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Cultural Resources Survey for Proposed Water Development Board Construction Activities, Sienna Plantation, Fort Bend County, Texas

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Texas Antiquities Permit No. 7918

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GRAY & PAPE
HERITAGE MANAGEMENT

August 8, 2017

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Project No. 16-72339.001

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ABSTRACT

Gray & Pape, Inc. of Houston, Texas was contracted by BIO-WEST, Inc. of Houston, Texas to conduct an intensive pedestrian cultural resources survey of two proposed water line segments (North Segment and South Segment) totaling 6.7 kilometers (4.4 miles) in length, and a waste water treatment plant covering 6.6 hectares (16.2 acres) in Fort Bend County, Texas. Portions of the project area are on property owned by Sienna Plantation Municipal Utility District Number 1 and the City of Missouri City. As political subdivisions of the state, a Texas Antiquities Permit was acquired prior to the commencement of fieldwork (Permit Number 7918).

Fieldwork and reporting activities were performed according to procedures set forth by the Texas Historical Commission and the Council of Texas Archeologists and in accordance with Section 106 of the National Historic Preservation Act. The goals of the survey were to establish whether or not previously unidentified archaeological resources were located within the project area, also defined as the project's Area of Potential Effects, and whether the proposed project would affect any previously identified cultural resources.

Prior to fieldwork, site file and background research was conducted, including a review of historic aerial and topographic maps in an attempt to locate any historic structures within the Area of Potential Effects. Site file review and background research indicated two previously recorded sites might be impacted by the project's Area of Potential Effects. Site 41FB253 was recorded as a Late Prehistoric shell midden and 41FB324 was the remains of a late nineteenth century sugar mill. A total of 15 shovel tests and two trenches were excavated along the planned route of the North Segment, none were positive for cultural resources, and the North Segment was observed to be heavily disturbed by bank modifications along Steep Bank and Flat Bank Creeks. Close interval shovel testing and a trench to test for deeply buried deposits demonstrate that 41FB253 does not manifest within the Area of Potential Effects and that the area has been heavily disturbed by past development. A total of 16 shovel tests were excavated along the planned route of the South Segment. Three tests near 41FB324 were positive for disarticulated brick and these were determined to be out of context remains from the demolition of that site during the construction of Waters Lake Boulevard. Close interval shovel testing and a trench to test for deeply buried deposits demonstrated that 41FB324 does not manifest within the Area of Potential Effects. The South Segment was observed to be heavily impacted by utilities installation, road construction, and residential development. Fifteen shovel tests and six trenches were excavated within the planned footprint of the wastewater treatment plant, all were negative for cultural resources. A ditch feature located within this portion of the Area of Potential Effects has been suggested to be of slave or prison labor construction. However, previous historical research and the current the archaeological survey produced no evidence in support of this supposition.

No new cultural resources were identified during the course of the survey. Known Sites 41FB253 and 41FB324 were determined to have neither near surface, nor deeply buried components, that extend into the project's Area of Potential Effects and will not be impacted by the current undertaking. Based on these results Gray & Pape, Inc. recommends that no further cultural resources work be required and that the project be allowed to proceed as currently planned. Gray & Pape, Inc. submitted project records to the Center of Archaeological Studies at Texas State University in San Marcos, Texas.

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1.0 INTRODUCTION

BIO-WEST, Inc. (BIO-WEST), of Houston, Texas, contracted with Gray & Pape, Inc. (Gray & Pape), of Houston, Texas, to perform an intensive pedestrian cultural resources survey of two areas proposed for construction activities by the Texas Water Development Board (TWDB) in west-central Fort Bend County, Texas. This will include the construction of two segments of water line totaling 6.7 kilometers (4.2 miles) and a waste water plant with a footprint of 6.6 hectares (16.2 acres).

The goals of the survey were to determine if the proposed project would affect any previously identified archaeological sites as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR 800), and to establish whether or not previously unidentified buried archaeological resources were located within the project's Area of Potential Effects (APE). Portions of the APE are on property owned by Sienna Plantation Municipal Utility District Number 1 and the City of Missouri City, political subdivisions of the state, as such, a Texas Antiquities Permit (Permit Number 7918) was required prior to the commencement of fieldwork. All fieldwork and reporting activities were completed with reference to state (the Antiquities Code of Texas) and federal (NHPA) guidelines.

1.1 Project Overview

The APE is broken into two areas, a North Segment and a South Segment (Figure 1-1). The North Segment is located on the *Missouri City, TX* United States Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS 1980a). The North Segment is approximately 3.5 kilometers (2.2 miles) in length, and the corridor is approximately 6 meters (20 feet) wide. The North Segment begins at the Steep Bank/Flat Branch Wastewater Treatment Plant and follows south along the east bank of Steep Bank Creek, before turning east and following the south bank of a canal that connects to Flat Bank Creek. The APE then follows the west bank of Flat Bank Creek before ending at a water treatment facility just east of Schiff Elementary School.

The South Segment is located on the *Thompsons, TX* USGS 7.5-minute topographic quadrangle map (USGS 1980b). The South Segment is approximately 3.2 kilometers (2 miles) in length, and the corridor is approximately 6 meters (20 feet) wide. The South Segment begins at the Sienna Plantation Residential Association Water Treatment Facility. The APE crosses and runs along the east side of Waters Lake Boulevard, with Oyster Creek immediately to the north and east. The proposed route then turns more southerly, across a horseshoe bend in Oyster Creek, before again following the west bank of the creek. As the APE approaches Scanlan Road it diverges from Oyster Creek and follows the west bank of a canal for approximately 1 kilometer (0.6 miles). At the southern terminus of the South Segment is a 6.6-hectare (16.2-acre) area for a planned waste water treatment plant. The anticipated depths of impact along the water line segments is to be between 1.5 and 2.0 meters (5.0 and 6.6 feet) deep, and up to 7.6 meters (25 feet) deep at the waste water treatment plant.

1.2 Report Organization

This report is organized into seven numbered chapters. Chapter 1.0 provides an overview of the project. Chapter 2.0 presents an overview of the environmental setting and geomorphology. Chapter 3.0 presents a discussion of the cultural context associated with the APE. Chapter 4.0 presents the research design and methods developed for this investigation. The results of this investigation are presented in Chapter 5.0. Chapter 6.0 presents the investigation summary and provides

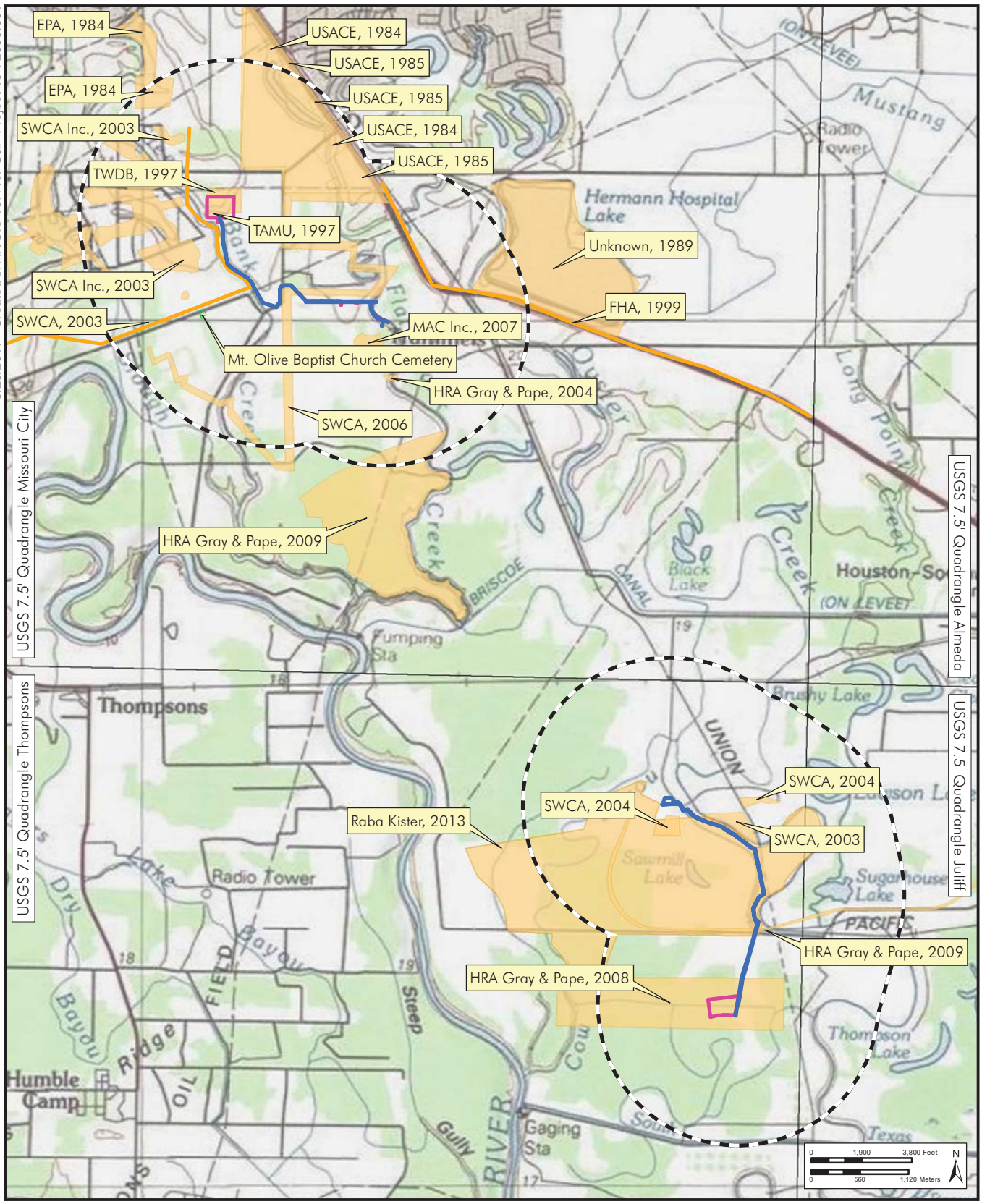

Figure 1-1
Project area location in Fort Bend County, Texas.

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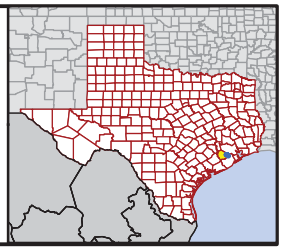
- Project Corridor
- Study Radius (1.6-km/1-mi.)
- Publicly Owned
- Cemetery Boundary
- Previously Recorded Area Survey
- Previously Recorded Linear Survey
- USGS Quadrangle Boundary



recommendations based on the results of field survey. A list of literary references cited in the body of the report is provided in Chapter 7.0.

1.3 Acknowledgements

The intensive pedestrian survey was completed by Crew Chief Michael Quennoz and Senior Crew Chief Vincent Valenti, under the supervision of Sr. Principal Investigator James Hughey, between February 22 and February 24, 2017. Mr. Hughey, Mr. Quennoz, and Crew Chief Jacob Hilton conducted deep testing on April 26 and 27, 2017. Sammy Greenwald of JNM Services, Inc. was the equipment operator during deep testing. The fieldwork required 80 person hours to complete. The report was prepared by Mr. Quennoz and Mr. Hughey. Graphics were produced by Duncan Hughey. Jessica Bludau edited and produced the report.

2.0 ENVIRONMENTAL CONTEXT

2.1 Physiography and Geomorphology

The Texas Coastal Plain makes up part of the larger Gulf Coastal Plain, a low level to gently sloping region extending from Florida to Mexico. The Texas Coastal Plain reaches as far north as the Ouachita uplift in Oklahoma, and as far west as the Balcones escarpment in central Texas. The basic geomorphological characteristics of the Texas coast and associated inland areas, which includes Fort Bend County, resulted from depositional conditions influenced by the combined action of sea level changes from glacial advance in the northern portions of the continent, and subsequent downcutting and variations in the sediment load capacity of the region's rivers. Locally, Fort Bend County is underlain by relatively recent sedimentary rocks and unconsolidated sediments ranging in age from the Miocene to Holocene (Abbott 2001; Van Siclen 1991).

Although older geologic units have been identified in the region (Abbott 2001; Barnes 1982; Van Siclen 1991), units relevant to the study of long-term human occupation in modern-day Fort Bend County include the Beaumont Formation, generally believed to predate human occupation in the region, the so-called "Deweyville Terraces", stratigraphically positioned between the Beaumont and Recent deposits. Holocene alluvium underlies the project area (Barnes 1982). These deposits are made up of clay, silt, and sand. This includes stream channel, point bar, natural levee, back swamp, and mud flat deposits (Barnes 1982). Gilgae, a succession of microbasins and microknolls in generally level areas or microvalleys and microridges parallel to the slope are common microfeatures.

The date of deposition for the Deweyville Terraces is not known. However, Abbott (2001:16) among others believes the north-south oriented terraces aggraded during the Late Pleistocene from overbank deposition of rivers and streams including the ancient Brazos River prior to the beginning of the Holocene. Abbott suggests that aggradation ended by approximately 20,000 years before present (B.P.) (Abbott 2001:106). However, meanders of rivers including the Brazos cut valleys through these terraces regularly during the Holocene and then abandoned them. This process leaves large, flat, open, and well drained areas favored for campsites. While all depositional facies other than channels have the potential to preserve archaeological sites, behaviorally, human activity favors well drained, sandy channel-proximal localities over floodbasin muds (Abbott 2001:126). Other Recent or Holocene deposits on the Gulf Plain typically result from overbank flooding of extant streams, eolian transport including dune formation, and infilling of marshes.

2.2 Soils

Six soil series are mapped within the APE: Asa, Brazoria, Churnaborg, Clemville, Norwood, and Pledger (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture [SSS NRCS USDA] 2017). Of these Asa, Brazoria, Norwood, and Pledger are the most prominent.

The Asa series consists of very deep, well drained soils formed in loamy alluvium and are typical of flood plains. A typical profile begins with a black (5YR 2.5/1) silty clay extending to 15 centimeters (6 inches) below the surface. This is underlain by a slightly darker black (10YR 2/1) silty clay loam to 36 centimeters (14 inches). From 36 to 124 centimeters (14 to 49 inches) there is a brown (7.5YR 4/4) silty clay loam. A reddish brown (5YR 4/4) silt loam continues to a depth of 155 centimeters (61 inches) below the surface. This is underlain to a depth of 180 centimeters (71 inches) by a

brown (7.5YR 5/4) silt loam before giving way to a reddish brown (5YR 4/4) silty clay loam from 180 to 203 centimeters (71 to 80 inches) below the surface (SSS NRCS USDA 2017). Asa soils have high geoarchaeological potential (Abbott 2001). Asa series soils are mapped primarily along the eastern half of the North Segment, though there are also smaller areas in the South Segment.

The Brazoria series consists of very deep, moderately well drained, very slowly permeable soils formed in clayey alluvial sediments on the flood plains of the Brazos and Colorado Rivers. A typical soil profile consists of 42 centimeters (17 inches) of dark brown (7.5YR 3/2) clay underlain by a brown (7.5YR 4/2) clay from 42 to 70 centimeters (17 to 28 inches) below the surface. From 70 to 90 centimeters (28 to 36 inches) is a mix of 90 percent reddish brown (5YR 4/4) and 10 percent dark reddish brown (5YR 3/2) clays. At 90 centimeters (36 inches) and continuing to 125 centimeters (49 inches) is a very dark brown (10YR 2/2 clay), which is underlain by a mix of 90 percent very dark brown (7.5YR 2.5/2) and 10 percent black (7.5YR 2.5/1) clays to a depth of 146 centimeters (58 inches) below the surface. Between 146 to 170 centimeters (58 to 67 inches) is a mix of 90 percent dark brown (7.5YR 3/3) and 10 percent dark brown (7.5YR3/2) clay. A mix of 30 percent dark reddish brown (5YR 3/2) and 70 percent dark reddish brown (5YR 3/3) clay can be found between 170 to 203 centimeters (67 to 80 inches) below the surface (SSS NRCS USDA 2017). Brazoria soils have moderate-high geoarchaeological potential (Abbott 2001). The largest area of Brazoria soils is located in the northwestern extent of the North Segment.

The Norwood series of soils are very deep, well drained soils, located on flood plains, and derived from reddish calcareous, loamy alluvial sediments. The Ap horizon is generally 0 to 51 centimeters (0 to 20 inches) thick and composed of light brown (7.5YR 6/4) loam in its upper portion and brown (7.5YR 4/2) loam in its lower portion. The Bw-horizon is 10 to 66 centimeters (4 to 26 inches) thick yellowish brown (10YR 5/4) silt loam. The Bk horizon, where present, is typically up to 51 centimeters (20 inches) thick reddish yellow (7.5YR 6/6) silt loam. There can be 3 BC horizons including BC1 which is a 15-centimeter (6 inch) thick reddish yellow (7.5YR 6/6) silt loam, BC2, a 10 centimeter (4 inch) thick light brown (7.5YR 6/4) silt loam, and BC3 a 12 centimeter (5 inch) thick brown (7.5YR 5/4) silty clay loam. In addition, the C-horizons in these soils often have bedding planes at depths of 38 to 101 centimeters (15 to 40 inches), and buried soil horizons occurring at a depth of between 76 and 152 centimeters (30 to 60 inches). This paleosol, commonly underlying Norwood soils, consists of a 15-centimeter (6-inch) thick Ab horizon composed of brown (7.5YR 4/2) clay underlain by two Bwb horizons. The Bwb1 is approximately 24 centimeters (10 inches) thick and composed of light yellowish brown (10YR 6/4) very fine sandy loam. The Bwb2 is approximately 43 centimeters (17 inches) thick and composed of yellowish brown (10YR 5/4) very fine sandy loam. Abbott (2001) categorizes the geoarchaeological potential of the Norwood series as high. Within the APE, Norwood soils make up large areas of the eastern half of the North Segment and almost the entire length of the South Segment.

The Pledger series consists of very deep, moderately well drained, very slowly permeable soils that formed in clayey alluvium. Such clays are found on nearly level flood plains. A typical soil profile begins with a black (10YR 2/1) clay that extends to a depth of 133 centimeters (52 inches) below the surface. From 133 to 171 centimeters (52 to 67 inches) below the surface is a yellowish red (5YR 4/6) silty clay, underlain by a yellowish red (5YR 4/6) clay to a depth of 182 centimeters (72 inches). From 182 to 220 centimeters (72 to 87 inches) is a red (2.5YR 4/6) silty clay (SSS NRCS USDA 2017). Pledger soils have moderate-high geoarchaeological potential (Abbott 2001). Pledger soils are concentrated at the southern extent of the South Segment and cover almost the entire area of the planned water treatment plant.

2.3 Natural Environment

2.3.1 Flora and Fauna

Fort Bend County lies at the southwestern boundary of the Austroriparian biotic province as defined by Blair (1950). The project area is located within the Floodplains and Low Terraces sub region of the Western Gulf Coastal Plain Ecoregion (Griffith et al. 2007). Evidence from pollen analysis in Central Texas suggests that, at least during the Late Pleistocene, the area may have been populated by vegetative species that were tolerant of a cold weather environment. Climactic flux during the Holocene would eventually result in a gradual trend towards warmer weather, similar to that seen today (Abbott 2001).

Late Pleistocene flora may have included populations of spruce, poplar, maple, and pine (Holloway 1997), in an oak woodland environment that would eventually transition to an oak savanna in the late Holocene (Abbott 2001). Fauna during this time would include currently present species such as white-tailed deer and various smaller game, as well as bison, and, in localized areas, pronghorn sheep, and the American alligator (Abbott 2001).

The modern vegetative community associated with this region consists of a diverse collection of primarily deciduous trees and undergrowth (Abbott 2001). Modern land alteration activities, especially those associated with agriculture, have resulted in the removal of native plant species from the area. Commonly identified trees include water oak, pecan, various elms, cedar, oaks, sweetgum, Chinese tallow, and mulberry. Honeysuckle, dewberry, ragweed, yaupon, and blackberry are common, as are indiangrass and bluegrasses and various types of briars and vines (Abbott 2001).

The modern faunal community includes mammals such as deer, squirrel, opossum, raccoon, skunk and various small rodents, numerous bird species, and reptiles including the Texas rat snake, the western cottonmouth, the kingsnake, and turtle species. Black bear and bison were present occasionally in the past (Abbott 2001).

2.3.2 Climate

Fort Bend County's close proximity to the Gulf of Mexico tends to influence the temperature, rainfall, and relative humidity of the region. Winds usually trend from the southeast or east, except during winter months when high-pressure systems can bring in polar air from the north. Average temperatures in the summer can reach well above 30 degrees Celsius (90 degrees Fahrenheit), and are often accompanied by equally high humidity. Although winter temperatures can reach below 0 degrees Celsius (30 degrees Fahrenheit), below freezing temperatures usually occur on only a few days out of every year, and are typically restricted to the early morning hours (Mowery et al. 1960).

Rainfall is even throughout the year, with an average monthly distribution ranging from between 43 centimeters (17 inches) to trace amounts; rainfall comes primarily from thunderstorms, which tend to be heavy but of short duration (Mowery et al. 1960).

2.4 Land Use

A review of historic and current aerial imagery available from Google, Inc. (2017) and Nationwide Environmental Title Research (NETR) (2017a, b) indicates that this area of Fort Bend County has been developed only relatively recently, having previously been predominantly open agricultural land with thick woods along the creeks, streams and abandoned oxbows of Oyster Creek and the Brazos River. In the case of the North Segment, the first major modern development was the diversion of Flat Bank Creek into a channelized canal sometime between 1968 and 1995. By 2002, the Steep Bank/Flat Branch Wastewater Treatment Plant had been constructed and from 2006 to the present there has been intensive residential development (NETR 2017a).

The South Segment appears to have had a broadly similar recent history, though it has not yet been subjected to the heavy residential development seen in the North Segment. The largest changes have been extending and widening Waters Lake Boulevard and the construction of Ridge Point High School. South of Scanlan Road the proposed waterline will follow a canal and berm which was constructed between 1968 and 1995 (NETR 2017b). A new Fort Bend Independent School District school is currently under construction just north of the proposed waste water treatment plant location. Additional earthmoving activities in preparation for residential development have begun to modify large areas of the landscape.

