

FINAL Cultural Resources Survey Report

PROPOSED HORSEPEN BAYOU CONVEYANCE IMPROVEMENTS

CITY OF HOUSTON, HARRIS COUNTY, TEXAS

October 14, 2019

Terracon Project No. 92187794
HCFCF Project ID: B104-00-00-E002



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Terracon

Environmental



Facilities



Geotechnical



Materials

ABSTRACT

Terracon Consultants, Inc. (Terracon) was retained by IDS Engineering Group (Client) to conduct an intensive pedestrian survey for the proposed Horsepen Bayou Conveyance Improvements project in Houston, Harris County, Texas. Terracon previously conducted a cultural resources desktop assessment for the Client, which was coordinated with the Texas Historical Commission (THC) on March 4, 2019. Since the proposed undertaking will occur on land owned or controlled by a political subdivision of the State of Texas (Harris County Flood Control District), this project was subject to the Antiquities Code of Texas (Texas Natural Resources Code, Title 9, Chapter 191). Additionally, since future phases of this project will trigger regulatory oversight through coordination with the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act, it will be subject to provisions of Section 106 of the National Historic Preservation Act (NHPA) (54 USC § 306101). This project was conducted under Antiquities Permit #8974.

The project area comprises an approximate six-mile reach along Horsepen Bayou, and associated tributaries, and an approximate 73-acre undeveloped tract. Fieldwork, consisting of pedestrian survey and shovel testing, was conducted from July 22 to July 26, 2019 by Catherine Jalbert (Project Archeologist), Edgar Vazquez (Staff Archeologist), and Michael Hogan (Staff Archeologist), under the oversight of Jennifer Hatchett Kimbell, who served as the Principal Investigator. The report was authored by Catherine Jalbert and Jennifer Hatchett Kimbell. The proposed project area was investigated in compliance with Texas Historical Commission (THC) and Council of Texas Archeologists (CTA) guidelines for archeological survey. No cultural resources were observed within the project area.

One property, NASA's Sonny Carter Training Facility/Neutral Buoyancy Laboratory (Building 920) is adjacent to the project area and has been determined eligible for listing to the National Register of Historic Places (NRHP). However, the THC has determined that the project will have no adverse effect on this property. Considering the absence of other observed cultural resources eligible for inclusion on the NRHP within the project area, Terracon recommended that the proposed project be allowed to proceed as currently designed. The THC concurred with this recommendation on October 4, 2019, and consequently no additional work is required at this time. In the event that human remains or cultural features are discovered during construction, those activities should cease in the vicinity of the remains and Terracon, the THC's Archeology Division, or other proper authorities should be contacted.

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CULTURAL RESOURCES SURVEY OF PROPOSED HORSEPEN BAYOU CONVEYANCE IMPROVEMENTS CITY OF HOUSTON, HARRIS COUNTY, TEXAS

Terracon Project No. 92187794

October 14, 2019

1.0 INTRODUCTION AND MANAGEMENT SUMMARY

On behalf of IDS Engineering Group (Client), archeologists from Terracon Consultants, Inc. (Terracon) conducted a pedestrian survey of an approximate six-mile reach of Horsepen Bayou and an approximate 73-acre undeveloped tract, the proposed location for the expansion of an existing stormwater detention basin. The proposed undertaking will consist of channel improvements to Horsepen Bayou and select tributaries. Specific improvement plans have not yet been developed but may include the replacement of three bridges within the project area and a large box culvert. The project area is in Harris County, Texas (Figures 1 and 2). The project area begins southeast of Ellington Air Field, northwest of the confluence of Horsepen Bayou and Space Center Boulevard and extends downstream along Horsepen Bayou, terminating at the Bay Area Boulevard bridge crossing. Linear portions of the project area follow along existing, modified channel banks in a residential area. The undeveloped parcel was dominated by thick undergrowth consisting of yaupon, greenbrier, and tall grasses as well as stands of mixed hardwoods. While this project is currently subject to the Antiquities Code of Texas, future phases will be subject to provisions of Section 106 of the National Historic Preservation Act (NHPA) (54 USC § 306101) as regulatory oversight will be triggered through Section 404 of the Clean Water Act.

A cultural resources desktop assessment was previously conducted to gather information on prior archeological investigations and known cultural resources in or near the project area. Fieldwork, consisting of pedestrian survey and shovel testing, was conducted from July 22 to July 26, 2019 by Catherine Jalbert (Project Archeologist), Edgar Vazquez (Staff Archeologist), and Michael Hogan (Staff Archeologist). Jennifer Hatchett Kimbell served as the Principal Investigator (TAC Permit #8974). The report was authored by Catherine Jalbert and Jennifer Hatchett Kimbell. The proposed project area was investigated following Texas Historical Commission (THC) and Council of Texas Archeologists (CTA) guidelines for archeological survey. No cultural resources were observed within the project area. During the THC's review of the report, they noted that a historic property, NASA's Sonny Carter Training Facility, known as the Neutral Buoyancy Laboratory, had been declared eligible for listing to the National Register of Historic Places (NRHP), but also that the proposed undertaking would have no adverse effect on this property. Given the absence of archeological sites and historic properties within the within the project area, Terracon recommended that the proposed project be allowed to proceed as currently designed. Based on our findings as well as their own determination that the Sonny Carter facility would not be adversely affected, the THC concurred with this recommendation on October 4, 2019.

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Figure 1. Project area.

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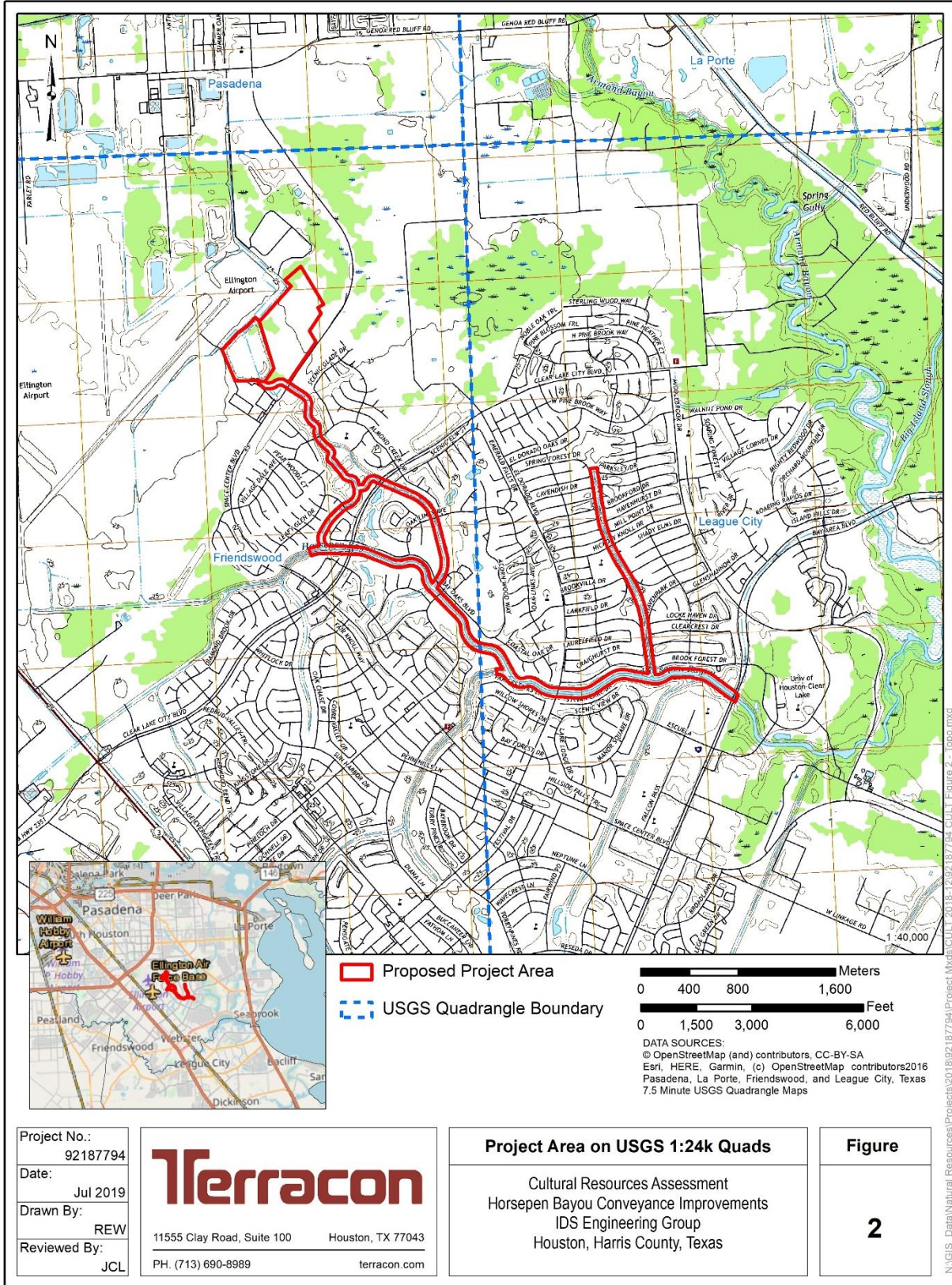


Figure 2. Project area on Friendswood and League City USGS 1:24,000 quads

2.0 BACKGROUND

2.1 Environmental Setting

The project area, located in the city of Houston, Texas, is in the Coastal Prairies portion of the West Gulf Coastal Plain Physiographic Province (Hunt 1974), which is characterized by generally flat, low relief prairie landscapes dominated by coastal aeolian processes and slow-moving drainages that feed into the Gulf of Mexico.

Harris County, like the rest of southeast Texas more broadly, is characterized by long, hot summers with short, moderate winters. Overall, the climate and physiography are dominated by Gulf moisture, which provides the source for most rainfall, including periodic hurricanes and other major tropic storms. Average precipitation varies widely depending on the frequency and intensity of tropical storm systems and rainfall patterns. Rainfall totals can range from as much as 73 inches to as little as 18 inches per year (Wheeler 1976). Major storms, like Hurricane Harvey in 2017, can bring up to dozens of inches of rainfall in one event. Light freezes can occur between late November and early March. In between, average temperatures range from as low as 64° in January to as high as 94° in August.

The local biotic community is dominated by marsh and prairie grasses and forested stands, consisting of some pine and mixed hardwoods, found mostly on elevated sandy ridges between waterways. The elevation of the project area is approximately 115 feet above mean sea level.

2.2 Culture History

The project area is in an area known as the Southeast Texas archeological region (Aten 1983; Patterson 1995; Story et al. 1990). Various syntheses have been presented for this area, but many of them suffer from the poorly stratified nature of prehistoric sites in the area and poor preservation conditions which cause organic remains to degrade, leaving few samples available for radiocarbon dating. As a result, regional chronologies tend to be imprecise and vague.

Following Aten (1983), regional prehistory is typically divided into three general periods: Paleoindian (12,000 B.P. to 9000 B.P.), Archaic (9000 B.P. to 3000 B.P.), and Late Prehistoric-Woodland (3000 B.P. to 250 B.P.). Generally, these stages or periods are based on a series of economic (including technology, subsistence, and settlement adaptations) transitions. Proposed shifts are related to climatic and environmental changes (Table 1), although these, like cultural transformations, are difficult to precisely date in the study area.

Table 1. Generalized culture history for Southeast Texas, with corresponding environmental periods

Time Period	Years Before Present (calibrated years cal B.P.)	Environmental Period
Historic	250 cal B.P. to ~50 B.P.	Modern Era, sometimes referred to as Anthropocene
Late Prehistoric-Woodland	3200 to 250 cal. B.P.	Late Holocene
Archaic	10,200 to 3200 cal. B.P.	Early and Middle Holocene
Paleoindian	13,800 to 10,200 cal B.P.	Terminal Pleistocene

The Paleoindian period begins with the earliest evidence of human presence and occupation in the study area, and in the New World. Archeologists have argued that during this time, human bands were highly nomadic, relied heavily on hunting strategies for food and other important resources, and maintained cultural territories covering large expanses of terrain. Exploitation of now-extinct Pleistocene fauna (including antique bison, mammoth, mastodon, and other taxa) was common. Subsistence data, however, also show reliance on small game including rodents and turtles. This period, covering nearly 4,000 years, saw many important adaptations that led in short order to the definition and establishment of regional cultural traditions, reduced settlement mobility, and increased populations across the region. Diagnostic tool types for the early part of this period include Clovis and Folsom points, both of which are defined by sophisticated fluting techniques. Fluted points eventually gave way to other forms including San Patrice, Dalton, Scottsbluff, St. Mary’s Hall, and others (Lohse 2013; Ricklis 2004).

Approximately 10,200 years ago or more, Pleistocene climates underwent rapid warming; this marks the beginning of the Holocene and of many of the so-called Archaic adaptations that followed. Megafauna became extinct, either from over-predation or climate change or both, and environmental habitats changed as rainfall regimes increased and sea levels rose in response to glacial melt. The predominating cultural patterns associated with this transition are the demonstrable increase in reliance on plant resources both for tools and for subsistence. Almost certainly, the perceived emphasis on plants is related in part to poor preservation of Pleistocene remains. Nevertheless, with the loss of most large-bodied prey species from the landscape, socially defined food-getting and economic strategies became refocused on smaller prey and a wider variety of caloric resources (Story et al. 1990). An important archeological indication of this shift is the appearance of plant cooking technology that used thermally heated rocks as a source of heat to transform carbohydrates into ingestible sugars (i.e., caloric energy) (Thoms 2009). This technique immediately made available several geophytes, root-based plant resources as reliable sources of food. Throughout the Archaic, regional populations increased, albeit slightly, and some indications suggest increased interaction with other, distant regions. Southeast Texas never appears to have been directly linked into thriving or well-defined cultural patterns that covered large area. Yet regional adaptations remained persistent and constant. One exception involves the Calf Creek interval, dated to about 5950-5700 cal B.P. This brief period is defined by a sudden and intensive focus on bison hunting and followed a long period during which bison were absent from the study area. Calf Creek remains are found from western Louisiana across Texas and as

far north on the Southern Great Plains as Kansas, eastern Colorado, Missouri, and western Arkansas (Thurmond and Wyckoff 1999).

The end of the Archaic in Southeast Texas corresponds with what Story et al. (1990) have termed the Mossy Grove archeological culture. In neighboring regions to the east, this period is called Woodland; each is defined by the appearance of pottery (first Tchefuncte then Goose Creek), but Woodland sites also commonly have domesticated plants, which appear to be absent from Mossy Grove assemblages. In terms of chipped stone tools, Gary points are ubiquitous across the region, and appear to last for an extended period. It seems likely that subtle variations within Gary point manufacturing and morphology might be discernable at sites where stratigraphic separation allows for such changes to be recognized. Following Costa et al. (2018), the last approximately 2,000 years of Southeast Texas prehistory might be best understood through a tripartite Mossy Grove sequence that reflect ceramic, lithic, and social developments. Under this recent scheme, Early Mossy Grove (EMG) begins with the appearance of pottery, probably diffusing westward from the Lower Mississippi Valley. This process extends until the appearance of the bow and arrow, perhaps around 1,200 years ago; this marks the beginning of so-called Middle Mossy Grove (MMG). This also marks the beginning of what is more commonly referred to as the Late Prehistoric period. Late Mossy Grove (LMG) reflects the eastern spread of a Plains-based economic system focused on the exploitation of bison, which appeared again in the study area for perhaps the first time since Calf Creek times.

Beginning in the early 1500s, European expeditions and incursions into Southeast Texas become increasingly frequent and included both French and Spanish influences. As these foreign powers competed for influence in the region, they encountered Native groups including the Atakapa, Akokisa, Bidai, Karankawa, Tonkawa, and others who had been in the area for centuries or longer (Aten 1983). Not long after Mexico gained its independence from Spain, in 1821, it began authorizing Anglo settlement into its northern territory of Tejas y Coahuila. San Felipe de Austin was established by Stephen F. Austin in 1824 as the colonial capital of this northern area, and it was from here that numerous land grants were issued to frontier settlers from the United States who came seeking new opportunities. Even though slavery was illegal in Mexico, many of the new arrivals did indeed bring enslaved persons with them. After Texas won its independence from Mexico and until after the Civil War, much of the economic prosperity of the state, and particularly of Brazoria, Wharton, Fort Bend, and parts of Harris County, relied heavily on labor from enslaved persons (Brown 1994). The 1860 United States census counted 180,682 enslaved persons in Texas that year and calculated that approximately 70-80% of the population of Brazoria County was comprised of enslaved persons. Figures were somewhat higher in adjacent Wharton County. Together, Brazoria and Wharton counties were by far the largest slave-holding region in southeast Texas and made up one of the densest concentrations of slave populations west of the Mississippi. Even following Emancipation, many Black individuals, especially males, were conscripted to prison farms that replaced plantations as a way of maintaining access to labor supply necessary to maintain the regional sugar crop economy. Following Emancipation, many freedmen entered Harris County to resettle in growing urban centers where they could develop their own social, economic, and cultural institutions

The area of what today is Harris County began to receive Anglo settlers in the early 1820s, like other parts of the northern Mexican territory of Tejas y Coahuila. After Texas gained its independence from Mexico in 1836, the modern boundaries of the county were established as Harrisburg County after John Richard Harris, an early settler. Harris laid out his town of Harrisburg at the junction of Brays and Buffalo Bayous, the uppermost navigable point of Buffalo Bayou at that time. Harrisburg served as an important gateway community for settlers and commerce heading west to other Anglo communities like Washington and San Felipe, which were located along the Brazos River. Following independence from Mexico, settlers began taking up residence closer to the new town of Houston, established by merchant and land speculating brothers John Kirby Allen and Augustus Chapman Allen in 1836 (Henson 2010). Houston has since grown to one of the nation's largest cities. The southeastern portion of Houston, where the project area is located, began to be heavily developed in the 1970s, a trend that continued through the 1980s.

Ellington Field Joint Reserve Base, immediately north and west of the existing detention basin and the 73-acre proposed tract, was founded in 1917 as Ellington Field whose aim was to provide training for pilots and bombardiers during World War I (Leatherwood 2017). The base was closed after the war but was re-opened in the spring of 1941; many military personnel were trained there during World War II. In 1947, the field became Ellington Air Force Base and was used for navigator training until the late 1950s. Between the 1950s and the 1970s, pilots for several branches of the U.S. military were trained at Ellington, and in 1982 NASA began using the field as well. In the 1980s, Ellington was acquired by the City of Houston and has since been used as a municipal airfield, although it continued to be used by military reserve and guard units and for aerospace activities (Leatherwood 2017). In 2015, Ellington was licensed by the Federal Aviation Administration to serve as one of ten commercial spaceports nationwide; however, due to its location in a heavily populated area, it cannot be used for vertical rocket launches (Leinfelder 2017).

3.0 RESEARCH AND SURVEY METHODS

A combination of desktop review and archeological fieldwork was employed to identify cultural resources present within a half-mile study area of the project area. Desktop review focused on identifying previously known historic properties and archeological sites, while pedestrian survey provided an opportunity to locate previously unknown archeological resources.

3.1 Desktop Review

This desktop assessment was conducted by consulting United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soils data; TxDOT's Potential Archeological Liability Map (PALM); the THC's online database, the Texas Archeological Sites Atlas (Atlas), which is restricted to qualified archeologists; historic-period USGS topographic maps and other historic maps; the NRHP website; the Texas Freedom Colonies Atlas; TxDOT's electronic resources for historic sites and bridges; and historic aerial photographs. These sources provide information on factors that affect the likelihood of intact archeological deposits being

present, previous archeological investigations, known prehistoric or historic-period sites, and historic properties listed in or eligible for listing in the NRHP within and near the project area. It should be noted that, while the Atlas includes polygons and lines representing many of the archeological investigations undertaken over the last five decades or so in Texas, this aspect of the Atlas is lacking much information. Additionally, the information available varies widely in quality, detail, and accuracy; this is particularly true for investigations conducted more than about 20 years ago.

3.2 Intensive Pedestrian Survey

Field methods adhered to survey standards established by the CTA and adopted by the THC for the project area. For linear projects, minimum survey standards require 16 shovel tests per mile and for project areas between 11-100 acres in size, a shovel test every two acres in areas that have the potential for buried cultural materials. Therefore, for this project area, up to 96 shovel tests were required for the linear portion of the project while 36 shovel tests were required for the undeveloped parcel (total of 132). Additional shovel tests (up to two) were placed in the areas of known sites identified during the desktop cultural resources review. This excludes areas with greater than 30 percent surface visibility, unless buried deposits are possible, or greater than 20 percent slopes. Shovel tests measured at least 30 centimeters in diameter and were excavated in 20-centimeter levels. Excavated sediments were screened through 1/4-inch mesh. Shovel tests were documented on a shovel test form, and their locations were recorded with a handheld Trimble Global Positioning System (GPS) device with sub-meter accuracy. Records will be housed at the Center for Archeological Studies at Texas State University in San Marcos.

4.0 RESULTS

4.1 Desktop Review

The project area is dominated by Lake Charles clay, 0 to 1 percent slopes, although the southern portion of the channel falls within the mapped area for Dylan clay, 3 to 5 percent slopes, and the eastern portion of the detention basin tract is mapped as Bernard-Urban land complex (NRCS 2019) (Figure 3). Lake Charles series soils are characterized as very deep, moderately well drained, very slowly permeable soils that formed in clayey sediments on broad coastal prairies (NRCS 2019). Dylan soils are very deep, moderately well drained soils that formed in clayey alluvium (NRCS 2019). Bernard series soils are described as very deep, somewhat poorly drained soils that formed in clayey fluvio-marine deposits of the Beaumont Formation (NRCS 2019).

The TxDOT PALM for the project area is dominated by areas classified as 4, for which no survey is recommended (Figure 4). A portion of the channel is classified as 2, for which surface survey but no deep (more than three meters) reconnaissance is recommended, and the eastern portion of the detention basin is classified as 2a, for which surface survey of mounds only is recommended (see Figure 4).

Terracon accessed the Atlas on January 7, 2019 and assessed the project area for the presence of previously recorded archeological sites, including sites designated as State Antiquities Landmarks (SALs) and determined to be eligible for listing on the National Register of Historic Places (NRHP). Several archeological investigations have been conducted within and near the proposed project area (Figure 5). A 2002 linear survey by Moore Archeological Consulting (MAC) for the Surface Transportation Board follows Space Center Boulevard through the edge of the 73-acre parcel and across the channel at the western end of the project area. Approximately 100 m downstream, a linear survey that Blanton and Associates conducted for USACE in 2013 crosses the channel portion of the project area. Multiple archeological investigations have been conducted nearer the eastern end of the channel portion of the project area. In 1984, Prewitt and Associates conducted a large-scale survey that followed a portion of Horsepen Bayou and examined a few isolated locations away from the channel (see Figure 5). This survey was followed in 1985 by a survey by Texas Heritage Services (THS) for a USACE permit for the Friendswood Development Company. THS recorded five archeological sites within or near the current proposed project area during their investigation, sites 41HR536, 41HR533, 41HR532, 41HR534, and 41HR535.

Site 41HR536 was documented as a Woodland/Early Ceramic Period campsite that was noted as being buried beneath dredge material from the channelizing of Horsepen Bayou. The site was identified by the presence of prehistoric pottery sherds eroding from the northern slope of the channelized bayou. The site was originally designated as a SAL in 1985 and is considered to be eligible for listing on the NRHP. In 1987, monitoring was conducted during the installation of a sanitary sewer line on a parcel adjacent to that on which the site is located, but there was no evidence that the site extended into the project area.

Site 41HR533 is located approximately 1130 feet (344 meters) downstream of 41HR536. This site was identified by the presence of prehistoric pottery and lithic debitage eroding downslope on the southern side of the channelized bayou, but the original site was thought to have been destroyed when the easement for a Harris County Flood Control District road was cleared and the roadway graded. No further investigations were recommended at the time.

Another Woodland/Early Ceramic Period prehistoric site, 41HR532, was identified by prehistoric pottery sherds that had eroded out of their original contexts when the overlying sediment was exposed by clearing. While it was noted that portions of the site outside the investigated easement could be intact, the portion of the site within the study area was determined to have been destroyed; no further investigation within that study area was recommended.

Site 41HR534 was documented as a Woodland/Early Ceramic Period prehistoric campsite that yielded prehistoric ceramic sherds, lithic tools, and debitage. Clear Lake High School was thought to have been constructed on top of the southern portion of the site, and the portion of the site in a wooded area north of the school was thought to be heavily eroded. However, it was considered possible that portions of the site might be preserved beneath dredged material adjacent to Horsepen Bayou, and further investigation of that area was recommended. This site was designated as a SAL in 1985 and was considered to be within the Armand Bayou National

Register Archeological District. Although 41HR834 is not listed on the NRHP, it is eligible for listing. The site was revisited in 2014 by archeologists from MAC for Clear Creek Independent School District (CCISD) in preparation for work on Clear Lake High School. The MAC archeologists determined that the portion of the site within their project area had been severely impacted and recommended no further investigation of that portion of the site.

Just east of the proposed project area for the current project is site 41HR535. This site was recorded as another Woodland/Early Ceramic Period campsite based on one prehistoric ceramic sherd and one utilized lithic flake found eroding from beneath a layer of dredge. Based on the probability that the site is preserved beneath the dredge layer, the site was designated as a SAL and determined to be eligible for listing on the NRHP in 1985 and was considered to be within the Armand Bayou National Register Archeological District. The full horizontal extent of the site is unknown, so it may extend into the current project area.

Finally, site 41HR1155 was recorded in 2014 by archeologists from MAC as part of their investigation of Clear Lake High School property for CCISD. The site was identified by one prehistoric pottery sherd and one piece of lithic debitage. The site was thought to lack potential to yield important information, and no further archeological investigation was recommended for the portion of the site located within the boundaries of the proposed project area.

No cemeteries, NRHP-listed properties, or Registered Texas Historic Landmarks (RTHLs) have been documented within a half-mile of the proposed project area (NPS 2019, THC 2019).

The linear project area is shown on two USGS topographic maps, given various names throughout the last hundred years. The western part of the project area is on the eastern side of the Genoa quad, later renamed the Friendswood quad. The eastern part is in the Seabrook quad, later renamed the League City quad (see Figure 2). Historic maps for this part of the state are easily accessible (USGS 2019). For purposes of identifying potential historic structures, the 1:24,000 USGS topographic quadrangle maps are ideal; for this area the oldest available USGS maps at that scale date to 1916. Other large-scale USGS topographic maps available for this area include 1920 Genoa and Seabrook 1:31,680, 1929 Genoa and Seabrook 1:24,000, 1932 Genoa and Seabrook 1:31,680, 1955 and 1969 Friendswood and League City 1:24,000 and more recent maps. No map indicates development within the proposed project area between 1915 and 1969.

Google Earth™ imagery is available back to 1944, and that imagery indicates that the current alignment of the portion of Horsepen Bayou west of the channelized loop near the middle of the project area deviates considerably from the alignment of the bayou between the 1940s and at least 1989. Between 1989 and 1995, the housing development along the channel was constructed, and it appears that most of that section of Horsepen Bayou was reshaped at that time. Consistent with the topographic maps, aerial imagery shows no structures immediately adjacent to the proposed project area dating to earlier than 1990.

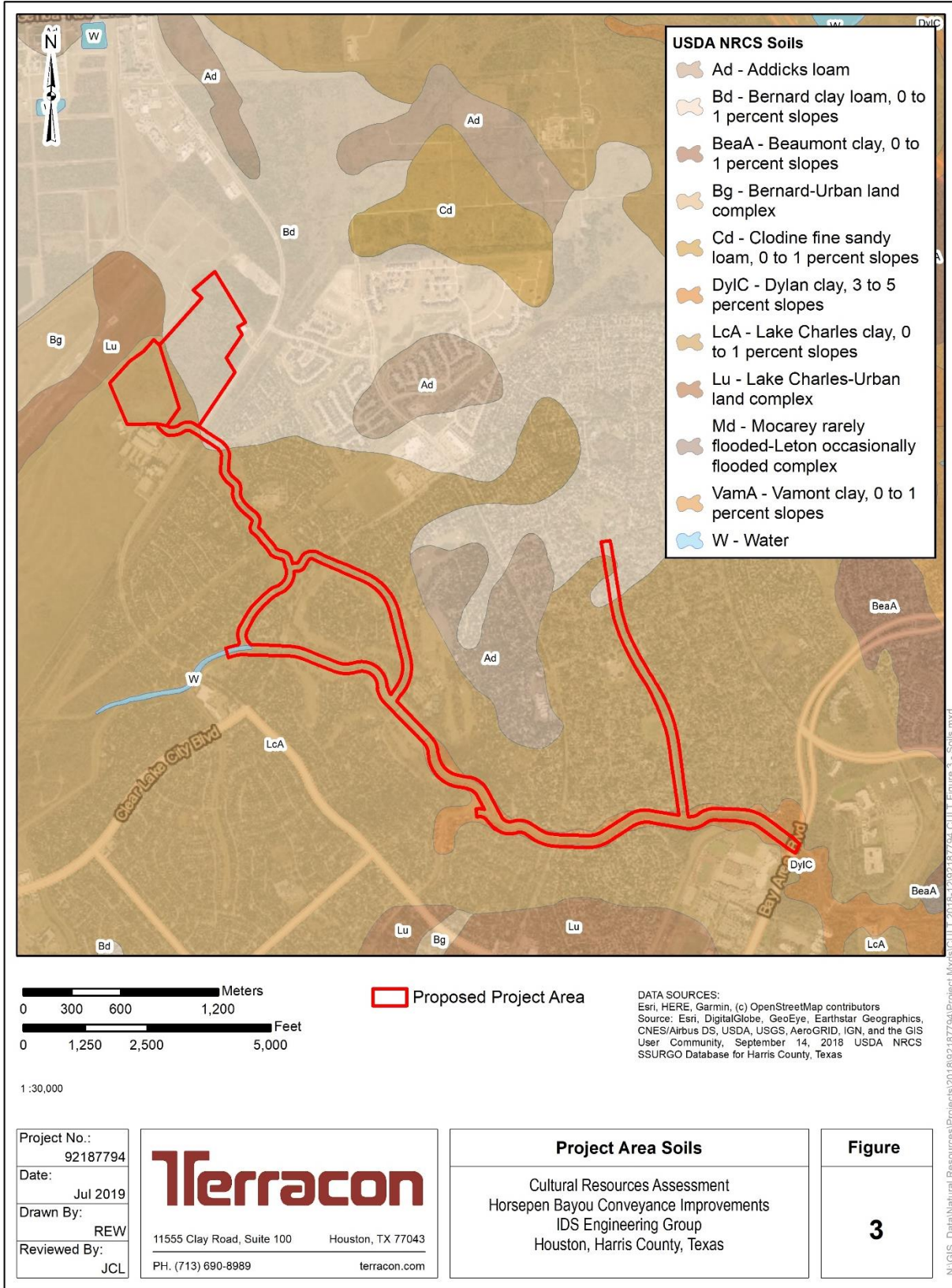


Figure 3. Project area soils.

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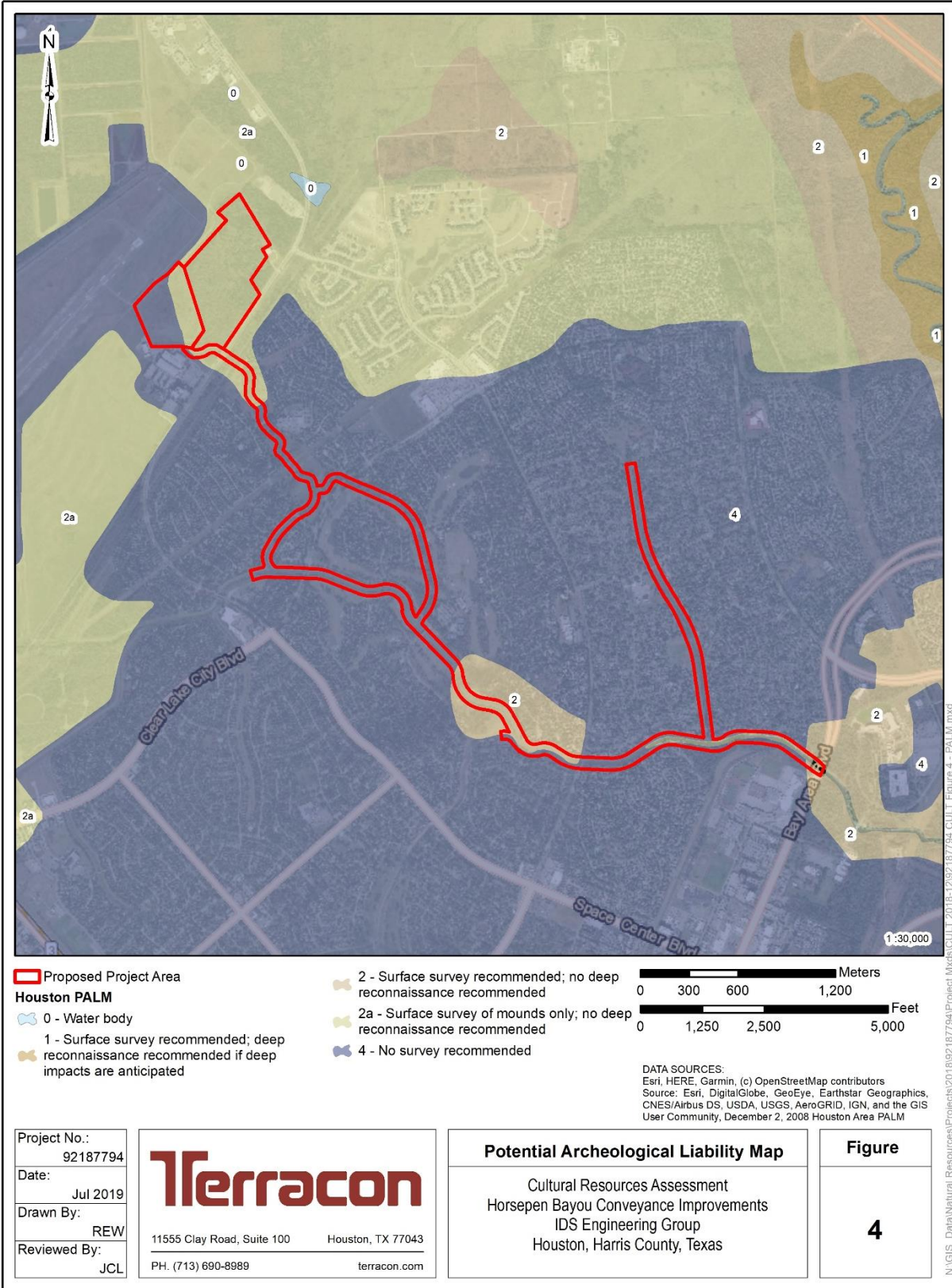


Figure 4. Project area PALM.

Figure Redacted for Site Protection

Figure 5. Results of desktop assessment.

Responsive ■ Resourceful ■ Reliable

4.2 Intensive Pedestrian Survey

Intensive pedestrian survey of the project area consisted of both surface examination and excavation. Pedestrian survey began at Bay Area Boulevard along the south embankment of the southern-most linear alignment where the previously recorded archeological sites were identified (see Figure 5; Figure 7). Along this alignment, shovel tests were placed every 100m with up to two additional staggered shovel tests placed around known sites. After survey was completed in this section, shovel testing proceeded to the other linear tracts before moving into the undeveloped parcel in the northeastern section of the project area. In areas where shovel test locations coincided with existing, man-made structures (roadways, bridges, pipeline corridors, etc.), shovel tests were offset to avoid these features. In areas where avoidance was not possible, or in areas that were inundated or exhibited slopes greater than 20 degrees, photographs of the environmental condition of the area were taken, and shovel test locations were recorded but not excavated. Overall, 135 Investigation Points were recorded, of which 117 were shovel tests (Figure 6).

Surface visibility in much of the project area can be described as poor, ranging between 0 and 5 percent due to the density of vegetation. Since the channel runs adjacent to residential developments, most of the linear portions of the survey area were characterized by short to ankle-high mowed grasses with trees lining the tops of the banks (Figures 8 and 9). In the linear section north of the channelized loop, the project area was dominated by a marshier landscape with taller grasses, forbs, and cattails in the areas surrounding the bayou (Figure 10 and 11). Along the linear portions of the project area, shovel tests reached between 50-80 centimeters below the surface, typically terminated in sterile subsoil. Throughout the 73-acre parcel, dense vegetation comprised of tall grasses, green brier, yaupon, forbs, and other underbrush were present as well as stands of mixed hardwoods and pines (Figure 12 and 13). Within this portion of the project area, shovel tests did not exceed 60 centimeters below surface due to the compactness of the strata or the presence of impassible tree roots.

In total, no cultural materials were observed on the surface or within the shovel tests excavated in the project area.

Figure Redacted for Site Protection

Figure 6. Shovel test locations.



Figure 7. First shovel test near Bay Area Boulevard (facing east).



Figure 8. Project area along Horsepen Bayou (facing east).



Figure 9. Project area along channelized stream from Spring Forest Drive to Brook Forest Drive (facing south).



Figure 10. Vegetation around channelized loop (facing west).



Figure 11. Vegetation around channelized loop (facing east).



Figure 12. Vegetation in 73-acre parcel for proposed detention basin (facing southeast).



Figure 13. Vegetation in 73-acre parcel for proposed detention basin (facing north).

5.0 CONCLUSIONS AND RECOMMENDATIONS

Terracon archeologists conducted an intensive pedestrian survey of the project area, which included an approximate six-mile reach of Horsepen Bayou and associated tributaries and an approximate 73-acre undeveloped parcel. This work was conducted in advance of proposed channel improvements to Horsepen Bayou in Houston, Harris County, Texas. The project area was systematically surveyed, with 135 Investigation Points recorded and 117 shovel tests excavated.

Terracon previously conducted a desktop review that indicated the presence of a number of known archeological sites along the southernmost linear alignment of the project area. With this factor in mind, Terracon archeologists conducted extra shovel testing (up to two additional shovel tests) in the area of each known site. The desktop review did not indicate the presence of known historic structures, or other cultural features within the project area. Pedestrian survey and shovel testing yielded no evidence of archeological deposits within the survey area. Based on the results of the current investigation, it is Terracon's assessment that no known historic properties eligible for inclusion on the NRHP will be affected by the proposed project as its currently designed. In their review of the draft version of this report however, the THC noted that NASA's Sonny Carter Training Facility, the Neutral Buoyancy Laboratory, has been determined to be eligible for listing to the NRHP. In discussions with THC staff about that property, the agency shared that no publicly available resource lists standing structure resources that have been determined eligible for NRHP

listing but that are not yet listed. Based on this discussion, Terracon concludes that it would have been impossible for the eligibility status of the Sonny Carter facility to have come to light during our background investigations. The THC concluded, however, that the project will have no adverse effect on the Sonny Carter facility and concurred with our other general recommendations (October 4, 2019). On this basis, the project is free to proceed as designed from the perspective of having satisfied the requirements of the Antiquities Code of Texas and Section 106 of the NHPA. In the event that human remains or intact cultural resources are discovered during construction, those activities should cease in the vicinity of the discovery and Terracon, the Texas Historical Commission's Archeology Division, or other proper authorities should be contacted.

6.0 REFERENCES CITED

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APPENDIX A
Shovel Test Log

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
1	EV01	-	0-25	10YR 4/2 dark grayish brown	Semi-moist clay	0%	On slope. Near edge of canal. Grassy area. About 10m from bridge	Heavily disturbed soil. Mixture of various clay with sand. Some CaCO3 present. Very few gravels. No cultural materials.
		-	25-66	10YR 5/3 brown with mottling 10YR 6/1 gray	Clay/CLLO			No cultural materials. 0 Gravels. CaCO3, also contained 2.5Y3/1 clay mottling. Terminated at basal clay.
2	CJ001	-	0-21	10YR 3/2 very dark grayish brown	Compact, sandy clay loam, dry	0%	Dense ankle to shin high grass, located on a slope with bayou downslope to the north. Walking trail located ~2m upslope to the south	No artifacts or gravels. This layer is disturbed. Some modern aluminum cans present at the interface between layer 1 & 2.
		-	21-55	10YR 5/8 yellowish brown	Compact, slightly moist clay			No artifacts or gravels. Calcium carbonate concretions present throughout.
		-	55-65	10YR 5/2 grayish brown	clay, compact, slightly moist			No artifacts or gravels. Calcium carbonate concretions present throughout. Terminated in basal clay

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
3	MH01	-	0-6	10YR6/3 Pale brown with 10YR3/1 very dark gray clay inclusions	Dry silt with clay inclusions	10%	Top of bank. Low mowed grass. Sidewalk ~2m south. Bayou 2m north	Sediment washed up during floods. Small roots, small # of shells. No cultural materials
		-	6-39	10YR3/1 very dark gray	Loamy clay. Dry.			No cultural materials. ~1-2% gravels. Small shell frags.
		-	39-58	7.5YR6/8 reddish yellow with ~10% 10YR 7/1 light gray	Clay. Dry			No cultural materials. ~2% gravels. No shell. Terminated due to clay.
4	EV02	-	0-22	10YR 4/2 dark grayish brown and 10YR 3/2 very dark grayish brown	Dry Clay	0%	On slope. Near edge of canal. 5m from sidewalk. Grassy area.	Modern glass from bottle present at 10 cmbs. Few gravels. Disturbed soils.
		-	22-45	7.5 YR 5/6 Reddish yellow with 10YR 6/1 gray	Sandy Clayey Loam			No cultural materials. Few gravels. Terminated at basal clay @ 40 cmbs.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
5	CJ002	-	0-15	10YR 3/2 very dark grayish brown	Compact, sandy clay loam, dry	0%	Grasses taller in this area with some forbs. Vegetation still dense. Landscape is still sloping toward bayou, but grade is less. Severe in this located ~5%	No artifacts or gravels.
		-	15-50	10YR 6/1 gray mottled with 10YR 3/4 dark yellowish brown	Silty clay, dry, friable			No artifacts or gravels or concretions. Disturbed fill layer.
		-	50-60	10YR 6/1 gray	Clay, compact, slightly moist			No artifacts or gravels. Basal clay with ~10% redox (10YR 5/8 yellowish brown) Terminated in sterile soil
6	MH02	-	0-32	10YR 3/1 very dark gray	Loamy clay. Dry.	3%	3/4 way up the bank. Sidewalk ~5m south. Bayou ~15m north.	No cultural materials. Snail shell. ~2% gravels. Small roots throughout.
		-	32-65	Mottled - 60% 7.5YR 6/8 yellowish red, 30% 10YR 3/1 very dark gray, 10% 10YR 7/1 Light gray	Clay. Dry			No cultural materials. Snail shell. ~2% gravels. Small roots throughout. Terminated due to clay

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
7	EV03	-	0-20	10YR 4/1 dark gray with 10YR 4/2 dark grayish brown	Sandy Clayey Loam	0%	On slope of canal. Grassy area. About 5m from sidewalk and alligator sign.	No cultural materials. Few gravels <5 cm. Light CaCO3. Possibly disturbed soil
		-	20-31	10YR 5/4 yellowish brown with 10YR 4/2 dark grayish brown	Clay			No cultural materials. Few gravels. Slight CaCO3. Terminated at basal clay. Iron oxidation present.
8	CJ003	-	0-14	10YR 3/2 very dark grayish brown	Compact, sandy clay loam	0%	Short, mowed grass. Located on a slope 10% grade. Bayou located to the north-northeast	No artifacts, gravels, or concretions.
		-	14-40	7.5YR 5/3 brown mottled with 10YR 6/1 gray	disturbed, clay, compact			No artifacts, gravels, or concretions. Disturbed fill with gradual transition to basal clay layer
		-	40-55	10YR 6/1 gray with 10% redox 10YR 5/8 yellowish brown	clay, compact			No artifacts, gravels, or concretions. Terminated in sterile clay

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
9	MH03	-	0-26	10YR 6/3 Pale brown	Sand. Very compact. Dry	0%	Knee high grass. ~5m south of bayou. ~30 cm above bayou.	No cultural materials. Snail shell throughout. Small roots throughout. No gravels.
		-	26-60	10YR 3/1 very dark gray	Sandy clay. Dry			No cultural materials. Snail shell throughout. Small roots throughout. No gravels. Terminated due to clay
10	CJ004	-	0-18	10YR 3/3 dark brown	Compact, dry, sandy loam	0%	Manicured landform parallel to bayou. Stand of trees located south of ST. Surface relatively flat	No gravels or concretions. No artifacts present
		-	18-52	10YR 6/4 light yellowish brown	Compact, slightly moist, clay			No artifacts, gravels, or concretions. Some calcium carbonated concretions (minimal). Terminated due to compactness
11	EV04	-	0-45	10YR 3/2 very dark grayish brown	Dry Sandy Clay	0%	On edge of canal with high grasses. Area around is densely wooded. On a flatter portion of bayou.	Few gravels <5 cm. Very compact soil. Plastic present at 20 cmbs.
		-	45-58	10YR 4/2 dark grayish brown with 10YR 5/1 Gray	Dry Sandy Clay			Compact soil, very few gravels, slight CaCO3, mild iron oxidation. Terminated at basal clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
12	MH04	-	0-48	10YR 3/1 Very dark gray with redox staining ~20% 7.5YR 6/8 reddish yellow	Sandy Clay. Compact. Dry	0%	Knee high grass. Woods ~15m south and bayou ~10m north.	No cultural materials. Snail shell throughout. Small roots. Terminated due to clay.
13	MH05	-	0-15	10YR 4/2 dark grayish brown	Sandy clay. Humic	0%	Low ridge ~ 1-2m above bayou. 15m south of bayou and 30m north of fence. Recently mowed grass.	Humic layer. No cultural materials. Large number of worms. Small roots throughout. No gravels.
		-	15-80	heavily mottled ~60% 10YR 5/3 brown, 20% 10YR 4/2 dark grayish brown, 15% 5YR 5/8 yellowish red, 5% 10YR 7/1 light gray	Sandy clay. Semi-moist			1 piece of plastic 50-60 cmbs. No artifacts. 1% small gravels. Disturbed. Terminated due to depth
14	CJ005	-	0-10	10YR 3/3 dark brown	Sandy clay loam. Dry and friable	0%	Horsepen Bayou is located ~1-2m to the north on a landscape that is dominated by manicured grass. Landform is fairly flat in this location sloping upward to the south toward housing. Clearly modified.	No artifacts, gravels, or concretions. No inclusions. Humic layer
		-	10-13	10YR 5/3 brown	Loamy sand, dry and loose			Possibly thin alluvial sand layer. No artifacts, gravels, or concretions.
		-	13-60	10YR 4/4 dark yellowish brown	Sandy clay loam, friable and dry			Largely homogenous, friable sandy loam. 1 piece of modern plastic at 50 cmbs
		-	60-71	10YR 6/1 gray	Clay, moist, and compact.			Small iron concretions. No artifacts. Terminated in basal clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
15	EV05	-	0-23	10YR 4/1 dark gray with 10YR 4/2 dark grayish brown	Dry Clay Loam	0%	On grassy bank of canal. 5m from house with brick fence and drainage.	No cultural materials. Soil looks partially disturbed. Sudden change in soil
		-	23-46	7.5YR 5/4 Brown with 7.5YR 6/1 gray	Sandy clay loam			No cultural material. No gravels. Change in soil. Clay and sand content. Hit basal clay @ 40 cmbs.
16	MH06	-	0-27	10YR 5/3 Brown	Clayey sand. Dry. Friable.	0%	Low ridge ~3m above bayou. ~20 m south of bayou and 20 m north of fence. Low grass. Small # of trees. Nearby concrete drainage.	No cultural materials. Small roots. No gravels. Friable.
		-	27-41	10YR5/3 Brown	Sandy clay. Dry. Very compact.			No cultural materials. No roots. Extremely compact. No gravels. Terminated due to clay/compaction.
17	CJ006	-	0-25	10YR 3/3 dark brown	Sandy clay loam, dry and compact	0-5%	Thick grasses, manicured landform, sloping toward bayou	No artifacts, gravels, or concretions. Thick humic layer
		-	25-60	10YR 4/4 dark yellowish brown	Sandy clay loam, dry and friable			No artifacts, gravels, or concretions. Slightly sticky. Increase in clay toward base of level.
		-	60-65	10YR 6/1 gray	Clay, moist, and compact. Sticky			No artifacts. Small/minimal iron concretions. Terminated in basal clay

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
18	EV06	-	0-32	10YR 4/2 dark grayish brown	Dry loam	0%	On grassy bank of canal. 20m from tree on edge of bank	No cultural materials. Few gravels <8 cm. CaCO3. Iron oxidation. Slight change in soil.
		-	32-40	7.5YR 5/4 Brown	Dry clay loam			No cultural materials. Few gravels. Move CaCO3. Iron oxidation. Pockets of 10YR 5/1 clay.
19	MH07	-	0-17	10YR 4/2 dark grayish brown	Sandy clay. Dry. Humic.	0%	Low ridge ~ 5m above water. 15m south of bayou. 15m north of fence. Low mowed grass.	No cultural materials. Small roots throughout. Wild onions. Small # of gravels.
		-	17-58	10YR 5/3 Brown with 10% redox	Sandy clay. Dry.			No cultural materials. Small roots throughout. Wild onions. Small # of gravels. Terminated due to clay.
20	CJ007	-	0-12	10YR 3/2 very dark grayish brown	Sandy clay loam, compact	0%	Similar landform to other ST's. Located south of bayou, on gently sloping landscape. Manicured lawn/grasses.	No gravels or concretions. No artifacts. Some modern plastic present
		-	12-45	10YR 4/4 dark yellowish brown	Fine sandy clay loam, slightly moist			Nothing of note. No artifacts, gravels, or concretions.
		-	45-60	7.5YR 4/6 strong brown with some 10YR 6/1 gray	Clay, very sticky and compact			No artifacts or gravels. Iron and calcium concretions present. Terminated in sterile soil.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
21	EV07	-	0-20	10YR 4/1 Dark gray	Dry clay	0%	On rise of bank 10m from black metal fence. Grassy area. Topo has been modified.	No cultural materials. Few gravels <5 cm. Very compact clay. CaCO3. Iron oxidation.
		-	20-32	7.5YR 4/4 Brown with 7.5YR 4/2 Brown	Dry Clay			No cultural materials. Few gravels <5 cm. Very compact clay. CaCO3. Iron oxidation.
22	MH08	-	0-35	10YR 5/3 Brown	Sandy clay. Dry.	0%	~3m above bayou. On ridge ~5m south of bayou. ~ 25m north of fence. Low mowed grass. Bridge ~70m west.	No cultural materials. Small roots throughout. Small number of gravels.
		-	35-60	7.5YR 7/6 Reddish yellow	Sandy clay. Dry.			No cultural materials. Small roots throughout. Small number of gravels. Terminated due to clay.
23	CJ008	-	0-40	10YR 3/2 very dark grayish brown	Compact sandy clay loam	0%	Dense grass, manicured lawn, slopes toward bayou located to north	Modern plastic (Gatorade bottle) present at 20 cmbs. No gravels or concretions present. No artifacts
		-	40-60	Mottled 10YR 6/1 gray. Fill disturbed	Clay. Compact, slight stickiness			No artifacts. Disturbed clay with some concrete and aggregate present. Terminated due to compactness at base.
24	EV08	-	0-15	10YR 6/3 Pale brown	Dry sand	0%	Edge of canal bank. Grassy area	No cultural materials. 0 gravels. Sudden soil change.
		-	15-60	7.5YR 4/2 brown	Moist sand			Trash at 60 cmbs. No gravels. Slight soil change
		-	60-67	7.5YR 4/2 brown with 7.5YR 5/1 gray	Moist sandy clay			Iron oxide No gravels. Inc clay content. No cultural materials.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
25	MH09	-	0-7	10YR 4/2 dark grayish brown	Clayey sand. Moist. Humic.	0%	Bank. ~2m above bayou. ~5m south of bayou. ~30m north of fences. Low mowed grass.	No cultural materials. Small roots. Throughout. ~2% gravels.
		-	7-45	10YR 5/3 Brown with 10% redox	Clayey sand. Moist.			No cultural materials. Small roots. Throughout. ~2% gravels
		-	45-68	5YR 5/8 yellowish red	Sandy clay. Semi-moist			No cultural materials. Small roots. Throughout. ~2% gravels. Terminated due to clay.
26	CJ009	-	0-7	10YR 6/3 Pale brown	Sand. Dry and loose	0%	This area is extremely modified. ST is on flat landform in close proximity to bayou (N) before steep incline (>30 degrees)	No gravels or concretions. Appears to be alluvial sand. No artifacts
		-	7-18	10YR 3/3 dark brown	Compact sandy clay loam			No artifacts, gravels, or concretions.
		-	18-70	Mottled fill. 7.5YR 4/6 strong brown	Fill/disturbed clay. Sticky and compact.			No cultural materials. Appears to be some calcium carbonate at interface between layers 2 and 3. No gravels. Appears to be disturbed.
27	EV09	-	0-58	10YR 5/3 brown	Moist sand	0%	Edge of canal bank. Grassy area. Between small dock and drainage	No cultural materials. No gravels. Slight change in soil
		-	58-73	7.5YR 4/6 strong brown	Moist sandy clay			Bits of plastic @ 60 cmbs. No gravels. Inc. in clay. Slight soil change. Terminated at clay

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
28	MH10	-	0-60	10YR 5/3 Brown	Sandy clay loam. Dry	0%	Bank ~2m above bayou. ~3m south of bayou. ~35m north of fence. Various trees. Low mowed grass.	No cultural materials. Large roots throughout. No gravels.
		-	60-72	5YR 5/8 yellowish red	Sandy clay. Dry.			No cultural materials. Large roots throughout. No gravels. Terminated due to clay
29	CJ010	-	0-60	10YR 3/4 dark yellowish brown	Fine sandy clay loam. Friable	0%	Like last ST, this ST is located on flat landform beside bayou before it steeply inclines to the south (>30%)	No artifacts, gravels, or concretions. Plastic found at 55 cmbs.
		-	60-72	10YR 6/1 gray	Clay. Compact and sticky			No cultural materials. Clay has significant calcium carbonate but does not appear to have iron concretions.
30	MH11	-	0-30	Heavily mottled. ~70% 10YR 3/1 very dark gray. 20% 10YR 5/3 brown. 10% 5YR 5/8 yellowish red.	Clay. Dry. Disturbed	0%	Bank of drainage channel. Low mowed grass.	No cultural materials. ~5% small gravels. Small roots. Terminated due to electrical line at 30 cmbs.

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31	CJ011	-	0-15	10YR 3/3 dark brown	Sandy clay loam. Moist but friable.	0%	ST located toward center of RoW in close proximity to channel. Landscape slopes upward from here to both the east and west.	No artifacts, gravels, or concretions.
		-	15-32	10YR 6/3 Pale brown	Sandy loam. Friable			No artifacts, gravels, or concretions. Homogenous sandy layer
		-	32-55	10YR 3/6 dark yellowish brown	Clay. Moist. Compact.			No gravels or artifacts. Level has some iron concretions. St Terminated in clay.
32	EV10	-	0-35	10YR4/1 dark gray	Dry sandy loam	0%	On grassy edge of canal. Nearby pine trees and sidewalk. About 50m from bridge	No cultural materials. No gravels, fairly soft soil, change in soil color and texture
		-	35-45	10YR 5/2 with mottling 10YR 3/1	Dry sandy clay			No cultural materials, no gravels, fairly soft soil, iron oxide, slight soil change.
		-	45-56	10YR 3/1 Very dark gray	Dry clay			No cultural materials, no gravels, fairly soft soil, iron oxide, slight soil change. Terminated at basal clay.
33	MH12	-	0-10	10YR 4/2 dark grayish brown	Clayey loam. Semi-moist	0%	Bank of drainage channel. Low mowed grass.	No cultural materials. Small roots throughout. ~1% small gravels.
		-	10-35	10YR 5/3 brown	Loamy clay. Dry.			No cultural materials. Small roots throughout. ~1% small gravels.
		-	35-70	90% 5YR 5/8 yellowish red. 10% 10YR 7/1 light gray	Clay. Dry.			No cultural materials. Small roots throughout. ~1% small gravels. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
34	CJ012	-	0-20	10YR 3/3 dark brown	Fine sandy clay loam, friable	0%	ST is in similar location to the last ST. Flat landform in the middle of two slopes to either side (east and west). Manicured grass lines side of channel	No gravels or artifacts. No visible concretions
		-	20-60	10YR 4/3 brown	Fine sandy clay loam. Friable			Rubber stopper (modern) found at 55-60 cmbs. No gravels concretions or other cultural materials present.
		-	60-80	10YR 5/2 grayish brown	Silty clay, moist, slightly hard			Increase in small (<3cm) iron concretions. Terminated at depth. No artifacts or gravels
35	EV11	-	0-53	10YR 4/1 Dark gray	Moist sandy loam	0%	On grassy edge of canal. Nearby pine trees and sidewalk.	Plastic/Trash until 40 cmbs, 0 gravels, sudden soil change.
		-	53-62	10YR 6/1 Gray with 90% mottling 7.5YR 5/6 strong brown	Moist clay			No cultural materials, 0 gravels, terminated at basal clay
36	MH13	-	0-12	10YR 5/3 Brown	Clayey loam. Dry.	0%	Bank of drainage channel. ~25m north of bridge. Low mowed grass	No cultural materials. ~3% gravels. Roots and onions throughout.
		-	12-66	5YR 5/8 yellowish red with 10% 10YR 7/1 light gray	Loamy clay. Dry.			No cultural materials. ~3% gravels. Roots and onions throughout. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
37	CJ013	-	0-10	10YR 3/3 dark brown	Fine sandy clay loam. Friable	0%	Manicured dense grass. ST close to channel (<1m) on gentle slope. ST surrounded by two high banks (east and west). Pine trees at top of banks	No gravels, concretions, or artifacts. Some larger roots present.
		-	10-35	10YR 4/3 brown	Sandy clay loam, moist and friable			No gravels, concretions, or artifacts. Some larger roots present.
		-	35-55	7.5YR 4/6 strong brown	Clay. Hard compact. Slightly moist			Moderately hard clay. No visible concretions or gravels. No artifacts present, Terminated at basal clay.
38	EV12	-	0-30	10YR 4/1 dark gray	Dry clay	0%	On edge of canal bank, Inc. slope. Grassy area with pines @ 20m. Near residential area.	No cultural materials, slight CaCO3, no gravels, iron oxide, very compact, sudden change in soil
		-	30-38	7.5YR 4/6 strong brown with 20% 7.5YR 6/1 Gray	Dry clay			No cultural materials, pockets of 7.5YR 6/1 clay, firm, terminated at basal clay.
39	MH14	-	0-26	10YR 5/3 Brown	Clayey loam. Dry. Humic	0%	Bank of drainage channel. Low mowed grass.	No cultural materials. ~1% small gravels. Roots throughout.
		-	26-70	5YR 5/8 yellowish red with 10% 10YR 7/1 light gray	Loamy clay. Dry.			No cultural materials. ~1% small gravels. Roots throughout. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
40	CJ014	-	0-14	10YR 3/3 dark brown	Sandy clay loam, friable	0%	Same topography/landform as last ST. Grasses remain short and dominate project area. