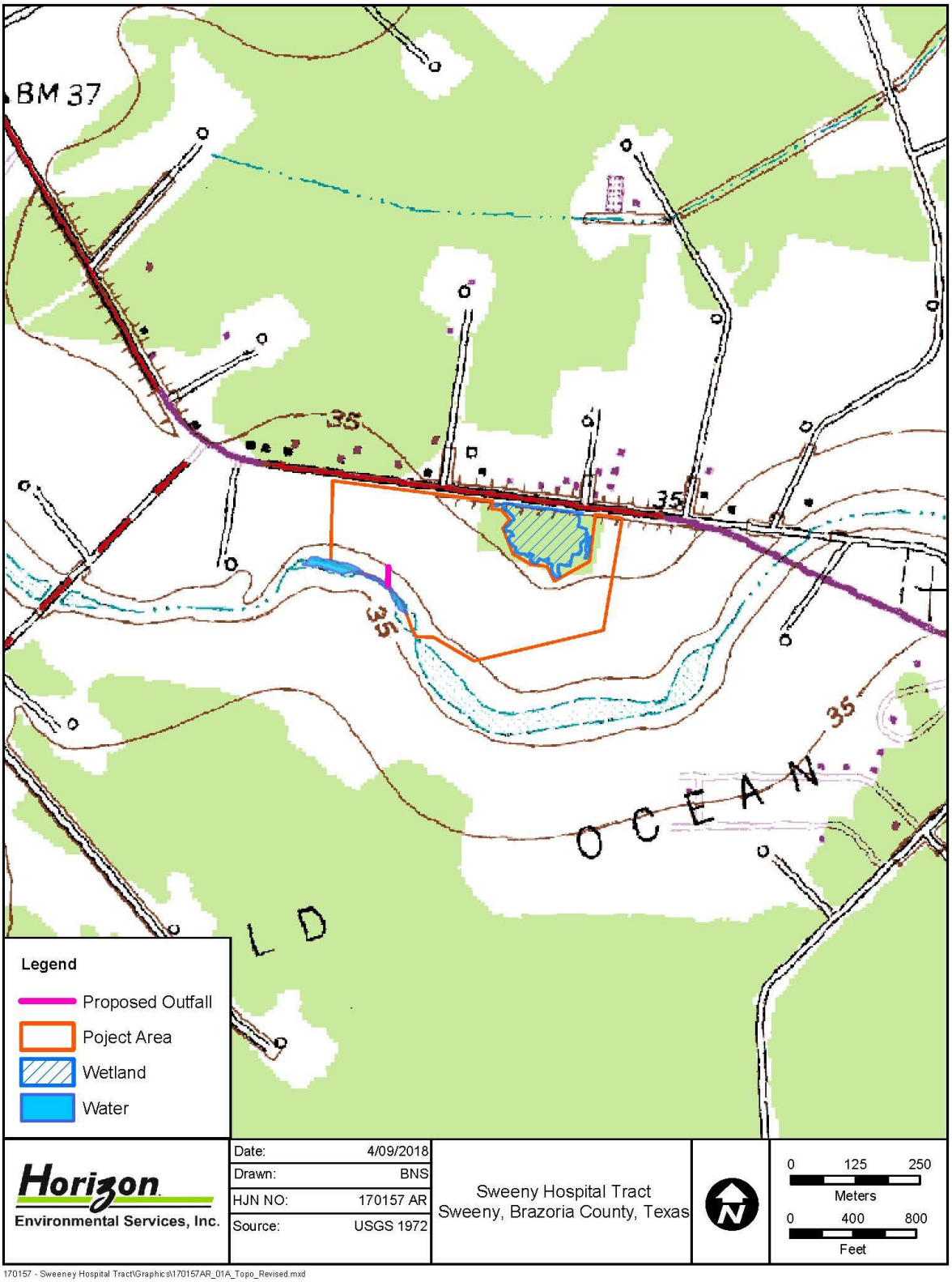


Figure 1. Location of APE on 1972 USGS Topographic Quadrangle

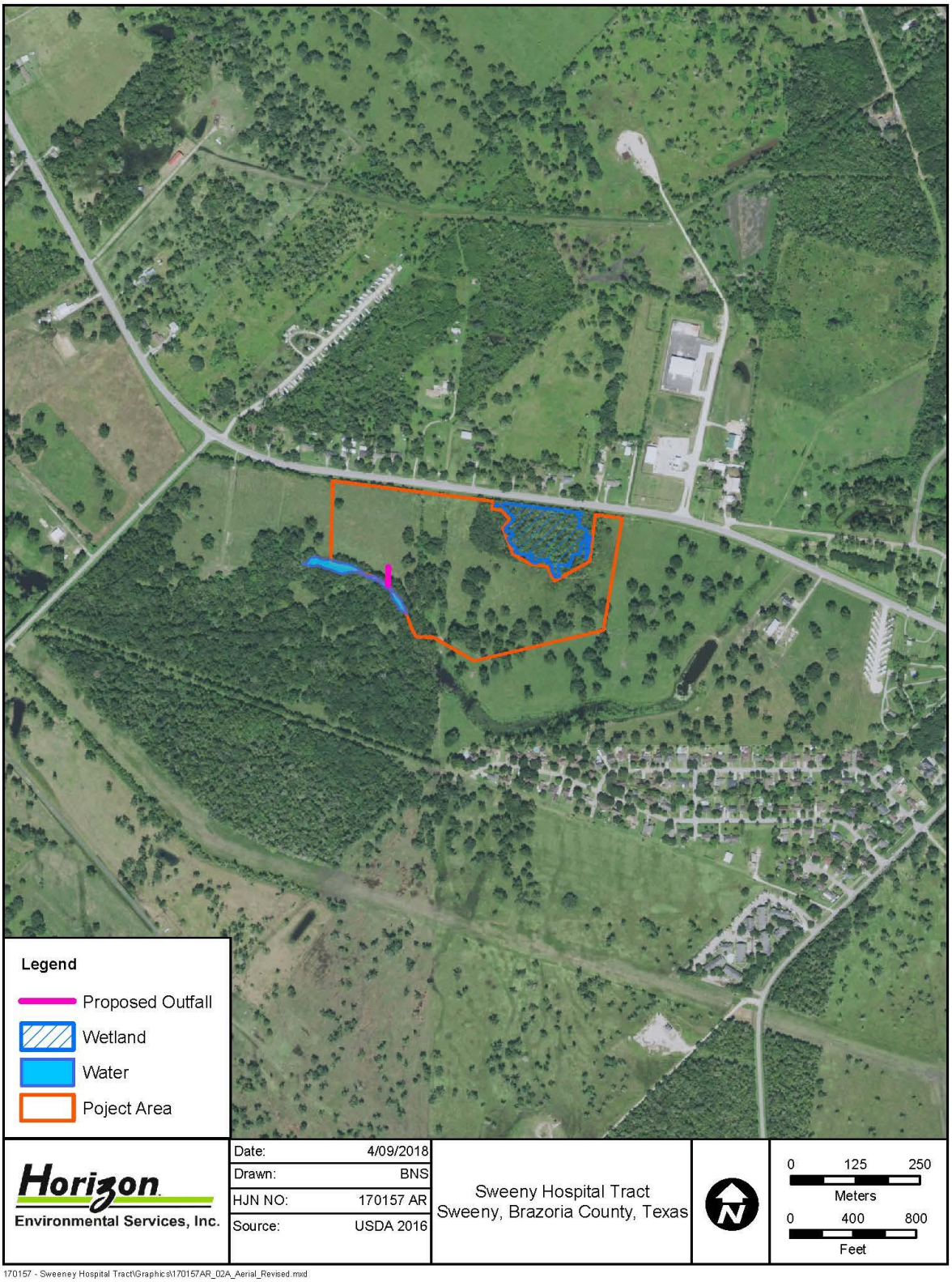


Figure 2. Location of APE on 2016 Aerial Photograph

The cultural resources investigation consisted of an archival review, an intensive archeological survey of the APE for direct effects, a reconnaissance-level historical resources survey of the APE for indirect effects, and the production of a report suitable for review by the 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. The archeological survey has been conducted under Texas Antiquities Permit No. 8134.

Following this introductory chapter, Chapters 2.0 and 3.0 present the environmental and cultural backgrounds, respectively, of the APE. 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 archeological survey, and Chapter 7.0 presents the results of the historical resources survey. Chapter 8.0 summarizes cultural resources management recommendations for the project, Chapter 9.0 lists the references cited in the report, and Appendix A summarizes shovel test data.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSIOGRAPHY AND HYDROLOGY

The APE is located in Brazoria County on the Gulf Coastal Plain in southeastern 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 in central Texas, 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 APE is situated on a coastal flat overlooking Stevenson Slough that forms the southern margin of the APE. Local topography slopes down gently to the south, averaging approximately 10.7 meters (35.0 feet) above mean sea level (amsl).

2.2 GEOLOGY AND GEOMORPHOLOGY

The APE is underlain by Holocene-age alluvium (Qal), which consists of varying quantities of clay, silt, sand, and organic matter that form point bars, natural levees, stream channels, backswamps, coastal marshes, mud flats, and narrow beach deposits (Fisher 1982). The landform on which the APE is situated is composed of a mosaic of loamy and clayey alluvium ranging of Holocene and general Quaternary (NRCS 2017) (Figure 3; Table 1).

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

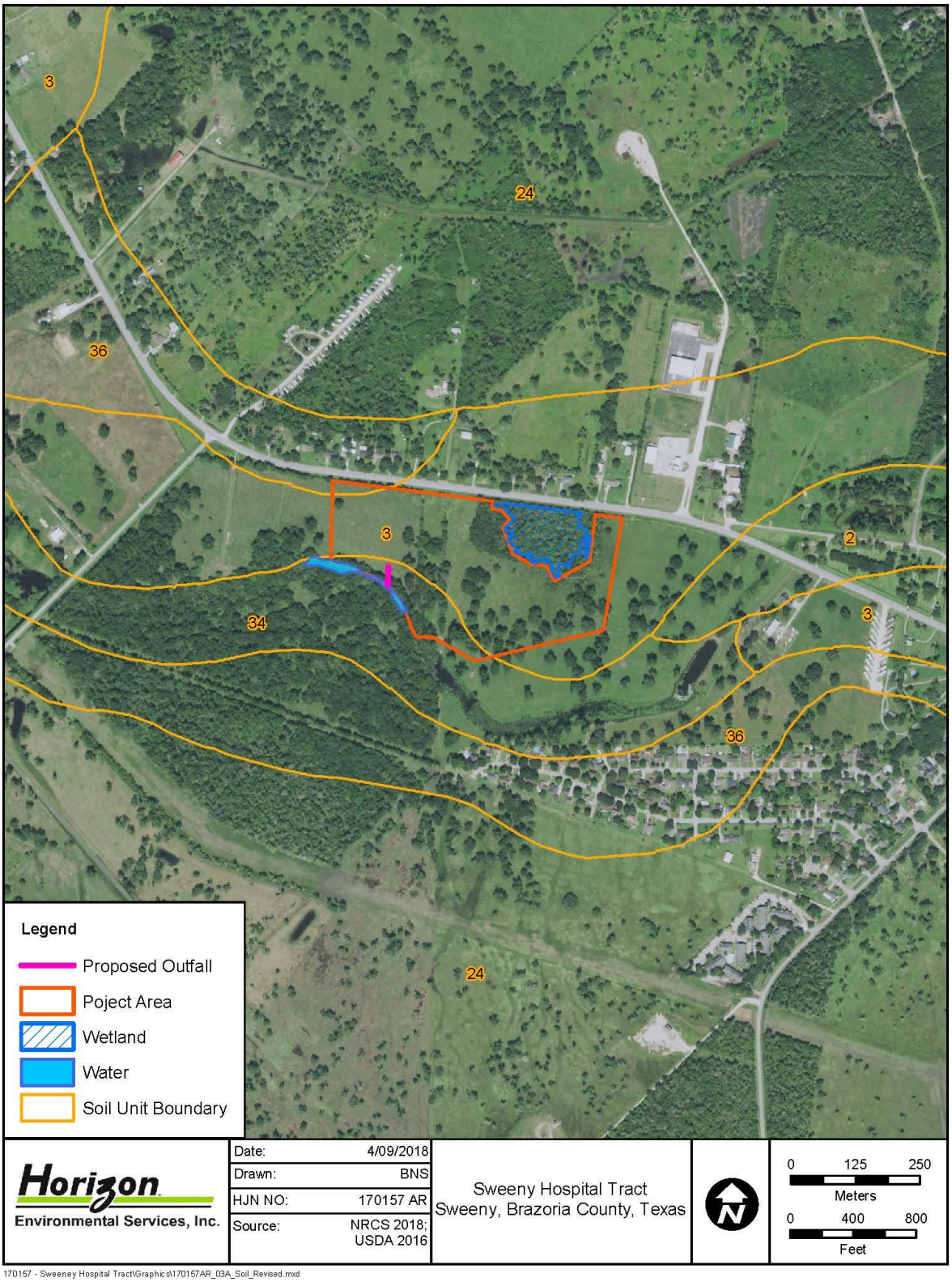


Figure 3. Distribution of Soils Mapped within APE

Table 1. Summary of Mapped Soils within APE

NRCS Soil Code	Soil Name	Parent Material	Typical Profile (inches)
3	Asa silty clay loam, 0 to 1% slopes, rarely flooded	Loamy alluvium derived from igneous, metamorphic, and sedimentary rock on floodplains	0-17: Silty clay loam (Ap) 17-35: Silty clay loam (Bw) 35-40: Silty clay loam (Bk) 40-80: Silt loam (B'w)
24	Norwood silt loam, 1 to 5% slopes, rarely flooded	Loamy and clayey alluvium derived from igneous, metamorphic, and sedimentary rock on natural levees	0-4: Silt loam (Ap) 4-14: Silt loam (Bw1) 14-38: Silt loam (Bw2) 38-50: Silt loam (BC) 50-55: Silty clay loam (Ab) 55-80: Very fine sandy loam (Bwb)
36	Pledger clay, 0 to 1% slopes, rarely flooded	Clayey alluvium of Quaternary age derived from igneous, metamorphic, and sedimentary rock on floodplains	0-17: Clay (A) 17-52: Clay 52-67: Silty clay (Bkss1) 67-80: Silty clay (Bkss2)

Source: NRCS 2017

NRCS = Natural Resources Conservation Service

the Wisconsin Full Glacial period (22,500 to 14,000 B.P.) through the Late Glacial period (14,000 to 10,000 B.P.) to the Post-Glacial period (10,000 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. 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 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.

In winter, the average temperature is 52 degrees Fahrenheit (°F); however, during winter the temperature tends to fluctuate greatly as air masses move in and out of the area. These air masses can produce light rain and drizzle, and conditions can become cloudy. Spring is relatively dry, with some thunderstorms and cool spells. Summer temperatures are high, with the daily

maximum temperature often reaching or exceeding 90°F. Fall is warm, dry, and pleasant, with increasing cold spells.

The average precipitation within the region is 127.0 centimeters (50.0 inches). The majority of this precipitation occurs as rain that falls between April and September. The growing season is approximately 265 days long.

2.4 FLORA AND FAUNA

Brazoria County is situated near the southeastern edge of the Texan 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. McMahan et al. (1984) further define four broad communities that characterize that portion of the Texan 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 taxa like 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 and 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, water oak, 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, greenbrier, 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, greenbrier, 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 APE is located within the Southeast Texas archeological region. In broad terms, 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 kilometers (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.

In discussions of the prehistory of Texas, Brazoria County is often treated as part of a cultural transition zone. Following Patterson (1995), Southeast Texas is defined as a 21-county area (including Brazoria County) that lies between the Colorado River on the west and the Sabine River on the east, extending about 199.5 kilometers (124.0 miles) inland from the coastline.

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 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 few lithics, oyster shell tools, large quantities of pottery (in later cultural components), and numerous bone tools.

3.1 PALEOINDIAN PERIOD (10,000 TO 5,000 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 5,000 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 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 during all prehistoric time periods.

In Southeast Texas, the PaleoIndian stage is divided into 2 periods based on recognizable differences in projectile point styles (Patterson 1995). These include the Early PaleoIndian period (10,000 to 8,000 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 (8,000 to 5,000 B.C.), which is characterized by unfluted lanceolate points (i.e., Plainview, Scottsbluff, Meserve, and Angostura).

3.2 ARCHAIC PERIOD (5,000 B.C. TO A.D. 100)

The onset of the Hypsithermal drying trend signals the beginning of the Archaic stage (5,000 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 (5,000 to 3,000 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 (3,000 to 1,500 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 128.7 kilometers (80.0 miles) 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 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- (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 (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 1993; 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 (A.D. 1700 TO PRESENT)

The first European incursion into what is now known as Texas was in 1519, when Alonso 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 that 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).

Though the alluvial bottomlands of the county's rivers attracted settlement by Anglo-Americans as early as 1820, the passengers of the schooner *Lively* who landed at the mouth of the Brazos River in December 1821 passed on to Richmond.[1] The area was first populated when Stephen F. Austin selected it for his proposed settlement, and 89 of Austin's Old Three Hundred had grants in what is now Brazoria County by 1824. The earliest communities were Velasco (at the site of present Surfside), East Columbia (originally known as Bell's Landing or Marion),

[1] The following historical summary of Brazoria County is adapted from TSHA (2017a, 2017b).

Columbia (later West Columbia), and Brazoria. Quintana and Liverpool were also settled before 1832.

Anglo-American Settlement and Agriculture in Brazoria County (1832 to Present)

Brazoria County became part of the Victoria district when Austin's original San Felipe district was divided in two in 1826. In 1832, the legislature of Coahuila separated Brazoria Municipality from San Felipe and made Brazoria its capital. Brazoria Municipality was the scene of the Battle of Velasco on June 26, 1832, and witnessed other agitation against Mexican rule. In 1833, county residents suffered both flood and cholera, but in 1834 population in the municipality reached 2,100, and prosperity returned. A decision was made to change the name of the municipality from Brazoria to Columbia, to make Columbia the seat of government, and transfer some territory to Matagorda Municipality. At the time, the largest settlements in the future county were Brazoria with 500 residents, Velasco with 100, and Bolivar with 50. As early as the mid-1830s, cotton farms produced more than 5,000 bales annually, and plantation owners in the area became some of the wealthiest in Texas. On March 1, 1835, a meeting near Brazoria led to the establishment of the first Masonic lodge in Texas—Holland Lodge No. 36.

When Stephen F. Austin declared against Santa Anna at another meeting in Brazoria on September 8, 1835, Texans began to prepare for a revolution. Agitation for independence led to the formation of committees of public safety and public meetings to discuss the impending break. After the convention at San Felipe and engagements at Gonzales, Goliad, and Bexar, volunteer companies were organized and a provisional government approved on November 13, 1835. Henry Smith of Brazoria County served as the first provisional governor. Formation of a permanent council soon thereafter brought the inauguration of mail routes throughout the area. Rebellion grew in 1835 and 1836, culminating in the Texas Declaration of Independence.

Citizens of the county contributed men and means to the Texas Revolution and participated in the Runaway Scrape. After his capture at the Battle of San Jacinto on April 21, 1836, Santa Anna and members of his army were taken to Velasco, then the location of the provisional government. Here Santa Anna signed the Treaties of Velasco with the Republic of Texas on May 14, 1836. Columbia, the seat of the interim government, served as the capital of the republic when sessions of the first Texas Congress met in October 1836. During the first session, Stephen F. Austin died and was buried at Peach Point. Houston became the capital.

Under the provisional government, Texas accepted the constitution that made its first counties from former municipalities. Brazoria County, among the first, took its name from the Brazos River when the Congress of the republic established it on March 24, 1836. Brazoria, which became county seat when the county was organized on December 20, 1836, served until 1896, when Angleton replaced it. The establishment of Fort Bend County in 1837 and of Galveston County in 1838 drew the present-day county boundaries, and the towns of Columbia, Velasco, and Brazoria were incorporated by the Congress of the republic in 1837.

According to some sources, the last shipment of African-Americans brought as slaves into North America arrived at the mouth of the San Bernard River in 1840. At that time, the community of Brazoria had an estimated population of 800 and Columbia of 300; 80 slaveholders in the

county owned a total of 1,316 slaves. Yellow fever and flooding in 1843 and 1844 slowed growth, but the annexation of Texas to the United States in 1845 and the Mexican War had little effect on residents of Brazoria County, who were mostly farmers. By 1847, Brazoria County had 1,623 white inhabitants and 3,013 slaves. In 1852, the county produced 7,329 hogsheads of sugar, the most of all Texas counties.

During pioneer days, the Brazos River was the chief artery by which immigration, communication, and commerce penetrated Texas from the Gulf. Small boats regularly navigated as far as East Columbia, and customhouses were located at Brazoria and Velasco. By 1840, Buffalo Bayou and the growing town of Houston had begun to draw commerce away from the Brazos, but freight and passenger service between Brazoria, other Brazos River ports, and Galveston was established by 1842, and a canal from the Brazos mouth to West Galveston Bay was completed by 1857.

Between 1849 and 1859, plantation life in Brazoria County flourished, and the county became the wealthiest in Texas, with a typically Southern society based on slavery. Agriculture was the foundation of the county's early economy, and some of the state's largest and most prosperous sugar and cotton plantations grew up along the rivers and deeper creeks on which crops could be shipped by barges. Plantations in the county between 1850 and 1860 numbered 46, including 19 sugar, 16 cotton, and 3 that produced both sugar and cotton. Before the war, these plantations produced an average of 7,000 to 8,000 hogsheads of sugar annually, and up to three-fourths of the state's output in 1857. Many planters raised cattle, and some cultivated oranges, lemons, and other fruits. Twenty-six county residents owned more than $100,000 in property by the year 1860; the foremost planter was John H. Herndon, whose real property was valued at more than $1.6 million and personal property at more than $106,000. In that year, Brazoria County had 2,027 white, 5,110 black slave, and six free black residents; by 1864, when slaves numbered 5,125, their value was only slightly less than the county's 283,151 acres of land. Town life was subordinated to plantation life, and Old Velasco and Quintana served as Gulf seaports and resort centers for antebellum plantation society. Later, the two towns declined in importance as plans for an intracoastal canal to divert trade developed, and in 1875 and 1900 both were almost destroyed by hurricanes. Other transportation in the period was provided by the Houston Tap and Brazoria Railroad, chartered in 1856 and built by planters to connect East Columbia with Houston markets and with the Buffalo Bayou, Brazos, and Colorado Railroad at Pierce Junction. After the Civil War, this railroad became the property of the International-Great Northern.

Residents of Brazoria County cast more than 99% of their votes for secession, 527 for and two against. During the Civil War, the Dance Brothers gun works manufactured weapons, companies were organized for the Confederate Army, and women were left to run the plantations. Fortifications built at Velasco and Quintana weathered Union attacks in 1862. Confederate blockade runners operated along the coast, and some cotton was shipped overland by mule and wagon to Mexico. Though the county suffered little physical damage in the war, the presence of federal troops and loss of profit from cotton crops in 1864 brought increasing hardship. Some plantations were destroyed, and agricultural production declined sharply with the freeing of the slaves. David G. Mills alone lost 313 slaves as a result of emancipation. County land was valued

at more than $3 million in 1860, but its value had declined to less than $2 million by 1866. During the same period, total property value in the county fell from almost $7 million to less than $3 million. Many plantations were divided into smaller farms or turned into pastures; others eventually became part of the Ramsey, Retrieve, Clemens, and Darrington state prison farms. In 1870, only a single Brazoria County resident, farmer William Bryan, had a prewar level of wealth, with real property valued at $100,000 and personal property worth $20,000. As conditions worsened, some Brazoria County citizens moved to Mexico, where they organized settlements in the Tuxpan River valley in Vera Cruz.

Between 1870 and 1880, the population in Brazoria County grew from 7,527 to 9,774, largely due to the arrival of federal soldiers and other Northerners, foreign immigrants, and Confederate soldiers from Texas and the Old South. S.A. Hackworth, a white Republican, bought land in Wharton, Fort Bend, and Brazoria counties and sold it to blacks in the 1870s and 1880s. By the 1890s, Columbia was the largest town in the county, followed by Brazoria, Velasco, Quintana, Sandy Point, and Liverpool, and new towns had been founded—Alvin, Angleton, and Pearland. In 1898, at the end of the Spanish-American War, Adm. George Dewey acquired 65,000 acres of land in Brazoria County.

Economic recovery came slowly in the post-Civil War era. The principal crops were corn, grains, sweet and Irish potatoes, fruits, wild grapes, and cotton and sugar for export. Sugar production, reduced in the early years of Reconstruction, burgeoned with the use of convict labor by 1871, but never again reached earlier levels. By 1867, the value of livestock, chiefly cattle, nearly equaled that of agriculture. When cattlemen found northern markets shut off in the late 1860s, hide and tallow factories were established along the Brazos River; Brazoria County packed $100,000 worth of canned beef in 1870. Figs were introduced in the Alvin area around the turn of the century and became an important crop. Four canneries were later built in the community. Live oak moss was ginned at Angleton.

Though the Galveston and Brazos Navigation Company was chartered as early as 1850, major improvements in transportation began only in the 1870s, starting with a canal across Galveston Bay, completed with the help of the federal government. By 1905, workers completed jetties to deepen the water in the harbors at Velasco and Quintana, and in part of what became the Gulf Intracoastal Waterway. The Brazos River Harbor Association was founded in 1925, and by 1929 Brazos River diversion reduced the problem of sanding in the channel and opened the harbor at Freeport. Railroad transportation improved. The Houston and Brazos Valley Railroad reached Velasco by 1907, the Sugar Land Railroad was serving plantations along Oyster Creek by 1916, and the St. Louis, Brownsville, and Mexico Railway established service to Brazoria by 1937. All were later acquired by the Missouri Pacific system, and more recently by the Union Pacific. Major state highway construction in the county was done in the 1920s and 1930s, though State Highway (SH) 288 was not completed until later.

The value of Brazoria County agriculture rose steadily after Reconstruction, and the majority of residents earned their livelihood from the soil until the late 1930s. The use of mules declined with widespread use of tractors after 1925, and the number of farms increased steadily to a maximum of 3,065 in 1940. Houston Lighting and Power service reached the county in 1927; however, by 1930, the effects of the Great Depression were obvious. Whereas fewer than a third

of county farmers were tenants in 1880, by 1930 tenants constituted a majority, a condition that lasted until the 1950s. Between 1900 and 1930, Brazoria County was described as a cattle-raising area, with some oil and sulfur production, dairying, and diverse farming. The dairy industry, centered on Alvin, peaked between 1910 and 1930, and cotton culture in 1920. Corn culture concentrated near Sweeny, Brazoria, Damon, Danbury, and Angleton; stock farming around Alvin' truck farming in the Sweeny area; figs and poultry near Alvin and Angleton; and pecans around Sweeny and East Columbia.

Rice culture enhanced the economy. Farmers near Danbury and elsewhere started planting rice after 1900 and began to dig rice canals in 1935. From a total of 6,000 acres planted in the crop in 1903, planting grew to 16,000 acres by 1940. In 1948, favorable growing conditions made Brazoria County the nation's number-one rice producing area, with a crop valued at more than $10 million. The average yield per acre almost doubled between 1956 and 1970; an average of 53,000 acres was planted during those years. Rice and grain exports comprised 65,000 tons in 1968; American Rice, Inc., at Brazosport, shipped 350,000 tons of rice in 1990.

Brazoria County mineral development began at West Columbia oilfield as early as 1901. Oil production started at Brazoria in 1902, reached 12,500,000 barrels in 1921, declined during the depression, and then resumed. Brazoria County ranked fourth among Texas counties in 1946, with 29,308,106 barrels produced. Sulfur deposits at Bryan Mound, Hoskins Mound, and Stratton Ridge Dome were first mined in 1912, and soon made the county first in US production of sulfur. The Freeport Sulphur Company employed 800 persons at Bryan and Hoskins Mound in 1930 and extracted 2,000 tons of sulfur daily. By 1944, the firm had extracted 552,000 long tons of ore. The county's contribution to World War I came from factories at Brazoria, Sweeny, and Hasima that produced live oak nails for shipbuilding.

Brazoria County manufacturing was relatively unimportant as late as 1940, when it employed only 166 persons. During the 1940s, however, the number of manufacturing jobs increased rapidly. As the depletion of Bryan Mound sulfur deposits brought an end to the area's principal industry, Dow Chemical Company, drawn to natural resources at Freeport, came in 1939 and soon gave rise to the Brazosport industrial and port community. After the Japanese attack on Pearl Harbor in 1941, members of the Texas National Guard manned newly established Dow facilities, while the company constructed 2,300 dwelling units in less than two months for its workers. By 1945, exports from Brazosport amounted to 117,610 tons. Another effect of World War II on the county took the form of camps for prisoners of war, which housed German soldiers and members of Rommel's Afrika Corps for a time. A second phase of industrialization began in the 1950s as "customer companies," including Monsanto and processors of chemical fertilizers, established operations nearby to make use of Dow products. Industrial development attracted more workers, including people from East Texas and some African Americans from nearby communities, while real estate developments produced such new Brazosport communities as Lake Jackson. Transportation, meanwhile, included by 1949 the Gulf, Colorado, and Santa Fe Railway and the Missouri Pacific, which operated the Houston and Brazos Valley; the St. Louis, Brownsville, and Mexico; the International-Great Northern; and the Texas and New Orleans. The county population grew from 27,069 in 1940 to 46,413 in 1950 and continued to expand. By 1982,

at which time 17,800 persons were employed in 2,785 business establishments in Brazoria County, three decades of further growth had more than tripled the population to 185,244.

Small farms in Brazoria County increased through the 1930s and 1940s, and farmers increasingly raised crops as tenants rather than landowners. By 1945, agribusiness had appeared; fewer than 7% of all farms accounted for almost 70% of farm income, and more than 50% of farms made less than $1,000 annually. At the same time, the county ranked eighth in Texas cattle production, with 69,437 head, and farmers turned to the Brahman breed. Overall farm production peaked in the 1950s, with 130,000 acres of cropland harvested. County farmers owned almost 82,000 cattle by 1960, and by 1968 cattle outnumbered people. Roughly 60% of the county's agricultural income derived from rice in the 1970s, and 40% from livestock and poultry; cotton, soybeans, and grain increased in importance by the latter part of the decade. By 1976, the county had 48 oil and gas fields, including Old Ocean, Chocolate Bayou, Damon Mound, Hastings, Bryan Mound, Danbury, Manvel, and West Columbia. In the late 20th century, petroleum and mineral production and marketing, together with other extraction and manufacturing and the chemical industry, continued to shape the county's development and the lives of local farmers and ranchers. More than 2,549,000 barrels of oil and 44,831,552 cubic feet of gas-well gas were produced in the county in 2004; by the end of that year, 1,270,790,962 barrels of oil had been taken from county lands since 1902. Magnesium from sea water, which ranked Brazoria County first in the nation's production, along with oyster shell, sulfur, and salt, was manufactured at Freeport and Velasco. The shrimping industry grew at Freeport after World War II. In 1967, 610 boats harvested 14,000,000 pounds of shrimp; the 1971 catch was 160 times larger than that in 1970, and the harvest doubled again by 1972. Both fishing and the recreation industry, which grew up after 1960, fostered ongoing development on the Gulf Coast.

By the 1980s, the county had 186 manufacturing establishments that employed almost 18,000 workers. In the 1990s, when the county had more than 41,000 acres of rice in production, the chief agricultural products were rice, cattle, cotton, corn, small grains, forage, and truck crops, with some sorghum, soybeans, and horses. The Brazoria-Galveston Soil Conservation District promoted adequate drainage to allow cultivation.

The population of Brazoria County became more homogeneous during the 20th century. After 1900, the white population grew steadily. By 1920, as blacks began to leave for employment in northern cities, the county had twice as many white as black residents. A typical county resident at the turn of the century was born either in the lower South or within the state of Texas. Native whites comprised 62.9% of the total population in 1930, and grew to 71.4% in 1940. Mexican Americans increased in the 1930s, especially around Alvin, where they were employed as farm laborers. The county population, 23,114 in 1930, increased steadily but predominantly in urban areas after 1940, and rose almost 57% between 1970 and 1980. Of a total population of 182,244 in 1982, almost 68% were native Texans, 13,152 were African American, and 22,679 Hispanic.

Brazoria County's first school was established in 1827, Brazoria Academy in 1839, Alvin Normal School in 1890, and the University of South Texas in 1897. By 1900, eight independent school districts with 200 teachers and 40 school buildings served the county's 6,000 pupils. Alvin Community College, founded in the late 1940s, enrolled 3,900 students in 1990. Brazosport College began in 1968. Common-school districts expanded significantly around 1920 and

suffered declining enrollments during the Great Depression, but grew again by 1940 as the northern county population increased with the rapid growth of Houston, and the southern and central parts of the county grew through the influence of increasing industrialization. New independent school districts became necessary. In 1935, the county had 27 schools for whites and 28 for blacks, and in 1940 Pearland had the only first-class high school among the common-school districts. In 1950, only 23% of the county population had completed high school, but by 1982 more than 65% had done so. College graduates numbered almost 14% that year.

In 2000, the census counted 241,767 people living in Brazoria County. About 66% were Anglo, 23% were Hispanic, and 9% were African American. Almost 80% of residents age 25 and older had four years of high school, and more than 19% had college degrees. In the early 21st century, petroleum and chemical production, tourism, and agribusiness were the key elements of the area's economy. In 2002, the county had 2,455 farms and ranches covering 613,891 acres, 55% of which were devoted to pasture, 37% to crops, and 7% to woodlands. In that year, local farmers and ranchers earned $47,422,000, with crop sales accounting for $24,824,000 of that total. Cattle, hay, rice, beans, sorghum, nursery plants, corn, and cotton were the chief agricultural products. Over 19,271,000 cubic feet of pinewood and over 3,680,000 cubic feet of hardwood were harvested in the county in 2003.

Angleton (2000 population, 18,130) is the county's seat of government and Pearland (37,640) its largest city. Brazosport (59,440) is a community of nine cities, including Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Quintana, Richwood, and Surfside Beach. Other towns include West Columbia (4,255), Sweeny (3,624), Manvel (3,046), Brookside Village (1,960), Danbury (1,611), Holiday Lakes (1,095), Bailey's Prairie (694), Damon (535), Danciger (357), and Bonney (384). Brazoria County offers water sports, fishing, hunting, and other recreation, along with historic sites including Varner-Hogg Plantation State Historical Park. The county celebrates a San Jacinto Festival at West Columbia and the Spring Fling at Clute in April; a Mexican Fiesta at Pearland and Youth Rodeo and Frontier Days at Alvin in May; a Fishing Fiesta at Freeport, a Fireworks Display at Alvin, and the Great Texas Mosquito Festival and Parade at Clute in July; a Founders Day Celebration at Pearland in September; and a County Fair and Rodeo at Angleton and the Bluegrass and Gospel Fall Festival at Brazoria in October.

Mineral Extraction and Manufacturing in Brazoria County (1901 to 1972)

Oil and Natural Gas

The APE is located within the Old Ocean Oil Field, one of several discovered in Brazoria County following the initial discovery of oil at West Columbia in 1901. Oil production started at Brazoria in 1902, reached 12,500,000 barrels in 1921, declined during the Depression, and then resumed following the discovery of oil at Old Ocean by J.S. Abercrombie in 1934 and the further discovery of natural gas at Old Ocean in 1936. Brazoria County ranked fourth among Texas counties in 1946, with 29,308,106 barrels produced. The Old Ocean field has been characterized by engineers as "one of the most unusual and complex fields" in Texas because it was unitized in 1948. The unitization of the field was accomplished after two years of study by the J.S. Abercrombie Company, then the unit operator, and the Old Ocean Royalty Owners Association. The unitization plan allowed the operator to recover more productivity from the field's vast natural

resources and increased the effective operations of the field on a broader economic basis. Under unitization, there were 585 royalty owners (over 93%) and 10 leasehold operators (98%) who were involved in the terms of the agreement. *Oil and Gas Journal* printed two articles on the Old Ocean field in its September 1948 issue, stating that the field at that time was the nation's largest voluntary unit and had the world's two largest separation stations installed in the Gulf Coast field." F.L. Nelson, the area production superintendent said, "The centralization of the field brought about by the unitization program enables us to operate more effectively and economically" (Jordan 1961). The largest of the two separation stations—the BRLD—had 145 wells flowing into the separator. The smaller of the two—the Ashley Wilson Station—is tied to 91 of the wells.

Jordan (1961) also notes that the discovery of the oil field changed Sweeney:

> [F]rom a sleepy, farming village from a sparsely settled community to a thriving oil field town in a relatively short time. Residents soon became familiar with the oil field jargon of the "roughnecks" and "Christmas tree" muddy khaki-clad men wearing tin hats and the field boots and board roads that spanned the swamps leading to drilling locations in [sic] the advent of the oil field introduced to the community and its residents a completely new concept of life. The 1960 census reports counted 3,007 within the corporate limits of the city, with a total of 7,000 residing in the trade area of Sweeny (Jordan 1961).

Sulphur Mining and Industry in Brazoria County (1912 to 1972)

Sulfur deposits at Bryan Mound, Hoskins Mound, and Stratton Ridge Dome were first mined in 1912, and soon made the county first in US production of sulfur. The Freeport Sulphur Company employed 800 persons at Bryan and Hoskins Mound in 1930 and extracted 2,000 tons of sulfur daily. By 1944, the firm had extracted 552,000 long tons of ore. During the 1940s, the number of manufacturing jobs increased rapidly.

As the depletion of Bryan Mound sulfur deposits brought an end to the area's principal industry, Dow Chemical Company, drawn to natural resources at Freeport, came in 1939 and soon gave rise to the Brazosport industrial and port community. After the Japanese attack on Pearl Harbor in 1941, members of the Texas National Guard manned newly established Dow facilities, while the company constructed 2,300 dwelling units in less than two months for its workers. By 1945, exports from Brazosport amounted to 117,610 tons. Another effect of World War II on the county took the form of camps for prisoners of war, which housed German soldiers and members of Rommel's Afrika Corps for a time. A second phase of industrialization began in the 1950s as "customer companies," including Monsanto and processors of chemical fertilizers, established operations nearby to make use of Dow products.

Industrial development attracted more workers, including people from East Texas and some African-Americans from nearby communities, while real estate developments produced such new Brazosport communities as Lake Jackson. By 1949, transportation facilities included the Gulf, Colorado and Santa Fe Railway and the Missouri Pacific, which operated the Houston and Brazos Valley; the St. Louis, Brownsville, and Mexico; the International-Great Northern; and the Texas and New Orleans railroads. The county population grew from 27,069 in 1940 to 46,413 in 1950, and continued to expand. By 1982, at which time 17,800 persons were employed in

2,785 business establishments in Brazoria County, three decades of further growth had more than tripled the population to 185,244.

The shrimping industry grew at Freeport after World War II. In 1967, 610 boats harvested 14,000,000 pounds of shrimp; the 1971 catch was 160 times larger than that in 1970, and the harvest doubled again by 1972. The fishing and recreation industries, which grew up after 1960, fostered ongoing development on the Gulf Coast.

4.0 ARCHIVAL RESEARCH

Prior to initiating fieldwork, Horizon personnel reviewed the THC's online *Texas Archeological Sites Atlas* (TASA), the National Park Service's (NPS) online *National Register Information System* (NRIS), the Texas Archeological Research Laboratory's (TARL) files, and the Texas State Historical Association's (TSHA) *The Handbook of Texas Online* for information on previously recorded cultural resources sites and previous archeological investigations conducted within a 1.6-kilometer (1.0-mile) radius of the APE. The archival research indicated the presence of five cemeteries within a 1.6-kilometer (1.0-mile) radius of the APE (Table 2; Figure 4) (THC 2017). The cemeteries are located well to the east of the APE and would not be disturbed in connection with the proposed undertaking.

In addition, two Official Texas Historical Markers (OTHM) are located east of the APE along the northern side of the Sweeny Cemetery. While OTHMs are not themselves a protected class of resource, they can provide clues about possible locations of other historical resources.

No known archeological sites or historic properties listed on the NRHP or designated as SALs are present within or in the vicinity of the project site. No prior cultural resources surveys have been conducted within or immediately adjacent to the APE (see Figure 4).

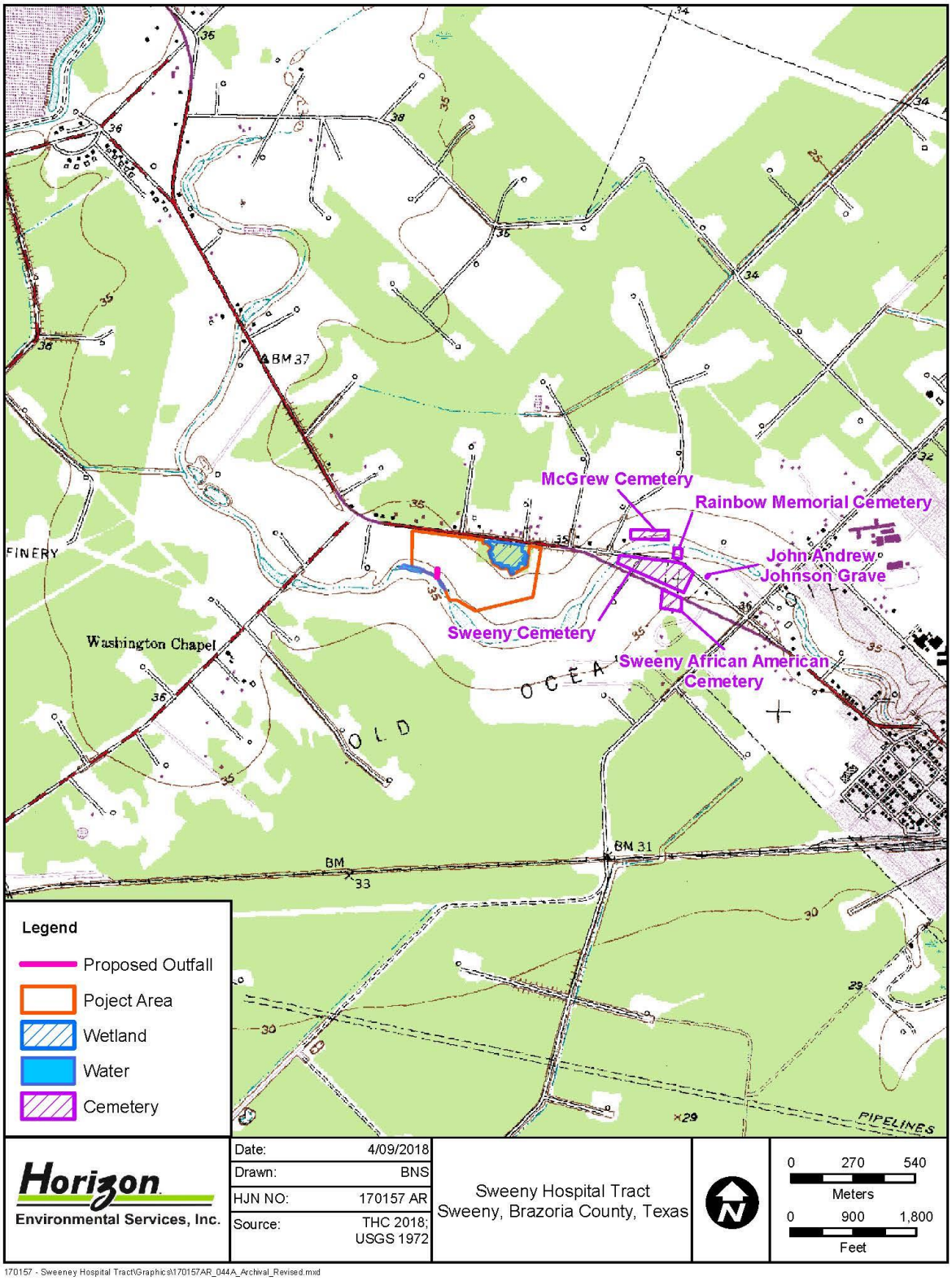


Figure 4. Locations of Known Cultural Resources within 1.0 Mile of APE

Table 2. Summary of Known Cultural Resources within 1.0 Mile of APE

Site No./Name	Site Type	NRHP/SAL Eligibility Status[1]	Distance/Direction from APE	Potential to be Impacted by Project?
Cemeteries				
John Andrew Johnson Grave (BO-C221)	Cemetery	N/A	0.5 mile east	No
McGrew Cemetery (BO-C084)	Cemetery	N/A	0.3 mile east	No
Rainbow Memorial Cemetery (BO-C100)	Cemetery	N/A	0.4 mile east	No
Sweeny African American Cemetery (BO-C212)	Cemetery	N/A	0.4 mile east	No
Sweeny Cemetery (BO-C220)	Cemetery	Recorded Texas Historic Landmark	0.2 mile east	No
Official Texas Historical Markers				
Sweeny Cemetery (No. 9598)	OTHM	N/A	0.5 mile east	No
Thomas Jefferson Sweeny (No. 9597)	OTHM	N/A	0.5 mile east	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
OTHM Official Texas Historical Marker
SAL State Antiquities Landmark
SHPO State Historic Preservation Office

5.0 SURVEY METHODOLOGY

On August 9, 2017 and April 9, 2018, Horizon Project Archeologist Briana Smith and Charles E. Bludau, Jr., under the overall direction of Jeffrey D. Owens, Principal Investigator, performed an intensive archeological survey of the APE for direct effects to locate any archeological resources that potentially would be impacted by the proposed undertaking. Horizon's archeologist traversed the tract and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The APE is located on a gentle, south-facing coastal upland flat adjacent to Stevenson Slough that ultimately discharges into the San Bernard River. The tract is undeveloped, and vegetation consists largely of ankle- to knee-high grasses with scattered oak trees, with dense stands of palmettos lining the banks of the slough to the south. The tract appears to have been used primarily as a cattle pasture in the recent past, though it may also have been used as cropland at one time (Figures 5 to 8).

In addition to pedestrian walkover, the Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 1 shovel test per 0.8 hectare (2.0 acres) for project areas between 4.5 and 40.5 hectares (11.0 and 100.0 acres) in size; as such, a total of 14 shovel tests would be required within the 11.6-hectare (28.7-acre) APE for direct effects. Horizon exceeded the TSMASS by excavating a total of 16 shovel tests (Figure 9). The pedestrian survey and shovel testing revealed that sediments in the APE consist of deep silty loam or loam overlying silty clay at average depths of 60.0 to 80.0 centimeters (23.6 to 31.5 inches) below surface in the southern portion of the tract near the slough. Sediments in the northern portion of the tract were shallower, consisting mainly of silty clay loam or clay loam overlying clay or compact silty clay at a depth of approximately 40.0 centimeters (15.7 inches) below surface.

All sediments were screened through 6.35-millimeter (0.25-inch) hardware cloth. The Universal Transverse Mercator (UTM) coordinates of all shovel tests were determined using hand-held Garmin ForeTrex Global Positioning System (GPS) devices based on the North American Datum of 1983 (NAD 83). Shovel testing was capable of fully penetrating sediments with the potential to contain subsurface archeological deposits, and it is Horizon's opinion that the pedestrian walkover with surface inspection and systematic shovel testing was adequate to evaluate the cultural resources potential of the APE. Specific shovel test data for all 16 shovel tests excavated during the survey are summarized in Appendix A.

During the archeological field survey, field notes were maintained on terrain, vegetation, soils, landforms, survey methods, and shovel test results. Digital photographs were taken, and a

Figure 5. Overview of Western Portion of APE (Facing North)

Figure 6. Overview of Eastern Portion of APE (Facing North)

Figure 7. View of Stevenson Slough along Southern Margin of APE (Facing East)

Figure 8. View of Dense Vegetation Adjacent to Stevenson Slough (Facing South)

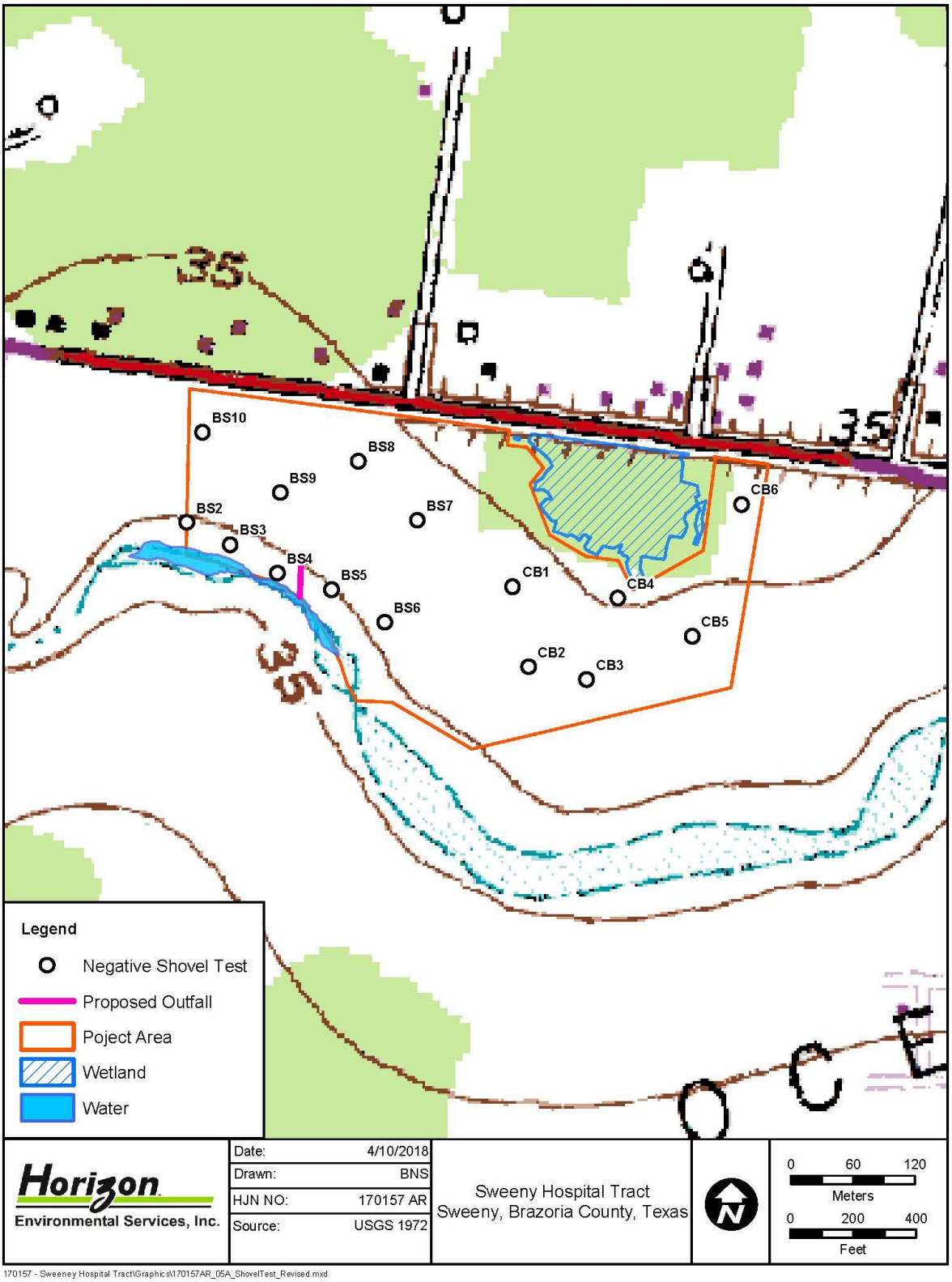


Figure 9. Locations of Shovel Tests Excavated within APE

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

On August 8, 2017, Horizon historian Eugene Foster conducted a reconnaissance-level historical resources inventory survey of the APE for indirect effects. The reconnaissance-level survey was conducted to identify NRHP-listed and NRHP-eligible historic properties that may be affected by the proposed undertaking. The APE for non-archeological resources included the project tract as well as all adjoining property parcels. The background literature search included published historical reports and thematic histories relevant to the history of Sweeney and Brazoria County.

The field survey for non-archeological resources sought to locate and record buildings, structures, objects, and districts constructed in or before 1972, as required to meet the general 50-year age criterion for NRHP eligibility and to provide a five-year buffer for project planning, approval, and construction. Historical maps and aerial photographs were reviewed prior to the field survey and used to locate historic-age resources in the field. Historic-age resources identified in the field were photographically recorded and their locations were mapped using a GPS-enabled digital camera. Online property ownership and tax appraisal records were also reviewed for each identified historic-age resource using the Brazoria County Appraisal District (BCAD) Web site. One interview was conducted with a local resident during the field survey to confirm the purpose of the survey and the locations and identities of cemeteries in the vicinity.

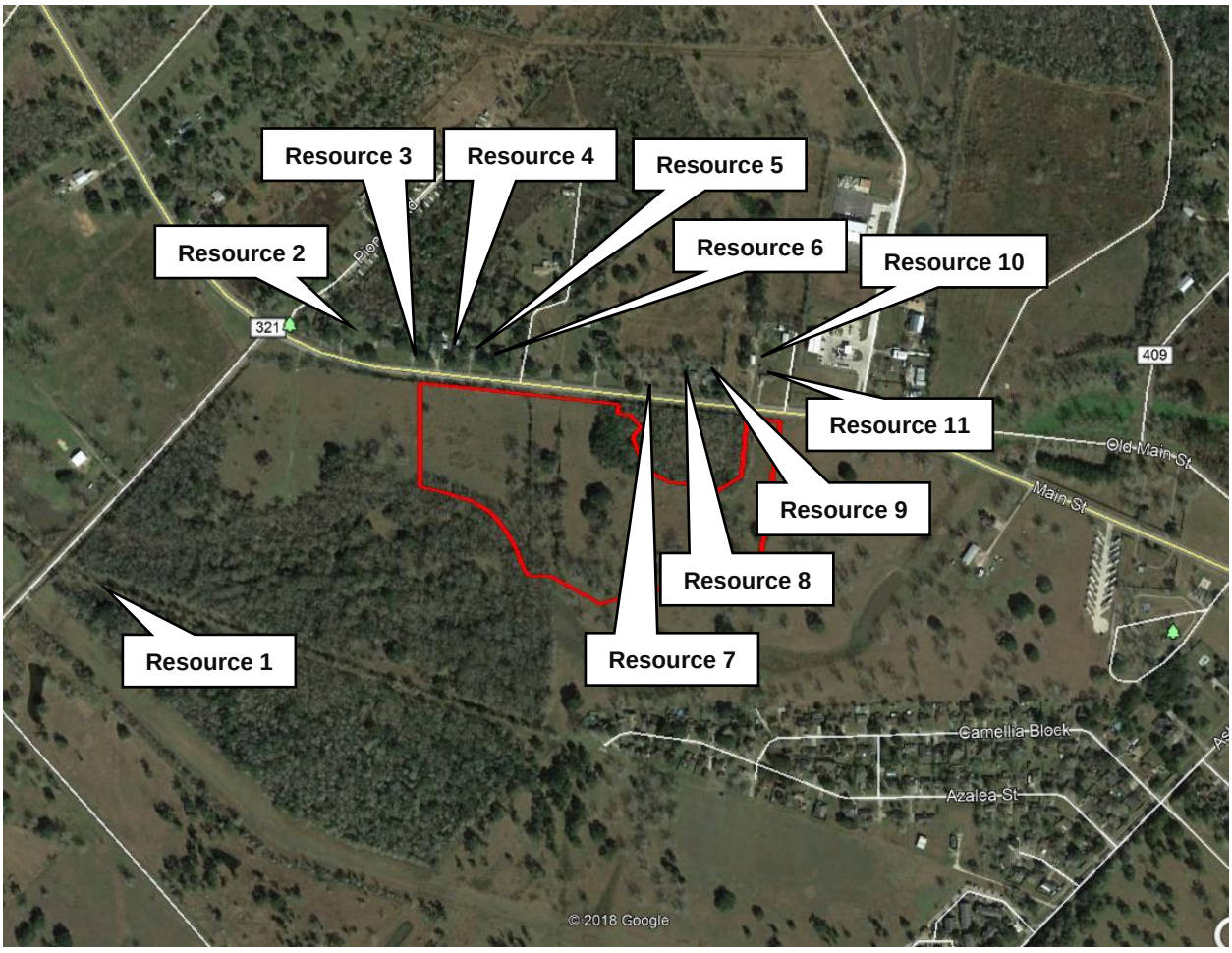
The survey methods employed during the survey represented a "reasonable and good-faith effort" to locate significant archeological and historic-age sites within the APE as defined in 36 Code of Federal Regulations (CFR) 800.3.

6.0 RESULTS OF ARCHEOLOGICAL SURVEY

No archeological resources, prehistoric or historic-age, were observed on the modern ground surface or within any of the shovel tests excavated during the survey of the APE for direct effects.

7.0 RESULTS OF HISTORICAL RESOURCES SURVEY

Eleven resources of historic age were identified within the APE for indirect effects as a result of the reconnaissance-level historical resources survey (Figure 10; Table 3). Each resource is described individually below.



Source: Google Earth (2017)

Figure 10. Locations of Historic-age Resources within APE for Indirect Effects

Table 3. Summary of Historic-age Resources in APE for Indirect Effects

Resource No.	Address	Resource Type/Style	BCAD Record No. & Date of Construction	Property Description (Vol./Page/Date)	Recommended NRHP Eligibility
1	FM 321	Oil and gas pipeline metering shed (Industrial)	182607/no data (estimated date ca. 1955)	Arch. McDonald (A0046 C. Breen); Lot 40, acres 120.471 (v. 21, pg. 21275, April 27, 2012)	Not eligible
2	9355 FM 524	Single-family residence (Minimal Traditional)	182638/1959 with 2016 storage bldg.	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 6F, acres 0.700 (v. 14, p. 043931, Oct. 7, 2014)	Not eligible
3	9363 FM 254	Single-family residence (Minimal Traditional)	182637/1950 residence with 2016 storage bldg.	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 6D1-7D, acres 0.500 (no data)	Not eligible
4	9367 FM 524	Single-family residence (Ranch)	182643/1960 with 1995 porch mods. and 1970 storage bldg.	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 7C, acres 0.500 (v. 97, p. 27580, June 25, 1997)	Not eligible
5	9369 FM 524	Single-family residence (Ranch)	182644/1960 with 2016 storage bldg.	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 7C-1, acres 0.500 (no data)	Not eligible
6	27 FM 524	Single-family residence (Minimal Traditional)	182642/1950 with two 1975 storage bldgs.	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 7B-7E, acres 0.726 (v. 8, p. 10974, Oct 8, 2007)	Not eligible
7	9381 FM 524	Single-family residence (Ranch)	235265/1959 with 1966 storage bldg.	ORR SD TR 8E (A0046 B. Breen); Blk. 1, Lot 4, Life Estate, acres 0.35 (v. 12, p. 35747, July 23, 2012)	Not eligible
8	FM 254 (0.2 mile west of Old Main Street and FM 524)	Single-family residence (Ranch)	235267/1959	ORR SD TR 8E (A0046 B. Breen); Blk. 1, Lots 5-6, acres 0.70 (v. 15, p. 56311, Nov. 30, 2015)	Not eligible
9	FM 254 (0.2 mile west of Old Main Street and FM 524)	Single-family residence (Ranch design trends with Minimal Traditional details)	235268/1967 residence with 1967 storage bldg.	ORR SD TR 8E (A0046 B. Breen); Blk. 1, Lot 7, acres 0.350 (no data)	Not eligible

Table 3. Summary of Historic-age Resources in APE for Indirect Effects (cont.)

Resource No.	Address	Resource Type/Style	BCAD Record No. & Date of Construction	Property Description (Vol./Page/Date)	Recommended NRHP Eligibility
10	FM 254 (0.2 mile west of Old Main Street and FM 524)	Commercial garage/shop (Quonset)	491219/1963	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 8B-8D-9A1-9B2 acres 0.730 (v. 13, p. 56080, Oct. 15, 2013)	Not eligible
11	9391 FM 254	Single-family residence (Ranch Style)	182646/1950	Arch. McDonald SD TR 6-7-11-12 (A0046 C. Breen); Lot 9A, acres .710 (v. 12, p. 36456, July 20, 2012)	Not eligible

Source: BCTAD (2017)
BCAD Brazoria County Appraisal District
FM Farm-to-Market Road

7.1 DESCRIPTIONS OF HISTORIC-AGE RESOURCES

Resource 1

Resource 1 is a small, metal utility building located along an old pipeline right-of-way (ROW) off the eastern side of Farm-to-Market Road (FM) 321 approximately 0.5 kilometer (0.3 mile) southwest of the intersection of FM 321 and FM 254 (Figure 11; also see Figure 10). It is rectangular in plan, clad with metal panels, and has a flat roof. Pipes connecting the building to the pipeline ROW suggest that this building may house oil and gas pipeline metering or compression equipment. This building appears to be more than 50 years old based on its condition and the industrial style of its casement window and two-panel door. It is not apparent on historic maps and aerials of the area, which suggests that the building may have been relocated to its current site in recent decades. The estimated date of construction is ca. 1955. Access to the building is via a ranch gate along the southeastern side of FM 321.

Resource 2

Resource 2 is a single-story, wood-frame dwelling located at 9355 FM 524 (formerly 35 FM 524) that reportedly dates from 1959 (Figures 12 and 13; also see Figure 10) (BCAD 2017). Architecturally, it is typical of Minimal Traditional design trends that were popular across the nation in the mid-20th century. Design characteristics include a moderately pitched, side-gabled roof, a front-gabled wing, and a small shed porch sheltering the front entry. The building retains its original asbestos shingle siding on original portions of its exterior, though a room addition on its western end is also covered with similar siding. Additional alterations include a replacement front door and replacement two-over-two metal sash windows in all original window locations. The front yard area features an expansive grass lawn, mature trees, and a gravel driveway connecting directly to FM 524.

Figure 11. Resource 1—Pipeline Metering Shed on FM 321 (Facing Southeast)

Figure 12. Resource 2—Dwelling at 9355 FM 524 (Formerly 35 FM 524) (Facing Northeast)

Figure 13. Resource 2—Dwelling at 9355 FM 524 (Formerly 35 FM 524) (Facing Northwest)

Resource 3

Resource 3 is a single-story, wood-frame dwelling located at 9363 FM 254 (formerly 32 FM 524) that reportedly dates from 1950 (Figure 14; also see Figure 10) (BCAD 2017). Architecturally, it is typical of Minimal Traditional design trends that were popular across the nation in the mid-20th century. Design characteristics include a low-pitched hipped roof over a simple rectangular floor plan with a small shed porch extension sheltering the front entry. The dwelling appears to have been completely re-clad with horizontal siding and replacement two-over-two metal sash windows. A recently constructed two-bay garage is connected to the western end of the dwelling and features horizontal siding and a hipped roof like that of the original dwelling. The front yard area features an expansive grass lawn, mature trees, and a new concrete driveway connecting directly to FM 524.

Resource 4

Resource 4 is a single-story, brick-veneered dwelling located at 9367 FM 524 that reportedly dates from 1960 (Figure 15; also see Figure 10) (BCAD 2017). Architecturally, it is typical of Ranch style design trends that were popular across the nation in the mid-20th century with a low-pitched hipped roof, a rectangular floor plan, and a broad front wing with a hipped roof. Design features include an integrated parking space at the southwestern corner and an integrated front entry porch with brick columns, though the county tax appraisal office documents porch

Figure 14. Resource 3—Dwelling at 9363 FM 254 (Formerly 32 FM 524) (Facing Northeast)

Figure 15. Resource 4—Dwelling at 9367 FM 524 (Facing Northeast)

alterations in the mid-1990s. Windows throughout appear to be original, paired two-over-two metal sash windows. The front yard area features a grass lawn, mature trees, and a concrete driveway connecting a recently constructed parking shed directly to FM 524.

Resource 5

Resource 5 is a single-story, brick-veneered dwelling located at 9369 FM 524 that reportedly dates from 1960 (Figure 16; also see Figure 10) (BCAD 2017). Architecturally it is representative of Ranch style design trends that were popular across the nation in the mid-20th century with a low-pitched hipped roof, a rectangular floor plan, and a central roof extension that covers an integrated entry porch. Distinctive features include an integrated, single-by garage on the western end and polychromatic brick laid in a common bond pattern. Windows throughout appear to be original, paired two-over-two metal sash windows. The front yard area features a grass lawn, mature trees, and a concrete driveway connecting directly to FM 524.

Resource 6

Resource 6 is a single-story, wood-frame dwelling located at 27 FM 524 that reportedly dates from 1950 (Figure 17; also see Figure 10) (BCAD 2017). Architecturally, it reflects Minimal Traditional design trends that were popular across the nation in the mid-20th century with a moderately pitched, side-gabled roof, and a front-gabled wing with an integrated corner porch sheltering the front entry. Non-original alterations include multiple room and garage additions to the building's western end that reportedly date from the mid-1970s (BCAD 2017). The windows

Figure 16. Resource 5—Dwelling at 9369 FM 524 (Facing Northeast)

Figure 17. Resource 6—Dwelling at 27 FM 524 (Facing Northeast)

throughout appear to have been replaced with two-over-two metal sashes, individually and in pairs. The front yard area features an expansive grass lawn, mature trees, and both gravel and concrete driveways connecting directly to FM 524.

Resource 7

Resource 7 is a single-story, brick-veneered dwelling located at 9381 FM 524 that reportedly dates from 1959 (Figure 18; also see Figure 10) (BCAD 2017). Architecturally, it is representative of Ranch style design trends that were popular across the nation in the mid-20th century with a low-pitched hipped roof, an elongated rectangular floor plan, and a hipped wing projecting forward from the eastern end of the floor plan. Design features include an integrated, single-by garage on the western end, an integrated entry porch at the front wing intersection, and monochromatic Roman brick laid in a common bond. Windows throughout appear to be original metal sash windows. The front yard area features a grass lawn, mature trees, and a concrete driveway connecting directly to FM 524. A small wooden storage shed has been recently constructed in the side yard.

Resource 8

Resource 8 is a single-story, brick-veneered dwelling located 0.3 kilometer (0.2 mile) west of Old Main Street and FM 524 that reportedly dates from 1959 (Figure 19; also see Figure 10) (BCAD 2017). Architecturally, it is representative of Ranch style design trends that were popular across the nation in the mid-20 century with a low-pitched hipped roof, an elongated rectangular

Figure 18. Resource 7—Dwelling at 9381 FM 524 (Facing Northeast)

Figure 19. Resource 8—Dwelling 0.2 Mile West of Old Main Street and FM 524 (Facing Northeast)

floor plan, and a hipped wing projecting forward from the east end. Design features include an integrated, two-bay garage on the western end, an integrated porch sheltering the garage and front entry, and monochromatic brick laid in a common bond. Windows throughout appear to be original two-over-two metal sash windows. Both garage bays have been enclosed. The front yard area features a grass lawn, mature trees, and a gravel driveway connecting directly to FM 524.

Resource 9

Resource 9 is a single-story, brick-veneered dwelling located 0.3 kilometer (0.2 mile) west of Old Main Street and FM 524 that reportedly dates from 1967 (Figure 20; also see Figure 10) (BCAD 2017). Architecturally, it is representative of Ranch style design trends with Minimal Traditional details that were popular across the nation in the mid-20th century. Design characteristics include a low-pitched hipped roof, an elongated rectangular floor plan, and a hipped wing projecting forward from the western end of the floor plan. The projecting wing shelters and an integrated single-by garage and an integrated porch that shelters the main entry doorway and a large picture window. The porch roof is carried on two round columns. The roof is covered with asphalt composition shingles and the exterior walls are veneered with monochromatic brick laid in a common bond. Windows are original two-over-two metal sash units. The front yard area features a grass lawn, mature trees, and a gravel driveway connecting directly to FM 524.

Resource 10

Resource 10 is a single story Quonset-style work shop or garage located 0.3 kilometer (0.2 mile) west of Old Main Street and FM 524 that reportedly dates from 1967 (Figure 21; also see Figure 10) (BCAD 2017). Exterior materials consist entirely of corrugated metal paneling with two roof ventilators mounted along the peak of the roof. The south-facing front wall has a large garage bay with a replacement overhead door and a small window. The surrounding yard area includes a large tree, a gravel drive, and a variety of metal shipping containers, equipment trailers, and truck parts.

Resource 11

Resource 11 is a single-story, brick-veneered dwelling located at 9391 FM 254 that reportedly dates from 1950 (Figure 22; also see Figure 10) (BCAD 2017). Architecturally, it is typical of Ranch style design trends that were popular across the nation in the mid-20th century. Design characteristics include a low-pitched hipped roof, an elongated rectangular floor plan, and an integrated garage at the western end. Additional features include a massive exterior fireplace of Roman brick centered on the south-facing front wall, an offset entry door, asbestos shingle siding above a tall skirting of Roman brick, and small one-by-one sliding windows. The front yard area features a grass lawn, young trees and shrubs, and a concrete driveway connecting directly to FM 524.

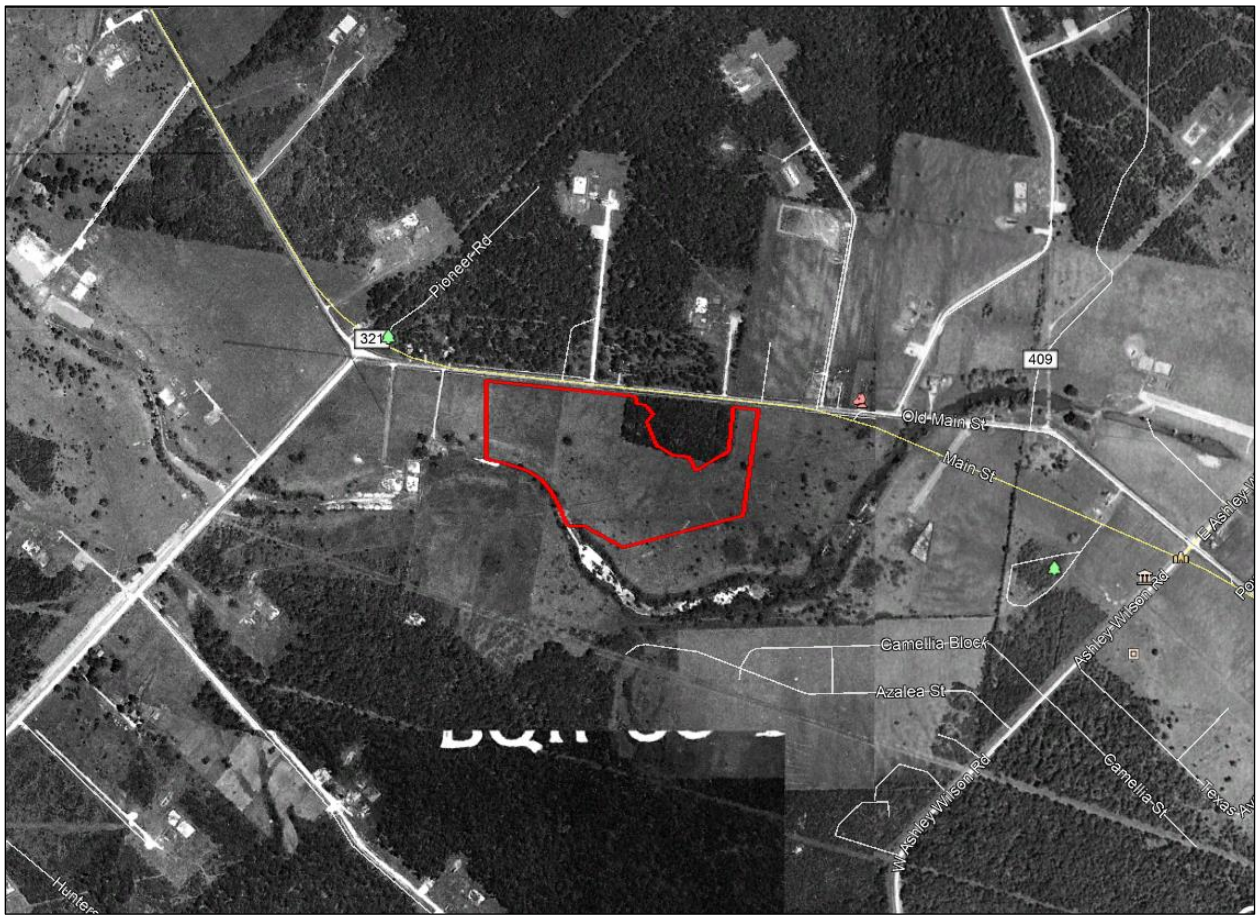
Figure 20. Resource 9—Dwelling 0.2 Mile West of Old Main Street and FM 524 (Facing Northeast)

Figure 21. Resource 10—Commercial building 0.2 Mile West of Old Main Street and FM 524 (Facing Northwest)

Figure 22. Resource 11—Dwelling at 9391 FM 254 (Facing Northeast)

7.2 HISTORICAL RESOURCE EVALUATIONS

Historical US Geological Survey (USGS) topographic maps and aerial photographs reflect Jordan's (1961) description (see Chapter 4.0) of Sweeney's transition from traditional agricultural land uses to oil and gas extraction in the mid-20 century. A 1944 USGS aerial photograph shows the APE south of FM 524 (Old Main Street) as a rural agricultural landscape of fenced pastures, probably used for cattle grazing (Figure 23), and three roadways accessing oil storage facilities along an oil and gas pipeline ROW that passes south of Stevenson Slough that forms the southern margin of the APE. North of FM 524, a few roadside residential properties are visible on the 1944 aerial photograph interspersed along the FM 524 frontage with several access roads connecting to active oil and gas storage facilities located farther north on separate tracts from the FM 524 residential properties. Subsequent USGS topographic quadrangles from 1952 (Figure 24) and 1976 (see Figure 1) show the area south of FM 524 (Old Main Street) to be largely unchanged, with two oil storage facilities along the creek. The 1952 and 1976 USGS maps show increasing numbers of residential properties along the FM 524 (Old Main Street) frontage and an unchanged pattern of oil and gas storage facilities farther north. The most notable changes south of FM 524 include a reroute of FM 524 to pass along the southern edge of Sweeney Cemetery. Several new roadways are also shown connecting to FM 524 and Ashley-Wilson Road, well to the east of FM 409. At present, the roadways shown on the 1952 and 1976 USGS maps south of FM 524 are fully developed, with a trailer park and a residential subdivision.



Source: Google Earth (2017)

Figure 23. Location of APE on 1944 Aerial Photograph

Eleven historical resources were recorded within the APE for indirect effects associated with the proposed undertaking. All appear to be related directly or indirectly to the influence of the oil and gas industry on local community developments in the post-1948 period, when the Old Ocean Oil Field was "unitized" under the operational control of the J.S. Abercrombie Company. Only Resource 1, a ca. 1955 oil and gas utility shed, is directly related to the greater oil and gas operations that continue today in and around the APE. The other 10 historic-age resources recorded within the APE are roadside residential and commercial properties built between 1950 and 1967 on the northern side of FM 524. Notably, Resources 2 to 11 all lie along the northern side of FM 524 and back up to a field of oil and gas wells that appear to be operational to the present day. None of the oil and gas wells depicted on historical topographic maps and aerial photographs south of FM 524 appear to survive at present. The only commercial property in the APE, Resource 10, is a Quonset building, possibly salvaged and relocated to this site ca. 1963 and later modified to serve as a local mechanic's shop or garage.

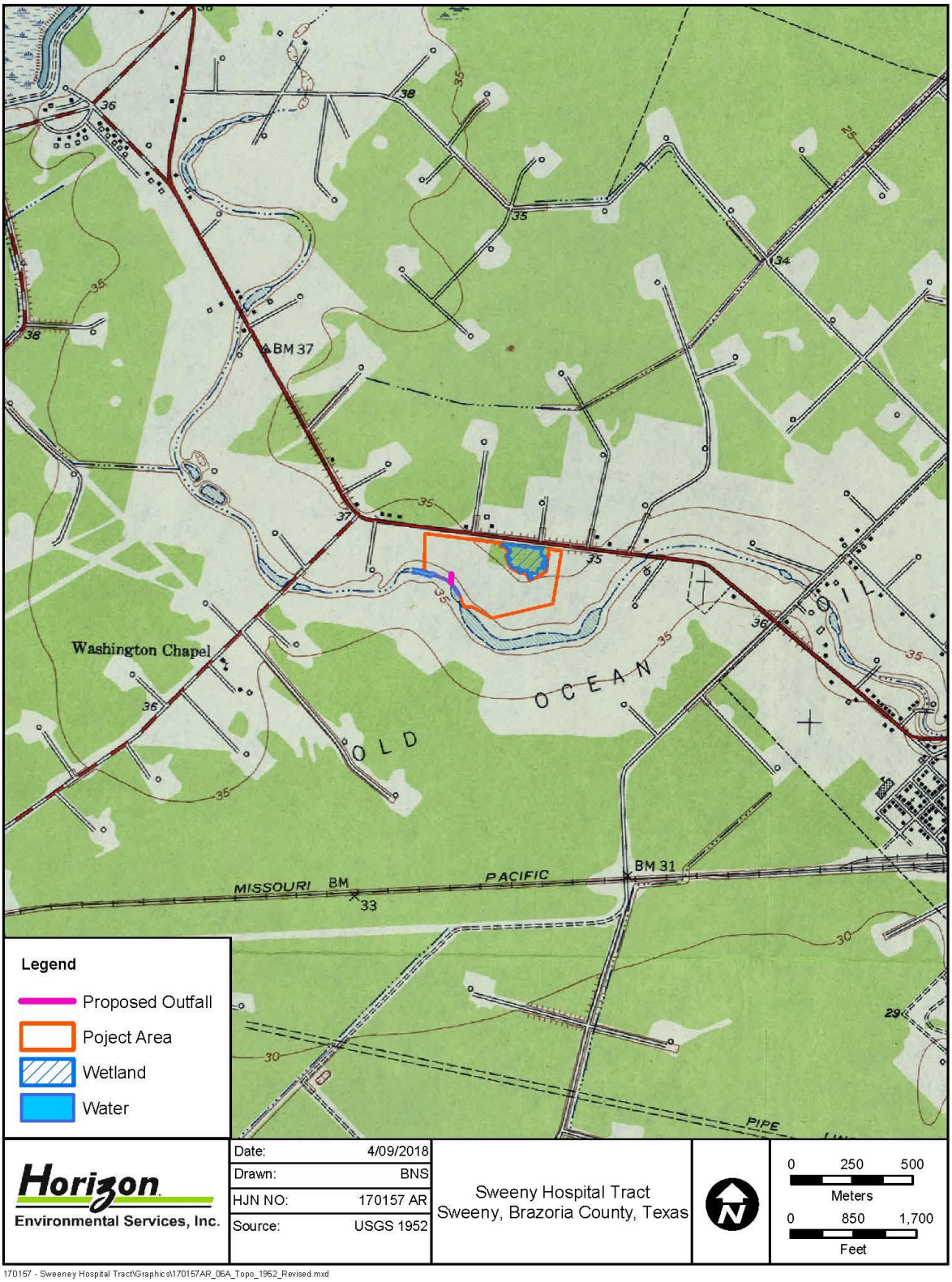


Figure 24. Location of APE on 1952 USGS Topographic Quadrangle

J.S. Abercrombie's unitization plan was unusual for its time and the field was recognized in industry journals as having the world's two largest oil and gas separation stations (Jordan 1961). However, none of the resources recorded within the APE, either individually or as a group, adequately represent his greater contributions to the oil and gas industry in Texas and Brazoria County. Consequently, none of the recorded resources is individually recommended for NRHP eligibility under Criterion B for association with J.S. Abercrombie, the most prominent historical figure associated with the resources recorded in the APE.

Individually, none of the recorded resources are believed to have been designed by a master architect or builders, and each presents only modest architectural and engineering design qualities. With the exception of Resource 5, most have suffered some degree of alteration in the form of additions to their original plan or by replacement of original windows and doors. Resources 1 and 10 may also lack integrity of location, as both are industrial building types that are easily relocated from one industrial/commercial site to another. Consequently, none of the recorded resources is individually recommended for NRHP eligibility under Criterion C for their architectural or engineering design qualities.

The mixture of property types and varied construction dates suggests that the recorded resources were built in an ad hoc manner for varied purposes over a span of 15 years by individual property owners rather than as a group within the framework of a unified subdivision or community development plan. Continued operation of the Old Ocean Oil Field through the late 20th century until the present has further diminished the integrity of the group as older buildings and oil wells have been removed and other newer buildings and industrial facilities have been built within the APE. Consequently, the surviving historic-age resources recorded within the APE lack sufficient historical distinction and unity of design to qualify for NRHP eligibility as a historic district.

8.0 SUMMARY AND RECOMMENDATIONS

8.1 CONCEPTUAL FRAMEWORK

The archeological investigations documented in this report were undertaken with three 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 inclusion in the NRHP and for designation as SALs.
- Formulate recommendations for the treatment of these resources based on their NRHP and 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 NHPA and the Antiquities Code of Texas, archeological resources are evaluated according to criteria established to determine the significance of archeological resources for inclusion in the NRHP and for designation as SALs, respectively.

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.

8.2 ELIGIBILITY CRITERIA FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES

Determinations of eligibility for inclusion in the NRHP are based on the criteria presented in 36 CFR §60.4(a-d). The 4 criteria of eligibility are applied following the identification of relevant historical themes and related research questions:

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> a. [T]hat are associated with events that have made a significant contribution to the broad patterns of our history; or,
>
> b. [T]hat are associated with the lives of persons significant in our past; or,
>
> c. [T]hat embody the distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
>
> d. [T]hat have yielded, or may be likely to yield, information important in prehistory or history.

The first step in the evaluation process is to define the significance of the property by identifying the particular aspect of history or prehistory to be addressed and the reasons why information on that topic is important. The second step is to define the kinds of evidence or the data requirements that the property must exhibit to provide significant information. These data requirements in turn indicate the kind of integrity that the site must possess to be significant. This concept of integrity relates both to the contextual integrity of such entities as structures, districts, or archeological deposits and to the applicability of the potential database to pertinent research questions. Without such integrity, the significance of a resource is very limited.

For an archeological resource to be eligible for inclusion in the NRHP, it must meet legal standards of eligibility that are determined by 3 requirements: (1) properties must possess significance, (2) the significance must satisfy at least 1 of the 4 criteria for eligibility listed above, and (3) significance should be derived from an understanding of historic context. As discussed here, historic context refers to the organization of information concerning prehistory and history according to various periods of development in various times and at various places. Thus, the significance of a property can best be understood through knowledge of historic development and the relationship of the resource to other, similar properties within a particular period of development. Most prehistoric sites are usually only eligible for inclusion in the NRHP under Criterion D, which considers their potential to contribute data important to an understanding of prehistory. All 4 criteria employed for determining NRHP eligibility potentially can be brought to bear for historic sites.

8.3 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.

8.4 SUMMARY OF INVENTORY RESULTS

Horizon's archeologist traversed the tract and thoroughly inspected the modern ground surface for aboriginal and historic-age cultural resources. The APE is located on a gentle, south-facing coastal upland flat adjacent to Stevenson Slough that ultimately discharges into the San Bernard River. The tract is undeveloped, and vegetation consists largely of ankle- to knee-high grasses with scattered oak trees, with dense stands of palmettos lining the banks of the slough to the south. The tract appears to have been used primarily as a cattle pasture in the recent past, though it may also have been used as cropland at one time.

In addition to pedestrian walkover, the TSMASS require a minimum of 1 shovel test per 0.8 hectare (2.0 acres) for project areas between 4.5 and 40.5 hectares (11.0 and 100.0 acres) in size; as such, a total of 14 shovel tests would be required within the11.6-hectare (28.7-acre) APE for direct effects. Horizon exceeded the TSMASS by excavating a total of 16 shovel tests. The pedestrian survey and shovel testing revealed that sediments in the APE consist of deep silty loam or loam overlying silty clay at average depths of 60.0 to 80.0 centimeters (23.6 to 31.5 inches) below surface in the southern portion of the tract near the slough. Sediments in the northern portion of the tract were shallower, consisting mainly of silty clay loam or clay loam overlying clay or compact silty clay at a depth of approximately 40.0 centimeters (15.7 inches) below surface. Shovel testing was capable of fully penetrating Holocene-age sediments with the potential to contain archeological deposits.

No archeological resources, prehistoric or historic-age, were observed on the modern ground surface or within any of the shovel tests excavated during the survey of the APE for direct effects.

On August 8, 2017, Horizon historian Eugene Foster conducted a reconnaissance-level historical resources inventory survey of the APE for indirect effects. The reconnaissance-level survey was conducted to identify NRHP-listed and NRHP-eligible historic properties that may be

affected by the proposed undertaking. The APE for non-archeological resources included the project tract as well as all adjoining property parcels. Eleven historic-age resources (i.e., 50 years of age or older) were recorded within the APE for indirect effects, though no historic-age resources are present within the APE for direct effects. The 11 historical resources include 2 commercial/industrial buildings and 9 single-family residences constructed between 1950 and 1967. All of the 11 historical resources within the APE, individually and as a group, are recommended as not eligible for inclusion in the NRHP.

8.5 MANAGEMENT RECOMMENDATIONS

Based on the results of the survey-level investigations of the APE 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 APE. No cultural resources were identified that meet the criteria for inclusion in the NRHP according to 36 CFR 60.4, and no further archeological investigations or historical research are recommended in connection with the proposed undertaking. However, it should be noted that human burials 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 APE, even in previously surveyed areas, all work should cease immediately at the location of the inadvertent discovery until a qualified archeologist can assess the find, and the THC should be notified of the discovery.

9.0 REFERENCES CITED

Abbott, J.T.

2001 *Houston Area Geoarcheology—A Framework for Archeological Investigation, Interpretation, and Cultural Resource Management in the Houston Highway District*. Archeological Studies Program, Report No. 27, Environmental Affairs Division, Texas Department of Transportation, Austin.

Adovasio, J. M., J. Donahue, and R. Stuckenrath

1990 The Meadowcroft Rockshelter Chronology 1975-1990. *American Antiquity* 55:348-354.

Aten, L. E.

1983 *Indians of the Upper Texas Coast*. Academic Press, New York.

1984 Woodland Cultures of the Texas Coast. In *Perspectives on Gulf Coast Prehistory*, pp. 72-93. Ripley P. Bullen Monographs in Anthropology and History, No. 5, The Florida State Museum, Gainesville.

Blair, W. F.

1950 The Biotic Provinces of Texas. *Texas Journal of Science* 2:93-117.

Brazoria County Appraisal District (BDAD)

2017 Property Records. <https://propaccess.trueautomation.com/ClientDB/PropertySearch.aspx?cid=51>. Accessed August 30, 2017.

Bryant, V. M., Jr., and R.G. Holloway

1985 A Late-Quaternary Paleoenvironmental Record of Texas: An Overview of the Pollen Evidence. In *Pollen Records of Late-Quaternary North American Sediments*, edited by V.M. Bryant, Jr., and R.G. Holloway, pp. 39-70. American Association of Stratigraphic Palynologists Foundation, Dallas, Texas.

Collins, M.B.

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

Dillehay, T. D.

1989 *Monte Verde: A Late Pleistocene Settlement in Chile—Paleoenvironment and Site Context*, Vol. 1. Smithsonian Institution Press: Washington D.C.

1997 *Monte Verde: A Late Pleistocene Settlement in Chile—The Archaeological Context*, Vol. 2. Smithsonian Institution Press: Washington D.C.

Dincauze, D. F.

1984 An Archaeo-Logical Evaluation of the Case for Pre-Clovis Occupations. *Advances in World Archaeology* 3:275-323. Academic Press, New York.

Ensor, H. B., and D. L. Carlson (editors)

1991 *Alabonson Road: Early Ceramic Period Adaptations to the Inland Coastal Prairie Zone, Harris County, Southeast Texas*. Reports of Investigations, No. 8, Archeological Research Laboratory, Texas A&M University, College Station.

Fisher, W.L.

1982 *Geologic Atlas of Texas, Houston Sheet*. Bureau of Economic Geology, The University of Texas at Austin.

Google Earth

2017 Brazoria County. Accessed August 30, 2017.

Hall, G.D.

1981 *Allens Creek: A Study in the Cultural Prehistory of the Lower Brazos River Valley, Texas*. Research Report No. 61, Texas Archeological Survey, The University of Texas at Austin.

Haynes, C. V., Jr., D. J. Donahue, A. J. T. Hull, and T. H. Zabel

1984 Application of Accelerator Dating to Fluted Point Paleoindian Sites. *Archaeology of Eastern North America* 12:184-191.

Hudgins, J. D.

1986 A Historic Indian Site in Wharton County, Texas. *Bulletin of the Texas Archeological Society* 55:29-51.

Jordan, M.L.

1961 Sweeny—Old Ocean Petroleum Industry. Sweeny Texas History, Sweeny History Digital Preservation Committee. <http://sweenytexashistory.com/images/Stories/OtherSweenyPeople/SweenyOldOceanPetroleumIndustryMattieJordan1961.pdf>. Accessed June 7, 2017.

Keller, J. E., and F. A. Weir

1979 *The Strawberry Hill Site*. Publications in Archeology, Report No. 13. Texas State Department of Highways, Austin.

Kelly, R. L., and L. C. Todd

1988 Coming into the Country: Early Paleo-Indian Hunting and Mobility. *American Antiquity* 53:231-244.

Lynch, T.F.

1990 Glacial-Age Man in South America?: A Critical Review. *American Antiquity* 55(1):12-36.

McMahan, C.A., R.G. Frye, and K.L. Brown

1984 *The Vegetation Types of Texas, including Cropland*. Map and accompanying Illustrated Synopsis, Texas Parks and Wildlife Department, Austin.

Meltzer, D.J.

1989 Why Don't We Know When the First People Came to America? *American Antiquity* 54(3):471-490.

Meltzer, D. J., D. K. Grayson, G. Ardila, A. W. Barker, D. F. Dincauze, C. V. Haynes, F. Mena, L. Nuñez, and D. J. Stanford

1997 On the Pleistocene Antiquity of Monte Verde, Southern Chile. *American Antiquity* 62(4:659-663).

National Park Service (NPS)

2017 National Register of Historic Places NPGallery Digital Asset Search. <https://npgallery.nps.nrhp>. Accessed August 10, 2017.

Natural Resources Conservation Service (NRCS)

2017 Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/app/>. Accessed August 15, 2017.

Newcomb, W. W.

1961 *The Indians of Texas from Prehistoric to Modern Times*. University of Texas Press, Austin.

Patterson, L. W.

1980 *The Owen Site, 41HR315: A Long Occupation Sequence in Harris County, Texas*. Houston Archeological Society, Report No. 3.

1995 The Archeology of Southeast Texas. *Bulletin of the Texas Archeological Society* 66:239-264

Patterson, L. W., J. D. Lockwood, R. L. Gregg, and S. M. Kindall

1993 Prehistoric Site 41HR354, 730, 731, 732, Harris County, Texas. *Houston Archeological Society Journal* 104:25-30.

Pertulla, T. K., M. R. Miller, R. A. Ricklis, D. J. Prikryl, and C. Lintz

1995 Prehistoric and Historic Aboriginal Ceramics in Texas. *Bulletin of the Texas Archeological Society* 66:175-235.

Prewitt, E.

1981 Cultural Chronology in Central Texas. *Bulletin of the Texas Archeological Society* 52:65-90.

Ricklis, R.A.

1994 Toyah Components: Evidence for Occupation in the Project Area During the Latter Part of the Late Prehistoric Period. In *Archaic and Late Prehistoric Human Ecology in the Middle Onion Creek Valley, Hays County, Texas*, by R.A. Ricklis and M.B. Collins, pp. 207-316. Studies in Archeology, No. 19. Texas Archeological Research Laboratory, The University of Texas at Austin.

1995 Prehistoric Occupation of the Central and Lower Texas Coast: A Regional Overview. *Bulletin of the Texas Archeological Society* 66:265-330.

Story, D. A.

1990 Cultural History of the Native Americans. In *The Archeology and Bioarcheology of the Gulf Coastal Plain*, by D. A. Story, J. A. Guy, B. A. Burnett, M. D. Freeman, J. C. Rose, D. G. Steele, B. W. Olive, and K. J. Reinhard, pp. 163-366. Two Volumes. Research Series No. 38, Arkansas Archeological Survey, Fayetteville.

Texas Historical Commission (THC)

2017 *Texas Archeological Sites Atlas*. <https://atlas.thc.state.tx.us/>. Accessed August 15, 2017.

Texas State Historical Association (THSA)

2017a Brazoria County. The Handbook of Texas Online. <http://www.tshaonline.org/handbook/online/articles/hcb12>. Accessed August 10, 2017.

2017b Oil and Gas Industry. The Handbook of Texas Online. <http://www.tshaonline.org/handbook/online/articles/doogz>. Accessed August 10, 2017.

US Department of Agriculture (USDA)

2016 Digital orthophoto, Brazoria County, Texas. National Agriculture Imagery Program, Farm Service Agency, Aerial Photography Field Office.

US Geological Survey (USGS)

1972 7.5-minute series topographic maps, Sweeny, Texas, quadrangle.

Waters, M.R., S.L. Forman, T.A. Jennings, L.C. Nordt, S.G. Driese, J.M. Feinberg, J.L. Keene, J. Halligan, A. Lindquist, J. Pierson, C.T. Hallmark, M.B. Collins, and J.E. Wiederhold

2011 The Buttermilk Creek Complex and the Origins of Clovis at the Debra L. Friedkin Site, Texas. *Science* 331:1599-1603.

Wheat, J. B.

1953 *The Addicks Dam Site*. Bulletin 154:143-252. Bureau of American Ethnology, U. S. Government Printing Office, Washington, D.C.

APPENDIX A:

Shovel Test Data

Table A-1. Shovel Test Summary Data

ST No.	UTM Coordinates[1]		Depth (cmbs)	Soils	Artifacts
	Easting	Northing			
BS1	234594	3216310	0-30	Dark reddish-brown silty loam	None
			30-70	Very dark brown silty clay loam	
			70-80+	Very dark grayish-brown dense silty clay	
BS2	234637	3216298	0-30	Dark reddish-brown silty clay loam	None
			30-70	Very dark brown moist loam	
			70-80+	Very dark gray dense silty clay	
BS3	234687	3216298	0-60	Very dark brown loam	None
			60-70+	Very dark gray compact clay	
BS4	234732	3216270	0-30	Dark reddish-brown silty clay loam	None
			30-60	Very dark brown loam	
			60-70+	Grayish-brown very compact silty clay	
BS5	234785	3216254	0-20	Very dark grayish-brown silty clay loam	None
			20-50	Reddish-yellow silty clay loam	
			50-60+	Reddish-yellow compact silty clay	
BS6	234836	3216222	0-30	Very dark grayish-brown clay loam	None
			30-40+	Mottled very dark grayish-brown and very dark brown compact silty clay	
BS7	234868	3216321	0-30	Very dark grayish-brown clay loam	None
			30-40+	Very dark brown compact silty clay	
BS8	234811	3216378	0-40+	Very dark grayish-brown sticky clay	None
BS9	234735	3216348	0-35	Very dark grayish-brown silty clay loam	None
			35-45+	Very dark brown compact silty clay	
BS10	234660	3216406	0-30	Very dark grayish-brown clay loam	None
			30-40+	Very dark gray compact clay	
CB1	234961	3216257	0-60	Very dark gray silty clay	None
CB2	234976	3216179	0-60	Very dark gray silty clay	None
CB3	235032	3216167	0-50	Very dark gray silty clay	None
CB4	235063	3216246	0-60	Very dark gray silty clay	None
CB5	235134	3216209	0-60	Very dark gray silty clay	None
CB6	235183	3216336	0-60	Very dark gray silty 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