3.0 CULTURAL CONTEXT

3.1 Prehistoric Context

Traditionally, Southeast Texas has been viewed as a buffer zone between cultural regions in prehistoric times. Patterson (1995) describes the archaeological record in this area as being an interface between the Southern Plains and the Southeast Woodlands. Along similar lines, both Shafer (1975) and Aten (1984) have categorized the Post-Archaic archaeological record of this region as Woodland. This categorization is not meant to literally invoke the exact cultural patterns and chronology of the Woodlands culture found to the east. Aten (1984:74) summarizes his concept by saying, "it loosely connotes activities by populations on a geographic as well as a cultural periphery of the southeastern Woodlands."

Dee Ann Story (1990) has suggested that the culture of Southeast Texas is distinctive enough so as to merit a separate designation by the Late Prehistoric. The Mossy Grove cultural tradition is a heuristic concept based on technological similarities shared by groups in this region. The primary marker of this technological tradition is the plain, sandy-paste Goose Creek pottery that is found in this region from the Early Ceramic through Early Historic periods.

Ethnic affiliations for the region are not entirely clear. Aten (1983) has defined the Brazos Delta-West Bay, Galveston Bay, and Sabine Lake archaeological areas and suggests that they may correlate with the Historic territories of the Coco, Akokisa, and Atakapa groups, respectively. Similarly, historic reconstructions of the inland subregion suggest a number of possible group affiliations (Story 1990). The historic economic inland/coastal cycle of the Akokisa, which stretched from Galveston Bay to the San Jacinto River basin, may mean that archaeological materials in the Lake Conroe area are affiliated with this group. Alternately, these remains may be associated with the Bidais who occupied territory immediately to the north of the Akokisa groups. At this point in time it is not possible to identify the cultural affiliation of the groups that inhabited the inland subregion. In part, this is a function of the dynamic nature of this region in which a number of cultural traditions met and diffused.

The Southeast Texas region is divided into inland and coastal margin subregions, which have archaeologically distinctive subsistence patterns, settlement patterns, and artifact types. Archaeological and historic evidence suggests that some groups exploited inland resources year-round, while other groups spent parts of the year both inland and on the coast.

Based on aspects of material culture, researchers have identified six archaeological time periods associated with Native Americans in the Southeast Texas region; in general, these include the Paleoindian, Archaic (with Early, Middle, and Late subdivisions), Ceramic, Late Prehistoric, Protohistoric, and Historic Indian. Archaeologists within the region agree on the general framework of cultural time periods, while disagreeing on the temporal boundaries of these periods. Patterson's (1995) chronology, for example, includes Early Paleoindian (10,000-8,000 B.C.), Late Paleoindian (8,000-5,000 B.C.), Early Archaic (5,000-3,000 B.C.), Middle Archaic (3,000-1,500 B.C.), Late Archaic (1,500 B.C.-A.D. 100), Early Ceramic (A.D. 100-A.D. 600), Late Prehistoric (A.D. 600 to 1500), Protohistoric (A.D. 1500 to 1700), and the Historic Indian (A.D. 1700 to 1800) periods. In contrast, Ensor (1995) offers a Southeast Texas chronology that includes Paleoindian (10,000 to 8000 B.C.), Early Archaic (8000 to 5000 B.C.), Middle Archaic (5000 to 1000 B.C.), Late Archaic (1000 B.C. to A.D. 400), Early Ceramic (A.D. 400 to 800), and Late Ceramic (A.D. 800 to 1750). Despite these differences, the chronologies developed by researchers are

based primarily on changes in projectile point technologies within the region and the introduction of pottery. It is generally recognized that a broad-based hunting and gathering lifestyle was utilized throughout all time periods.

3.1.1 Paleoindian Period

Evidence is sparse for Paleoindian habitation, and much of what is known about the period in the area comes from a compilation of materials gathered from the state of Texas and North America. At the close of the Pleistocene, large game hunters crossed the Bering Strait, and within a few millennia had penetrated into South America (Culberson 1993; Newcomb 1961). The Paleoindian people traveled in small bands (Culberson 1993) and were mega-fauna hunter-gatherers with the bulk of their meat protein derived from mammoths, mastodons, giant bison, and giant sloths. These groups carried with them an easily recognizable stone tool material culture, though admittedly, little is known about their wooden or bone tools and clothing types. The later Folsom Culture developed a very efficient toolkit that was apparently designed to be portable leading to theories that these people were following buffalo herds across the plains. However, the widespread use of Folsom technology suggests that the technology spread beyond the area for which it was initially designed. Isolated Paleoindian artifacts found across southeastern Texas include Clovis, Angostura, Scottsbluff, Meserve, Plainview, and Golondrina point types (Aten 1983).

The Transitional Archaic period begins about 9,000 B.P. and ends around 7,500 B.P. (Aten 1983; Story 1990). This stage is also poorly represented in the archaeological work in the area but isolated finds of Bell/Calf Creek, Early-Side Notched, and Early Expanding Stemmed dart points are attributed to this time period.

3.1.2 Archaic Period

With the retreat of the glaciers (the Hypsithermal period), the mega-fauna upon which the Paleoindian peoples depended gradually became extinct. This shift in food supply is seen as the pivotal transition point between the Paleo and Archaic periods (Biesaart et al. 1985; Culberson 1993; Newcomb 1961). Though dates often disagree (ranging from 8,000 B.C. marking the beginning of the Early Archaic [Culberson 1993], to Aten [1984] stating that the transition from Late Archaic to Late Prehistoric-Woodland began around A.D. 100), there are three progressive stages recognizable during the Archaic period: the Early, Middle, and Late.

Much of what is known about the Early Archaic peoples indicates that they were small, isolated bands of hunter-gatherers that remained in relatively restricted regions (Aten 1984). With the loss of the mega-fauna as a food source, the Early Archaic peoples adopted the hunting of smaller game such as bison and deer and increased their reliance on foraging (Culberson 1993). The material record fits the transitional makeup of this period because there was a dramatic shift from the large spear points of the Paleoindian period to a reliance on smaller dart type points. Diagnostic designs for this period are Dalton, San Patrice, Angostura, Golondrina, Merserve, Scottsbluff, Wells, Hoxie, Gower, Uvalde, Martindale, Bell, Andice, Baird, and Taylor (Turner and Hester 1993). These points are much more crudely made than their Paleo precursors, but remain designed for use on a spear shaft.

The Middle Archaic period saw the largest growth in technology and in the number of stone tools utilized. Specialized tools appeared for the milling of wild plant foodstuffs (Culberson 1993) along with a large assortment of tools for food preparation and procurement. Gravers, scrapers, axes and choppers, knives, drills and polished stone tools, also known as ground stone tools began to appear in large quantities (Newcomb 1961). Diagnostic points such as Gary, Kent, Palmillas, Nolan, Travis, Belvedere, Pedernales, Marshall, Williams, and Lange dominate the spectrum of dart points from the Middle Archaic period (Turner and

Hester 1993; see also the Edwards Plateau Aspect [Newcomb 1961]). The advent of the atlatl also seems to be placed within this period (Culberson 1993).

The Late Archaic period saw a dramatic increase in the population densities of Native American groups. Human habitation of areas rich in diverse flora and fauna intensified, as did the variety of materials and artifacts (Culberson 1993; Aten 1984). Late Archaic peoples began relying heavily on foraging tubers, berries, and nuts and hunting small game such as deer, rabbits, and raccoons, as well as fish and shellfish, and birds. Groups became socially more complex than earlier periods and the result was an increasing intercommunication with neighboring groups. Culberson (1993:55) states that a "Lapidary Industry" developed in which stone artifacts were made from exotic materials (jasper, hematite, quartz, shale, slate, etc.) acquired from sources great distances away. These materials were fashioned into an increasingly complex array of household goods such as celts, plummets, banner stones, mortars and pestles, and pendants; also during this period there is an increase in the occurrence of sandstone bowls (Culberson 1993). Diagnostic points of this period are difficult to distinguish from those of the Middle Archaic. Gary and Kent points remain prevalent in southeast Texas, while other points such as Marcos, Montell, San Gabriel, Mahomet, Fairland, and Castroville also appear at times (Turner and Hester 1993).

The Archaic period in southeast Texas ends with the adoption of ceramic technology at the beginning of the Ceramic period. Patterson (1995) places the beginning of the Early Ceramic period on the Texas coast from 100-600 A.D. Aten (1983) placed the appearance of pottery in the Galveston Bay area approximately 100 A.D. The ceramic chronology of the inland areas parallels that of the coast; however, it does not manifest until several centuries later. The inland areas generally lack the earliest ceramic types present in the coastal region as well as some of the later ceramic types (Aten 1983; Story 1990). As a result of trade networks or stylistic/manufacturing influences, it appears that ceramic traits moved from the coast to the inland areas and from the east to the west (Aten 1983).

3.1.3 Late Prehistoric

The transitional period between Late Archaic and Woodland-Late Prehistoric is a period marked by an intensification of group dynamics across Texas. The advent of the bow and arrow is believed by most (Aten 1984; Culberson 1993; Newcomb 1961) to be from this period, though some may place it later. Most importantly for archaeological investigations, the first signs of pottery begin to emerge at sites from this period (Aten 1983). Although the amount and variety of pottery intensifies during the Late Prehistoric, it is an excellent way of determining the terminus post quem of a site. Fishing, bison hunting, and the collection of wild flora intensifies beyond the level of the Late Archaic period during this stage, but there is no sufficient data to demonstrate the initial advent of sedentary agricultural. The diagnostic points of this period are Catahoula, Friley, Alba, and Bonham (Turner and Hester 1993).

The Late Prehistoric (also known as Woodland and Ceramic periods) continue from the end of the Archaic period to the historic period ushered in by the Spanish Missions and Anglo-American settlers. During this period, there is a shift to the almost total use of arrow points such as Perdiz and, later, Scallorn, and a wide variety of ceramic types. According to Aten (1984), there are nearly 18 different types of pottery from this period currently identified for the east Texas Coast alone based on temper, paste, and design.

Goose Creek and other sandy paste pottery types are often recovered from Ceramic period and Late Prehistoric sites throughout southeast Texas. Goose Creek appears in Aten's coastal chronology to greater or lesser extents in nearly every period, particularly Mayes Island, Turtle Bay, Round Lake, and the later Orcoquisac

periods. Because of the predominance of sandy paste pottery across the region, Story (1990) has suggested the Mossy Grove Tradition as an encompassing cultural tradition for the area. Other ceramic forms that occur in the region include grog-tempered, stamped, and bone-tempered pottery (Patterson 1996).

3.1.4 Protohistoric Period to the Post-Contact Period

It is during this period that peoples known today as the Caddo, Attakapans, and Bidai, to name a few, are identifiable both culturally and materially. This is mostly due to the historical sources of the seventeenth through the nineteenth centuries that aid in the reconstruction of the past cultures in the area. In order to better understand the complexity of the region's cultures, researchers turn to historical sources to get an understanding of the peoples who first occupied the southeast Texas. Hernando De Soto encountered the Native Americans of the region during his expedition in 1542 (Hudson 1976); it was the first recorded meeting with the Caddo peoples. The first expeditions by La Salle in 1687 and the subsequent settlement in the eighteenth century by Europeans continued to document the presence of Native American groups in the area (Aten 1984). French traders and Spanish missionaries encountered the Hasinai, also known as the Neches Angelina, who became allies of the Spanish against the western Apache tribes (Newcomb 1961). The later historical sources identify the Hasinai as one of the two main groups in the area of eastern Texas that fall under the Caddo culture (the primary culture that dominated the Piney Woods area), the other of which is the Kadohadacho (La Vere 1998; Gregory 1986).

The loose cultural group, known as the Attakapans, dominated the majority of the land north of present-day Harris County in what is now Montgomery County. Their language group extended from the Gulf coast to the Trinity and San Jacinto Rivers and they had much in common with the coastal group known as the Karankawa (Aten 1984). The Attakapans were subdivided into regional groups. The Akokisas dwelled primarily on the shores of the Trinity and San Jacinto Rivers. The Patiris group occupied the land north of the San Jacinto valley. The Bidai group dominated the Trinity Valley and to their north was the small group known as the Deadoso. Most of what is known about the Attakapans culture comes from the early accounts of the French explorer DeBellise. They are described as primarily hunter-gatherer groups who relied somewhat on agriculture and fishing (Sjoberg 1951).

In the seventeenth and eighteenth centuries, the Spanish and French used the Native American groups as pawns in the two nations' quest to settle the area (Newcomb 1961). Most destructive for all native groups in the region was the influx of European diseases. When Anglo-American settlers began moving into the area in mass around the 1850s, disease and warfare had decimated the groups to near extinction.

3.2 Historical Context

Fort Bend County was established on December 29, 1837 from parts of Austin, Brazoria, and Harrisburg counties. Richmond, which had been incorporated in May of that same year, was voted the county seat by the citizens of the new county. The area was originally settled in the 1820s as part of the land originally granted to Moses Austin by the Spanish colonial government and then reissued by the Mexican government after the Mexican Revolution (1810-1821). Of the 297 original grants, 53 of them were situated in the future Fort Bend County (Ott 2010).

In 1821, the first contingent of Stephen F. Austin's settlers anchored at the mouth of the Brazos River. A small party from this group continued 145 kilometers (90 miles) up the Brazos to a bend in the river. In November of 1822, a blockhouse was built at this location to protect the settlers from hostile Indians. Other settlers followed and a small community that

came to be referred to as Fort Bend grew around the blockhouse. Fort Bend was located on one of the primary fords of the Brazos River and as such played a role in the troop movements during the Texas Revolution. The site was abandoned when Santa Anna's Mexican Army crossed the river in route to the battle of San Jacinto. When the area was resettled the new community of Richmond was established (Leffler 2010).

Richmond became a regional trade center in the following decades, with barges and steamboats carrying the cotton, corn, and sugar produced in the region down the Brazos to Galveston (Leffler 2010). In 1853, the Buffalo Bayou, Brazos, and Colorado Railway proved a further boon to business connecting Stafford Point to Harrisburg. African slaves were essential to the plantation economy of region and by the 1850s outnumbered the white inhabitants of the county. By the start of the Civil War, there were approximately 250,000 Africans held in captivity in Texas and the majority of these people were living on plantations in eastern Texas. Because of their economic and social dependency on slave labor, Fort Bend planters strongly supported the secession of the southern states from the United States of America (Ott 2010).

The final quarter of the nineteenth century witnessed a steady increase in the settlement and population of the county. Immigrants from Central Europe including Czechs, Germans, Austrians, and Bohemians established prosperous small farms on the lands once held by the large plantations. A number of settlements arose along the rail lines that stretched across the entire county. One such community, Rosenberg, grew at the junction were the Colorado and Santa Fe line crossed the Galveston, Harrisburg, and San Antonio line 5 kilometers (3 miles) west of Richmond. Rosenberg would grow to be the predominant town in the county surpassing Richmond in population in 1920 (Ott 2010).

The economy of Fort Bend in the nineteenth century focused on cotton, sugar, corn, and livestock production. In the 1890s, a one-million-dollar sugar refinery was constructed in Sugar Land. The county also contains substantial amounts oil, gas, and sulfur deposits, which have played a major role in the economic development of the area (Ott 2010). Trammels, Missouri City, Thompsons, and Arcola were part of a speculative real estate development in 1890 (Hardy, Heck and Moore Inc. [HHM] 2002).

Fort Bend County's economic and social identities have revolved around farming and ranching since the earliest settlers arrived. Poor economic and agricultural conditions in the later part of the nineteenth century resulted in a movement toward farm tenancy. In 1925, 72 percent of farms in the County were operated on a tenancy basis. During the World War II years, the lure of jobs in urban centers and the military reduced the number and ratio of tenant farmers. More valuable uses of the farmland by home developments, industry, business, and commerce reduced the number of viable commercial farms. Until very recently, the development and transport of oil, gas, and sulfur have been at the heart of commercial ventures and industry in the county. As the City of Houston has expanded westward, a more diverse mix of commerce and industry has taken root. Property-development corporations and two high-technology corporations are the largest contributors to the counties tax coffers (Ott 2010).

3.2.1 Plantation History

The area surrounding much of the southern segment has a history of use as a plantation. The Hall and Fitzgerald leagues were located to the east bank of the Brazos River in 1824 as part of Stephen F. Austin's "Old Three Hundred" colony. The entirety of the David Fitzgerald and William Hall leagues were purchased by Jonathan Dawson Waters, who relocated to Oyster Creek from the Newberry District in South Carolina in 1840 (Wharton 2001). By

1845, Waters had acquired a large part of the Fitzgerald League. By 1850, Waters owned the entire Fitzgerald league and had the largest cotton and sugar plantation in Fort Bend County. Waters made many improvements to the land including the construction of a brickyard, shipping wharf, and sugar mill in 1849 (Johnson 2017). The 1850 agricultural census did not report any sugar crop for Waters, but listed the plantation as comprising 3471 acres with a cash value of $31,500 and plantation machinery valued at $9000 (United States Bureau of the Census 1850). Waters also purchased parcels of land in the Hall league. J.D. Water's nephew, Robert G. Waters, sold his 213 hectares (528 acres) of land which fronted the Brazos River in the Hall league to his uncle in 1846. In 1859, J.D. Waters bought 339 hectares (840 acres) of land from Charles Oakley and William Smith in the Hall league. Waters eventually became the wealthiest man in Fort Bend County and one of its largest slave owners (Wharton 2001).

The page that might report Waters' sugar crop is missing from the online copy of the 1860 agricultural census, but by this point, the plantation's total acreage had increased to 20,600, its cash value had risen to $270,000, and its farming implements and machinery were valued at $18,000 (United States Bureau of the Census 1860). The plantation's increased acreage between 1850 and 1860 coupled with its sharp increase in cash value and machinery value during that same interval could indicate a period of substantial improvements to the plantation, which might have included construction of another sugar mill. However, no clear indication has been found that Waters built a second sugar mill on his plantation prior to his death in 1872. It is unlikely that Waters built a second sugar house after the onset of the Civil War, after which there was a considerable decline in plantations throughout the south and production dropped after 1852 until 1871 when the convict leasing system began (Creighton 1975). However, it was rumored that his estate was worth $800,000 at the time of his death (Waters and Milam 1903).

Thomas W. House, Sr. was the next person to farm the property, which he purchased from Waters' heirs in 1872. House was a successful Houston merchant and banker who bought the property as a sugar plantation, and Waters' 1852 sugar mill was still in use on the property. Many plantations across the south had troubles rebounding after the Civil War until the convict leasing system began in 1871 (Creighton 1975). The date of the convict leasing system corresponds to the purchase of the plantation by Thomas W. House (T.W. House) in 1872. T.W. House, Jr. states that convict labor was used at Arcola as early as 1875 (Texas Legislature Penitentiary Investigating Committee, 1974; pg.212). The elder House died in January 1880, but son T.W. House, Jr. continued operation of the plantation.

The 1880 agricultural census lists the T. W. House Estate as consisting of 4,046 hectares (10,000 acres), with a cash value of $400,000, and farming implements and machinery valued at $25,000 (U.S. Bureau of the Census 1880a). The 1880 manufacturing census contains three entries for the T. W. House Estate—two lumber saw mills and a sugar house. The census distinguishes the lumber saw mills by reference to the "downside place" and the "River place," while the sugar house is simply listed as part of the "sugar farm" (U.S. Bureau of the Census 1880b). The 1880 census listing two lumber saw mills but only one sugar house strongly suggests that the second sugar house had not yet been constructed. Research of the House records produced an order for machinery in May of 1883 from the Edward's Copper, Brass, and Sheet Iron Works located in New Orleans, Louisiana (Papers of T.W. House, Houston Metropolitan Research Center). Among this list of materials were a cast iron bed plate, vacuum pan, centrifugals, and steam engine suggesting that by 1883 either the technology of the original sugar house was being updated or an outfit of machinery for an entirely new sugar house was being purchased. The cane crop for that year was stated to be "one of the heaviest for many years," (Burke 1883, pg.178). House, Jr. incorporated the Arcola Sugar Mills

Company on March 10, 1903, and the property was listed as an asset of the company. House, much like Waters before him, made many improvements to the property. During his tenure on the property he constructed a cooper shop, commissary, two dormitories for single seasonal workers, 11 residences for the manager and other white employees, cane field derricks, and several other agricultural sheds and buildings (Rice 1907: 12-13, 19).

Around the turn of the century there were several developments that likely had a negative impact on the Arcola Plantation and potentially on the north sugar house. House, like many sugar producers, fell on hard times in the late 1800s and early 1900s. U. S. Annexation of Hawaii and granting of protectorate status to Puerto Rico created competition for the U. S. Sugar market, and often U. S. producers lost out to these new competitors. A tropical storm caused the Brazos River to flood in 1899, inundating approximately 31,079 square kilometers (12,000 square miles) (LifeOnTheBrazosRiver.com 2010). This was followed by the hurricane of 1900, best known for its devastation of Galveston Island (Creighton 1975). As a result, no sugar was produced for that year (Nesbit 1943). House, who never consistently made a profit from the plantation, filed for bankruptcy in 1907 (Rice 1907: 2) and the plantation was put up for sale in 1909. The Texas sugar industry also suffered with the abolition of the convict lease system in 1910, as it ended access to the industry's source of cheap labor. The mill went out of business around 1929 (Glander 1984: 2-13).

The plantation was purchased by T. H. Scanlan, a former Houston Mayor, in 1913 (Foradas 2005: 19). He later turned it over to the Scanlan Foundation, who renamed the property "Sienna Plantation," an allusion to the Sienna Region of Tuscany in Italy. The foundation transferred the property to a Catholic Foundation in 1948, which used the property as a retreat for Cenacle Sisters, an order of nuns. The nuns continued to use the property until it was sold in 1978, and the development of Sienna Plantation as a master planned community began (Foradas 2005: 19; Glander 1984: 2-13).

4.0 METHODOLOGY

This cultural resources investigation was designed to identify and assess new and already recorded cultural resources that may be impacted by the proposed project. Desktop assessment and modeling were performed prior to initiating field investigations in order to better understand cultural, environmental, and geological settings. Results of the desktop assessment were then used to develop the field methodology.

4.1 Site File and Literature Review

Site file research was initiated by reviewing records maintained by the Texas Archeological Research Laboratory (TARL) in Austin, Texas and by consulting online research archives maintained by the Texas Historical Commission (THC). Site file research resulted in a listing of all archaeological sites within 1.6 kilometers (1 mile) of the project area and all historic structures eligible for the National Register of Historic Places (NRHP) listing located adjacent to the project APE. Documentary research including historic maps, USGS topographic maps, historic aerials, and land grants was conducted in order to provide an understanding of the development and history of the project area, the surrounding area, and southeast Texas in general. This research then was used to prepare an overview history of the area and to provide an understanding of the contextual framework of local prehistory and history.

4.2 Field Methods

4.2.1 Intensive Pedestrian Survey

The APE passes through a highly developed and modified landscape; therefore, shovel testing was focused in areas of minimal disturbance, as well as in areas near known archaeological sites. In areas of obvious disturbance, such as along canals and levees or in areas of residential development, shovel testing was less intensive. Subsurface testing consisted of the excavation of 30- by 30-centimeter (12- by 12-inch) shovel tests. Vertical control was maintained by excavating each shovel test in 10-centimeter (4-inch) levels. One wall of each shovel test was profiled and the walls and floor of each shovel test were inspected for color or texture change potentially associated with the presence of cultural features. When possible, soils were screened through 0.64-centimeter (0.25-inch) wire mesh; soils with high clay content were hand sorted in an effort to detect cultural materials in the soil matrix. Descriptions of soil texture and color followed standard terminology and the Munsell (2005) soil color charts. All the field data were recorded on appropriate field forms. All shovel tests were backfilled after excavation and documentation. The excavated shovel tests were placed on field maps and points were taken with Global Positioning System (GPS) if the strength of the signal permitted.

4.2.2 Site Definition

If new cultural resources were encountered, systematic steps would be taken to define their extent, limits, and general character within the confines of the APE. Additional delineation shovel tests would be excavated in four radiating directions at an interval of 10 meters (32.8 feet) within the confines of the APE. In general, two sterile shovel tests would be used to define a site's size and extent. At a minimum, between six and eight delineation shovel tests would be excavated unless surrounding landforms or topography suggested the presence of a natural site boundary.

For each cultural resource identified, including structures or other resources within or immediately adjacent to the APE, photographs would be taken of the general vicinity and of any visible features. A sketch map would be prepared showing site limits, feature locations, permanent landmarks, topographic and vegetation variations, sources of disturbances, and total number of tests performed within the

site. Only diagnostic artifacts recovered from shovel tests would be collected. Locations of all positive tests were recorded with the GPS.

If any architectural resources had been identified, these would have been recorded on corresponding field forms. Details of form, construction, material, style, condition, and alteration would be recorded both on the forms and photographically for each structure. All documentation would be reviewed by a qualified Architectural Historian who would decide if additional information or a personal field inspection was necessary at the survey level.

4.2.3 Deep Testing

In areas with potential for more deeply buried intact cultural resources, deep testing, via trenching was carried out. Trenches were excavated by mechanical means and measured at least 140 centimeters (4.5 feet) in width, 4.57 meters (15 feet) in length and 2 meters (6.5 feet) deep. Vertical control was maintained by carefully scraping in 10 to 20-centimeter (4 to 8-inch) levels. One wall of each trench was profiled and the walls and floors of each trench were photographed and inspected for color, texture, inclusions and disturbances in an effort to identify any possible cultural features.

The locations of all deep testing trenches excavated during the survey were recorded with a sub-meter accurate GPS data collector and recorded on field maps. Digital photography aided documentation of the existing conditions of the project area and fieldwork methods, with photograph locations recorded on field maps and logged with a GPS unit.

4.3 Curation

No diagnostic or non-diagnostic artifacts were collected in the course of the current survey. As a project permitted through the THC, however, Gray & Pape submitted project records to the Center of Archaeological Studies at Texas State University in San Marcos, Texas.

5.0 RESULTS OF INVESTIGATIONS

5.1 Result of Site File and Literature Review

A search of the Texas Archeological Sites Atlas, maintained by the THC determined that no previously identified cemeteries, historic markers, or National Register properties are located within the project APE. One cemetery, Mount Olive Church (FB-CO94) is located within a 1.6-kilometer (1-mile) study radius of the project area. The same research identified that 18 previous cultural resource surveys had been conducted within the study radius of the project area, six of these surveys overlap with the current APE. Nine previously recorded archaeological sites are located within the study radius. The currently mapped boundary for Site 41FB253 overlaps with the project APE, and Site 41FB324 is immediately adjacent to the APE.

5.1.1 Previously Recorded Surveys

The Texas Archeological Sites Atlas identifies 19 previous cultural resource surveys conducted with 1.6 kilometers (1 mile) of the APE (Table 5-1). Five of these surveys overlap in some measure with the APE.

In 1997, archaeologists with the TWDB identified Site 41FB253 during the survey of a proposed wastewater treatment plant. Immediately thereafter, a geoarchaeological survey of the site was conducted (Kuehn 1997). In 2002, the Center for Ecological Archaeology at Texas A&M University conducted further testing at 41FB253, including additional trenching and auger probes to determine the site boundaries (Mason and Dering 2002). The results of these studies and 41FB253 will be discussed fully in the proceeding section on previously recorded archaeological sites.

In 2006, SWCA Environmental Consultants (SWCA) conducted a survey in support of the 6.5-kilometer (4-mile) Riverstone Levee project under Texas Antiquities Permit 3925. SWCA excavated 30 trenches with a backhoe over the length of the project, all of which were negative for cultural material. A portion of their survey overlaps with the current APE in the North Segment, near wear the canal connects Flat Bank and Steep Bank Creeks. The report identifies numerous spoil piles in the area, likely from the construction of the canal. Trench 18 is mapped close to, or within, the current APE. This trench was described as having a thin layer reddish brown clay over a brown granular clay. This was interpreted as the author as overburden from the construction of the canal (Chavez 2013).

In 2013, Raba Kistner Environmental, Inc. (REKI) surveyed a portion of Municipal Utility District #4 under Texas Antiquities Permit 6805. REKI focused their survey efforts of the 1,500-hectare (3,700-acre) project area on high probability areas along Oyster Creek, Cow Bayou, and Sawmill Lake, partially overlapping with the current APE. Although initial field plans called for 70 shovel tests in these high probability areas, difficulty excavating a shallow layer of hard, dry clay loam resulted in switching to auger tests using a gasoline powered auger boring unit. In addition, REKI made use of field work formerly completed by HRA Gray & Pape to complete coverage of their survey area (Clark et al 2014:34). A total of 64 auger units complimented the original six shovel tests excavated. Auger holes were 30 centimeters (12 inches) in diameter and excavated to a depth of 80 to 85 centimeters (31 to 34 inches) unless an obstruction was encountered. None of the shovel tests or auger tests were positive for cultural material. Forty-four backhoe trenches were also excavated. Four trenches, all along the west bank of Sawmill Lake, were positive for historic material. These proved to be the remains of brick structural foundations (41FB339). Site 41FB339, believed to be a historic saw mill, will be discussed further in the proceeding section on previously recorded

archaeological sites. No other historic or prehistoric cultural resources were encountered during the course of the survey (Clark et al. 2014).

In 2007 and 2008, HRA Gray & Pape conducted a survey in support of the 6.4-kilometer (4.0-mile) long Sienna Parkway South Extension. In addition to testing the entire length of the right-of-way, extensive testing was carried out between the right-of-way and the Community Arcola Cemetery. There were two positive shovel tests which produced brick and concrete fragments. These were determined to be associated with the brick and wrought iron fence fronting the Scanlan residence. In addition to the fence, two other cultural feature were noted, both were railroad grades associated with the Arcola Sugar Mills Company Railroad. No further cultural resources were identified and the authors recommended no further work within the project right-of-way (Nash et al. 2009).

In 2008, HRA Gray & Pape produced a historical background study of a 2-kilometer (1.2-mile) drainage feature that connects Oyster Creek and Cow Bayou. The purpose of the study was to determine the feature's origins and develop recommendations for further cultural resources management activity. The drainage feature was depicted in a 1909 drawing of the property, however, there was inconclusive evidence to determine if it was constructed using slave labor or postdated emancipation, perhaps by convict labor. The author recommended that the feature in of itself was not eligible for the National Register because of the lack of historical record and because "…it is a component of a larger system that has been compromised by development or by time" (McKinney 2008).

Table 5-1. Previously Recorded Area and Linear Surveys within 1.6 Kilometers (1 Mile) of the Proposed Project Area, Fort Bend County, Texas. Surveys marked with a * overlap with APE.

Survey Type	TAC Permit #	Investigating Firm/ Agency	Field Work Date	Report Author	Sponsoring Agency	Report at THC
Area	N/A	United States Corps of Engineers-Galveston District (COE VD/USACE)	07/1984	N/A	COE-VD	N/A
Area	N/A	COE-VD	01/1985	N/A	COE-VD	N/A
Area	N/A	COE-VD	01/1986	N/A	COE-VD	N/A
Area	N/A	Environmental Protection Agency (EPA)	01/1984	N/A	EPA	N/A
Area	2957	SWCA	01/2003	Miller, et al.	COE-VD	1/2003
Area*	3925	SWCA	10/2006	Chavez	Fort Bend County	08/2013
Area	N/A	HRA Gray & Pape	07/2010	Nash	COE-VD	08/2010

Survey Type	TAC Permit #	Investigating Firm/ Agency	Field Work Date	Report Author	Sponsoring Agency	Report at THC
Area	4600	Moore Archeological Consulting, Inc. (MAC)	07/2007	Moore and Driver	United States Department of Education	01/2008
Area	N/A	HRA Gray & Pape	10/2013	Treichel et al.	COE-VD	03/2014
Area	761	N/A	03/1989	N/A	N/A	N/A
Linear	N/A	N/A	10/1999	N/A	Federal Highway Administration	N/A
Area*	1847	Lockwood, Andrews, and Newnam, Inc.	06/1997	Kuehn	TWDB	06/1997
Area*	1862	Center for Environmental Archaeology - Texas A&M University	2002	Mason and Dering	TWDB	03/2002
Area*	6805	Raba Kistner	07/2013	Clark et al.	Fort Bend Municipal Utility District	06/2014
Area*	N/A	HRA Gray & Pape	11/2008	Nash et al.	Fort Bend County	07/2010
Area	3432	SWCA	05/2004	Bonine	City of Missouri City	10/2004
Area	5430	HRA Gray & Pape	11/2009	Scott	Private	10/2010
Area	N/A	SWCA	02/2004	Carpenter	COE-VD	06/2004
Area	3225	SWCA	09/2003	Houk	City of Missouri City	11/2003
Area*	N/A	TWDB	1997	Whitsett	TWDB	N/A
Historical*	N/A	HRA Gray & Pape	2008	McKinney	Private	N/A

5.1.2 Previously Recorded Sites

According to a search of the Texas Archeological Sites Atlas, maintained by THC, nine previously recorded archaeological sites are located within the 1.6-kilometer (1-mile) study radius of the project area. One of these sites, 41FB253, has a mapped site boundary that intersects with the current APE, and Site 41FB324 lies immediately adjacent to the APE.

Site 41FB68 is an early twentieth century historic site measuring 30 by 20 meters (98 by 66 feet) and located on an abandoned segment of Thompson's Ferry Road, Approximately 200 meters (700 feet) southwest of the intersection of Glenn Lakes Lane and Highway 6. Cultural material included glass fragments, white ceramic sherds, strap iron and iron fragments, pieces of field brick and chunks of mortar. All material was found on the surface. No cultural features were identified. Eligibility status is unavailable on the Sites Atlas (Hudson 1984a). Current Google Earth (2017) imagery shows that the site is currently occupied by a United States Post Office.

Site 41FB69 is a nineteenth century historic road located along 1.4 kilometers (0.87 miles) of an abandoned segment of Thompson's Ferry Road, running between Oilfield Road and Glenn Lakes Lane. No cultural materials were recorded, only the remains of the elevated road bed. Eligibility status is unavailable on the Sites Atlas (Hudson 1984b). Current Google Earth (2017) imagery shows the site has been subjected to heavy commercial and residential development.

Site 41FB98 is a late nineteenth or early twentieth century historic surface scatter measuring 60 by 40 meters (197 by 131 feet) and located approximately 100 meters (300 feet) southeast of the intersection of Belmont Shore Lane and Water's Shore Drive. Recorded materials included glassware, ceramics, china, crockery, fragments of metal tools and brick fragments. No cultural features were identified. This site was determined ineligible for the NRHP (Good 1985a). Current Google Earth (2017) imagery indicates that the site is on the edge of a residential development and some undeveloped marshy drainage.

Site 41FB99 is a multicomponent site featuring Late Archaic and Early to Late Prehistoric campsites as well as a historic scatter. The site is bisected by Flat Bank Creek and measures 15 by 25 meters (49 by 82 feet) east of the creek and 50 by 25 meters (164 by 82 feet) west of the creek. The site is located approximately 500 meters (547 yards) south of Oil Field Road and the town of Dewalt and 400 meters (437 yards) west of Highway 6. Cultural material included several chert flakes along the east bank and large quantities of sand tempered ceramics (some decorated), debitage, small scrapers, bone (primarily deer) shell (mussel and land snail), historic ceramics, crockery, glass and some metal along the west bank. No historic features were identified; however, a substantial prehistoric midden deposit was located west of the creek between 30 and 60 centimeters (12 and 24 inches) below surface. East of the creek, an ash layer of similar depth was located as well as a possible pit. This site has been determined eligible for the NRHP (Good 1985b).

Site 41FB100 is a late nineteenth or early twentieth century historic scatter measuring 40 by 20 meters (131 by 66 feet) located approximately 550 meters (1,790 feet) southwest of the intersection of Oilfield Road and Highway 6. Cultural material included glasswares, crockery and china scattered by plowing across the area. No cultural features were identified. This site has been recommended ineligible for the NRHP (Good 1985c).

Site 41FB288 is a multicomponent Late Prehistoric and Neo-American open campsite measuring approximately 200 by 80 meters (656 by 262 feet) and located on the low western terraces of Steep Bank Creek, a tributary of the Brazos River. Cultural material

included 16 prehistoric ceramic sherds, numerous bone fragments, fresh water mussel shell fragments, two late-stage reduction flakes. Faunal material included fish (gar) scales and white-tailed deer. This assemblage is very similar to that which was recovered at the Late Prehistoric site 41FB253 on the opposite bank of Steep Bank Creek. Historic material consisted of three historic whiteware fragments found on the surface and one glass fragment from a trench excavation. The historic material was dated as manufactured between 1865 and 1910 and its context within the site was unclear. The Late Prehistoric material was in a fairly tight concentration 10 to 20 centimeters (4 to 8 inches) thick at a depth of 65 to 80 centimeters (25.5 to 31.5 inches) below the surface. No cultural features were identified. Eligibility status is unknown though the site has been recommended for avoidance or further evaluation due to site integrity and potential significance (Miller et al. 2002). It should be noted that at the time of writing this site is mislabeled on the Texas Archeological Sites Atlas as 41FB289. However, the above report makes it clear that 41FB288 is located on Steep Bank Creek, opposite 41FB253, and that 41FB289 is located further to the west along Snake Slough.

Site 41FB324 consisted of the remains of a late nineteenth century sugar mill encountered during the construction of Water Lakes Boulevard, 1 kilometer (0.6 miles) southwest of the intersection with Sienna Parkway, and 25 meters (82 feet) south of Oyster Creek. Excavation uncovered a largely intact brick foundation. Diagnostic artifacts included firebrick, glass bottle fragments, square head machine-cut nails, and a metal plaque embossed "Phoenix Iron Works Houston". These items were consistent with a late 1800s date for the site. Archival research revealed that there had been a sugar mill previously located at the location, constructed by T.W. House, Jr. between 1880 and 1890 (Scott 2010). Excavation was limited to within the Water Lakes Boulevard right-of-way. After the site was fully recorded the site was removed during completion of Waters Lake Boulevard.

Site 41FB339 is the brick foundation of a historic sawmill, located on the west bank of Sawmill Lake. Three brick foundation features were eventually identified and a concentration of surface brick scatter was found 18 meters (60 feet) to the northwest. In addition to the foundation, loose bricks, mortar, cut nails, glass bottle fragments, a cow bell, a ceramic pipe bowl, and faunal remains were also recovered. Based on the artifacts recovered, the authors dated the site to the second half of the nineteenth century and the cut nails suggested construction before the 1890s. The site is believed to be one of two sawmills listed on an 1880 census of the T.W. House estate. After testing, the site was recommended as not eligible for the NRHP due to lack of integrity (Clark et al. 2014; Nichols and Murray 2014). Current Google Earth imagery (2017) shows that the site has been removed for residential development and the construction of a retaining pond.

Site 41FB253 is a Late Prehistoric camp site and aquatic resource processing site occupying both sides of Steep Bank Creek near the current location of the Missouri City Steep Bank/Flat Bank Wastewater Treatment Plant. In 1997, in advance of construction of the wastewater treatment plant, the TWDB conducted an initial survey, revealing bone and mussel shell in a backhoe trench. This was followed the same year by a geoarchaeological study to determine if the faunal material had a cultural association. Four trenches were excavated, producing additional shell and bone in a discrete layer at approximately 85 centimeters (33 inches) below surface. Also recovered was a single Late Prehistoric plainware ceramic sherd (Kuehn 1997).

Phase II testing followed to determine the archaeological significance of the site and identify the site boundaries, and consisted of a 2 by 2-meter (6.5 by 6.5-foot) block excavation, as well as the placement of auger probes at 10-

meter (33-foot) intervals. Recovered artifacts included ceramics identified as Goose Creek ware, lithics, and decorated bone fragments. The lithics were primarily tertiary flakes. Stone tools consisted of one core, two edge modified flakes, and two projectile points, identified as a Lozenge type and Fresno type. Faunal remains were primarily freshwater mussel shell, but also include fish bones and deer bone (Mason and Dering 2002).

It was concluded that 41FB253 was a single component Late Prehistoric site that served primarily as a processing location for aquatic resources. The cultural deposits were determined to be between 1 and 10 centimeters (0.4 and 4 inches) in thickness, and at a varying depth of 40 to 110 centimeters (16 to 43 inches) below the surface. This cultural layer was consistently located beneath a massive red clay (Unit II), and laying directly atop a very dark gray clay (Unit 1). Unit II was interpreted a recent flood deposits, while Unit I was believed to be sedimentation of a poorly drained pond. Determined by auger probes, the footprint of the site was described as approximately 30 meters (98 feet) north to south and 110 meters (360 feet) east to west. However, no testing was conducted south of the plant property boundary. The authors recommended that the site was a significant cultural resource, eligible for the National Register and designation as a State Antiquities Landmark (Mason and Deering 2002).

In 2000, as part of a levee and detention pond project, SWCA surveyed the areas immediately north of 41FB253 as well as the opposing west bank of Steep Bank Creek. Ten trenches were excavated and four produced cultural and faunal material identical to that of the original 1997 excavations. Subsequently, SWCA extended the northern boundary of the site 90 meters (295 feet) to the north as well as the opposing west bank. They recommended that the portion of the site north of the original boundary and east of Steep Bank Creek eligible for the National Register and listing as a State Antiquities Landmark. However, the portion of the site on the west bank was not considered to be a contributing element to the sites significance due to disturbance and ephemeral nature (Miller et al. 2010).

5.2 Results of Field Investigations

Intensive pedestrian survey, including shovel testing was carried out along the length of both the North and South Segments, as well as within the footprint of the proposed waste water treatment plant at the southern terminus of the South Segment. All shovel tests in the North Segment were negative for cultural resources. In the South Segment, three positive shovel tests were associated with the previously recorded historic sugar mill site, 41FB324. In addition, 10 trenches were excavated to test for deeply buried cultural deposits. All trenches were negative for cultural material.

5.2.1 North Segment Results

A total of 22 shovel tests were attempted along the North Segment, 15 of these were negative for cultural resources and seven were unexcavated (Figure 5-1). Three close interval shovel tests were placed near the northern terminus of the APE, immediately south of the Missouri City Steep Bank/Flat Bank Wastewater Treatment Plant. These tests were intended to determine the potential for 41FB253 to extend into the APE. The area northwest of the APE appeared to be undisturbed and overgrown. This presumably is the avoided portion of the site as recommended by the previous excavators. Outside of that area; however, numerous modifications to the landscape were observed, including outflow pipes, buried and above ground utilities, as well as bank modification (Figure 5-1: Photo A). Two of the shovel tests were consistent in profile, a third was heavily disturbed (Figure 5-2). Shovel Test A1 had a top 30 centimeters (12 inches) consisting of a brown (7.5YR 4/4), compact, massive clay. This was underlain by a dark brown (7.5YR 3/2), granular clay loam which extended to the base of the shovel test at 100 centimeters (40 inches). A sparse matrix of

Figure removed from public distribution copy.

North Segment field results
with representative photos.

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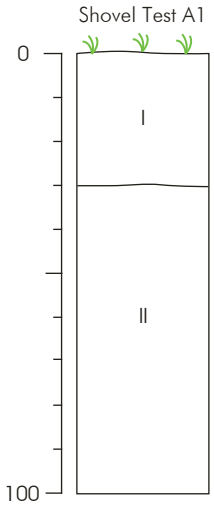
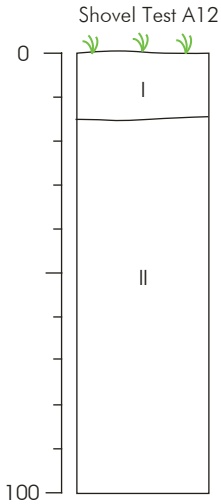
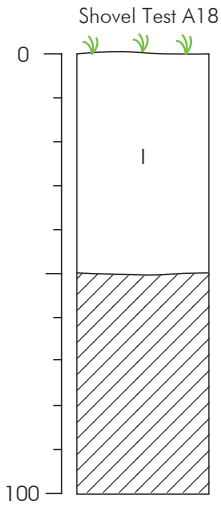
Figure 5-1



I	(0-30 cmbs)	7.5YR4/4 Brown compact, massive clay, with less than 2% crushed shell;
II	(30-100 cmbs)	7.5YR3/2 Dark brown compact, granular, unconsolidated clay loam, concentration of larger shell fragments from 40-55 cmbs and platy sandstone from 50-65 cmbs;



I	(0-15 cmbs)	7.5YR3/4 Dark brown compact clay loam;
II	(15-100 cmbs)	7.5YR4/4 Brown compact clay;



I	(0-50 cmbs)	7.5YR4/4 Brown and 7.5YR3/2 dark brown compact clay mixed with gravels and fill material;

Unexcavated

North Segment shovel test profiles.

mussel shell fragments was observed between 40 and 55 centimeters (16 and 22 inches) below the surface. No cultural material was recovered and only a small amount of shell was observed.

Trench 1 was also placed in this location to confirm that there were no deeply buried cultural deposits. This trench revealed a mix of fill soils associated with the buildup of the levee along Steep Bank Creek as well as disturbed back fill soils associated with a previous trench excavated to bury the drainage pipe encountered at the base of Trench 1 (Figure 5-3). The profile consisted of 25 centimeters (9.8 inches) of brown (7.5YR 4/4) sandy clay. Between 25 and 155 centimeters (9.8 and 61 inches) was a disturbed layer of strong brown (7.5YR 4/6) and very dark gray (7.5YR 3/1) clays interspersed with lenses of very pale brown (10YR 7/3) sand. Between 155 and 255 centimeters (61 and 100 inches) was a disturbed layer of very dark gray (7.5YR3/1) and strong brown (7.5YR 4/6) clays. At 220 centimeters (86.6 inches) and extending to 255 centimeters (100 inches), in the northwest quadrant of the trench, was a layer of very pale brown (10YR 7/3) sand surrounding an exposed section of galvanized steel drain pipe. Based on surface observations, shovel tests, and deep testing, it does not appear that Site 41FB253 extends into the APE, and that this area of the APE is heavily disturbed by previous development.

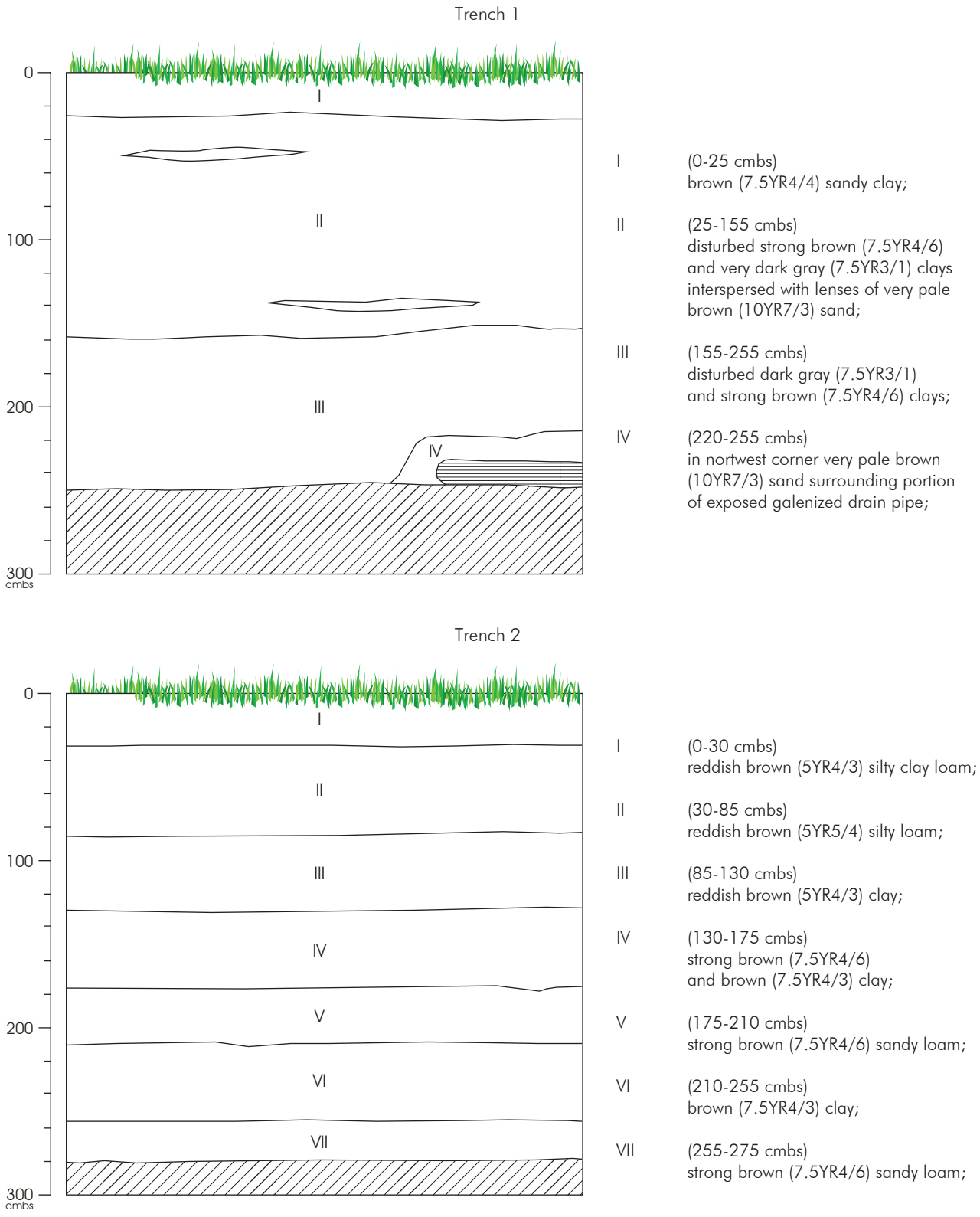
The portion of the North Segment APE that follows the east bank of Steep Bank Creek was tested every 100 meters (330 feet). This area consisted of gently sloping to moderately steeply sloping bank between residences and the creek (Figure 5-1: Photo B). Only in the area of Shovel Test A12 did the bank appear to be unmodified. The upper 15 centimeters (6 inches) consisted of a dark brown (7.5YR 3/4) clay loam, underlain by a brown (7.5YR 4/4) clay, which extended to the base of the shovel test at 100 centimeters (40 inches) below the surface (Figure 5-2). This portion of stream bank appeared to be undisturbed; therefore, a trench was placed at this location to test for deeply buried cultural deposits. Trench 2 produced a profile of 30 centimeters (12 inches) of reddish brown (5YR 4/3) silty clay loam. This was underlain by a reddish brown (5YR 5/4) silty loam extending to 85 centimeters (33.5 inches) below the surface. From 85 to 130 centimeters (33.5 to 51.0 inches) was a reddish brown (5YR 4/3) clay. Beneath this, between 130 and 275 centimeters (51 and 108 inches) were alternating stratigraphic layers of strong brown (7.5YR 4/6) to brown (7.5YR 4/3) clays and strong brown (7.5YR4/6) sandy loam stratigraphic units (Figure 5-3).

Most of the unexcavated shovel tests occurred within the eastern half of the proposed route where the APE occupies the edges of an artificial canal and levy system (Figure 5-1: Photo C). The shovel tests that were excavated were similar to Shovel Test A18 heavily disturbed and consisted of brown (7.5YR 4/4) and dark brown (7.5YR 3/2) clays mixed with gravels and other fill materials (Figure 5-2).

5.2.2 South Segment

A total of 18 shovel tests were attempted along the South Segment, three tests near site 41FB324 were positive, three planned shovel tests were unexcavated due to disturbances from recent construction, and the rest were negative for cultural resources. An additional 15 shovel tests were excavated within the footprint of the planned wastewater plant, all of which were negative for cultural resources (Figure 5-4).

The northern-most portion of the South Segment lies within a heavily disturbed area that includes an existing water treatment plant, a canal, Waters Lake Boulevard, and a utility corridor (Figure 5-4: Photo A). The APE then parallels the west shoulder of Waters Lake Boulevard, and is co-located alongside several other previously installed utilities. Testing in this section of the APE focused on the area nearest the previously recorded late nineteenth sugar



North Segment trench profiles.

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Figure 5-3

Figure removed from public distribution copy.

South Segment field results,
including previous work.

GRAY & PAPE
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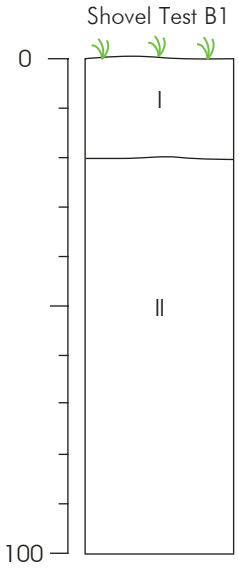
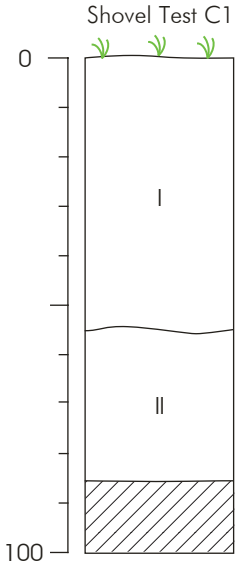
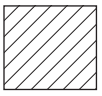
Figure 5-4



I	(0-20 cmbs)	7.5YR3/3 Dark brown sandy loam clay with lots of roots;
II	(20-100 cmbs)	7.5YR4/6 Strong brown sandy loam;



I	(0-55 cmbs)	7.5YR3/3 Dark brown compact, fine clay;
II	(55-85 cmbs)	7.5YR2.5/1 Black compact, granular, fine clay;



Unexcavated

South Segment shovel test profiles.

GRAY & PAPE HERITAGE MANAGEMENT

Figure 5-5

mill (41FB324). Three shovel tests produced a small quantity of disarticulated brick fragments. Profiles were similar to that of Shovel Test B1 (Figure 5-5). Disarticulated brick was identified in the top 20 centimeters (8 inches), which consisted of a dark brown (7.5YR 3/3) sandy clay loam. This was underlain by a strong brown (7.5YR 4/6) sandy clay loam which extended to 100 centimeters (40 inches) below the surface.

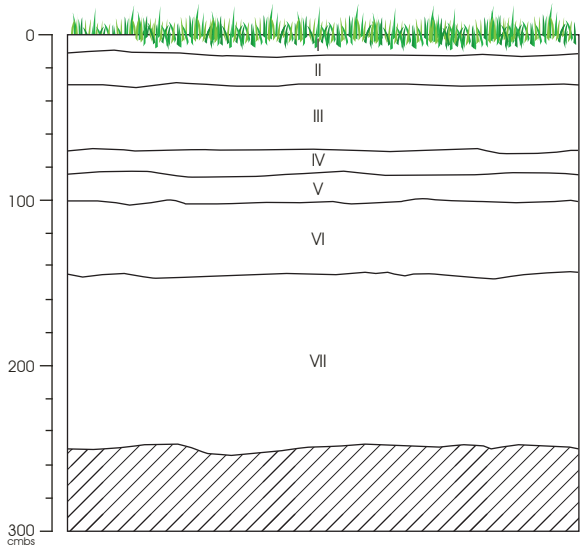
Trench 5 was placed in this location to determine if there were any deeply buried features present associated with 41FB324. The profile observed was broadly similar to that of the shovel tests (Figure 5-6). Ten centimeters (4 inches) of brown (7.5YR 4/3) sandy clay loam overlaid a brown (7.5YR 5/4) silty loam that extended to a depth of 30 centimeters (12 inches). Between 30 and 70 centimeters (12 and 27.5 inches) was a mottled yellowish red (5YR 4/6) and reddish brown (5YR 4/3) silty clay loam. This was underlain by a strong brown (7.5YR 5/6) silt loam to 85 centimeters (33.5 inches) below the surface, over a strong brown (7.5YR 4/6) sandy clay loam to a depth of 100 centimeters (40 inches) below the surface. Between 100 and 145 centimeters (40 and 57 inches) below the surface was a mottled strong brown (7.5YR 4/6) and brown (7.5YR 5/3) sandy clay loam. A dark reddish brown (5YR 3/3) clay loam extended to the base of the trench at 250 centimeters (98.4 inches) below the surface. No intact evidence of Site 41FB324 was observed in either the shovel tests or the trench.

In addition to being heavily disturbed by recent development (Figure 5-4: Photo B), an approximately 1.2-kilometer (0.7-mile) section of the South Segment APE, north of Scanlan Road, was tested at a 30-meter (100-foot) interval by HRA Gray & Pape in 2008 and this data was later published by Raba Kistner (Figure 5-4). All of these shovel tests were negative for cultural resources. In addition, Raba Kistner excavated five trenches near both the current APE and Oyster Creek, these were also negative for cultural deposits (Clark et al 2014:6). Because of the previous testing and subsequent construction, this portion of the APE was not extensively shovel tested during the present project; shovel tests and trenches were excavated in select areas to supplement and confirm the results of this previous work. Trench 6 was placed along Oyster Creek, 275 meters (900 feet) north of Scanlan Road, to supplement the previous work and test for deeply buried cultural deposits. Trench 6 produced a profile with 20 centimeters (7.9 inches) of a reddish brown (5YR 5/4) sandy loam underlain by a strong brown (7.5YR 4/6) silty clay loam to a depth of 65 centimeters (25.6 inches) below the surface. Between 65 and 125 centimeters (25.6 and 49.0 inches) were extremely thin alternating deposits of reddish brown (5YR 5/4) and yellowish red (5YR 4/6) silt loam. A mottled olive (5Y 5/4) and light brown (7.5YR 6/4) sand was between 125 and 130 centimeters (49 and 51 inches) below the surface. An olive (5Y 5/4) sandy clay loam extended to a depth of 150 centimeters (59 inches) and was underlain by a dark gray (5YR 4/1) clay with calcium carbonate inclusions to the base of the trench at 280 centimeters (110 inches) below the surface. A black (5YR 2.5/1) clay lens was located between these two stratigraphic units and was 40 centimeters (15.8 inches) at its thickest point.

South of Scanlan Road the APE is centered on a 2-meter (6-foot) tall berm that parallels a large canal, which based on aerial imagery, was constructed between 1968 and 1995 (NETR 2017b). No shovel tests were placed in the berm. In several places this berm had recently been cut into to allow for the placement of outflow pipes connecting a nearby school under construction and the canal. Examination of these cuts showed that the berm is constructed entirely of massive clay fill deposits, likely excavated during the construction of the canal (Figure 5-4: Photo C).

Within the APE of the planned wastewater treatment plant at the southern extent of the project area, 15 shovel tests were excavated, all negative for cultural resources. The area was densely wooded with an open understory. Soils

Trench 5



I (0-10 cmbs)
brown (7.5YR4/3) sandy clay loam;

II (10-30 cmbs)
brown (7.5YR5/4) silty loam;

III (30-70 cmbs)
mottled yelowish red (5YR4/6) and reddish brown (5YR4/3) silty clay loam;

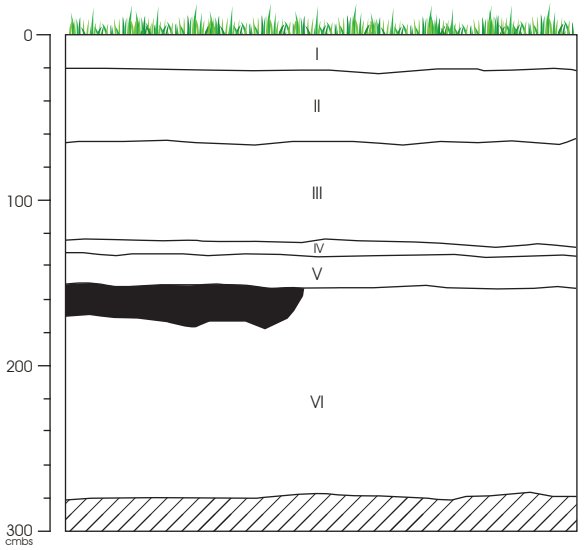
IV (70-85 cmbs)
strong brown (7.5YR5/6) silt loam;

V (85-100 cmbs)
strong brown (7.5YR4/6) sandy clay loam;

VI (100-145 cmbs)
mottled strong brown (7.5YR4/6) and brown (7.5YR5/3) sandy clay loam;

VII (145-250 cmbs)
dark reddish brown (5YR3/3) clay loam;

Trench 6



I (0-20 cmbs)
reddish brown (5YR5/4) sandy loam;

II (20-65 cmbs)
strong brown (7.5YR4/6) silty clay loam;

III (65-125 cmbs)
extemely thin alternating bands of reddish brown (5YR5/4) yellowish red (5YR4/6) silt loam;

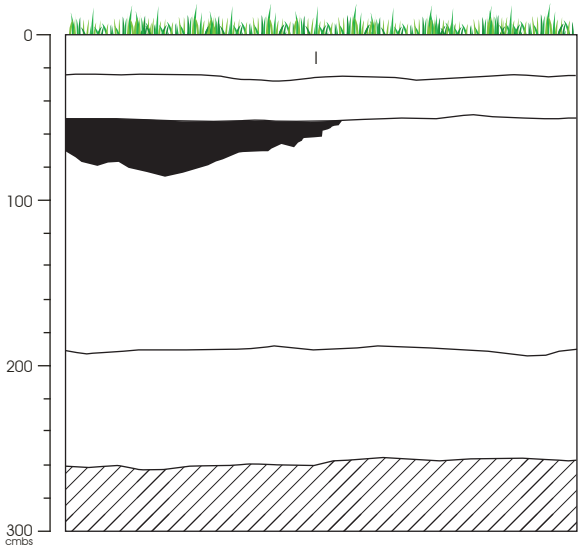
IV (125-130 cmbs)
mottled olive (5Y5/4) and light brown (7.5YR6/4) sand;

V (130-150 cmbs)
olive (5Y5/4) sandy clay;

VI (150-280 cmbs)
dark gray (5YR4/1) clay

A black (5YR2.5/1) clay lens occured between 150-190;

Trench 8



I (0-25 cmbs)
very dark gray (7.5YR3/1) clay;

II (25-50 cmbs)
reddish brown (5YR5/4) clay loam;

III (50-190 cmbs)
brown (7.5YR4/2) clay

A black (5YR2.5/1) clay lens occured between 50-85;

IV (190-260 cmbs)
very wet strong brown (7.5YR4/6) sandy clay loam;

Unexcavated

South Segment trench profiles.

were broadly consistent throughout the area. In Shovel Test C1, between the surface and 50 centimeters (20 inches) below the surface was a dark brown (7.5YR 3/3) clay, underlain by a very compact, black (7.5YR 2.5/1) clay (Figure 5-5). Six trenches were also placed within this portion of the APE to test for deeply buried cultural resources. All six trenches were broadly similar in profile to each other as well as to shovel tests in the area. In Trench 8 a profile was observed with a very dark gray (7.5YR 3/1) clay in the top 25 centimeters (9.8 inches). This was underlain by a reddish brown (5YR 5/4) clay loam to a depth of 50 centimeters (20 inches) below the surface. Between 50 and 190 centimeters (20 and 75 inches) was a brown clay. A black (5YR 2.5/1) clay lens was located between these two stratigraphic units. From 190 centimeters (75 inches) to the base of the trench at 260 centimeters (102 inches) was a very wet, strong brown (7.5YR 4/6) sandy clay loam. Water quickly pooled at the base of the trench (Figure 5-6).

A previously known feature in this area is an east/west running ditch that previously connected Oyster Creek and Cow Bayou (Figure 5-7). A previous historical study showed that although local oral history placed the feature as dating to the early Texas statehood age, there was no historical documentation to confirm this (McKinney 2008). Using primary historical documentation as well as secondary literature McKinney was able to find only one direct reference to the plantations drainage system. A 1907 advertisement for the sale of the plantation described the plantation's drainage system as extensive and exemplary, but provided no details to its age or method of construction. The same document included a map of the plantation, on which the drainage ditch is present (McKinney 2008:5).

The ditch is approximately 1 meter (3 feet) wide, with the south bank in most areas 1 meter (3 feet) high and the north bank only 30 centimeters (12 inches) high. Extending approximately 15 meters (50 feet) north from the ditch is a cleared corridor that gently slopes towards the ditch. At the edge of the cleared area several, smaller, north/south running ditches were observed. These smaller ditches, as well as the central clearing were cut within the last five years as part of a land maintenance program to alleviate inundation (Greenwald 2017). The feature in and of itself is not eligible for the National Register because of the lack of historical record or any associated archaeological evidence, and because it was a component of a larger landscape that has since be compromised by development throughout the area.

Figure 5-7. Overview of ditch feature. View is to the west.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This report summarizes the results of a cultural resources survey of two linear segments, totaling 6.7 kilometers (4.2 miles), proposed for the construction of a water line, and 6.6-hectare (16.2-acre) area for the construction of a waste water treatment plan in Fort Bend County, Texas. Fieldwork was carried out under Texas Antiquities Permit Number 7918. The goals of the survey were to determine if the proposed development would affect any previously identified historic properties and to establish whether or not previously unidentified cultural resources were located within the APE. All fieldwork and reporting activities were completed with reference to State laws and guidelines (the Antiquities Code of Texas).

Prior to fieldwork mobilization, a background literature and site file search was conducted to identify the presence of recorded sites and previous cultural resource surveys within or near the APE. Nineteen surveys and nine sites have been recorded within a 1.6-kilometer (1-mile) study radius of the APE. Two sites (41FB253, 41FB324) were determined to have mapped boundaries that intersected with, or were immediately adjacent to the project APE. Five of the previous surveys overlapped with the current APE. This research formed the basis for the fieldwork design.

Field investigations consisted of a combination of pedestrian survey, shovel testing, and deep testing. Pedestrian survey and shovel testing revealed that large portions of both the North Segment and the South Segment have been heavily impacted by development. Forty-two of 45 excavated shovel tests were negative for cultural material. All three positive shovel tests were located near 41FB324, and produced disarticulated pieces of brick, remnants of the site redeposited during road construction. Deep testing included the excavation of 10 trenches at five locations, and produced no deeply buried cultural deposits.

A portion of the North Segment APE was determined to overlap with the mapped boundary of the Late Prehistoric site 41FB253. However, close interval shovel testing, combined with a trench excavation to test for deeply buried deposits, revealed that the site did not manifest within the APE. Furthermore, the area had been previously disturbed by the installation of drainage systems and utilities, as well as modifications to build up the bank along Steep Bank Creek. Based on these observations, 41FB253 will not be impacted by the current project as planned.

The South Segment APE passes immediately adjacent to the mapped boundary of the late nineteenth sugar mill, Site 41FB324. Although 41FB324 was removed during the construction of Waters Lake Boulevard after it was recorded, close interval shovel testing, combined with a trench excavation to test for deeply buried deposits, were undertaken to see if the site extended into the APE. Other than disarticulated brick pieces, no cultural material was identified within the APE. Based on these observations, 41FB324 will not be impacted by the current project as planned.

Within the APE of the planned waste water treatment plant is a ditch feature that local oral history has suggested was constructed by slave or prison labor. However, previous historical research and the current archaeological survey have found no evidence to support this supposition. Based on this evidence, Gray & Pape believes that the site is not eligible for the National Register because of the lack of historical or archaeological record. Furthermore, it exists as a small component of a larger system that has been heavily compromised by previous development.

No artifacts or cultural features were encountered in the field. No negative impacts on any previously identified sites are anticipated from the proposed development. Based on the

results of the survey, Gray & Pape recommends that the no further cultural resources work be required and that the project be cleared to proceed as currently planned.

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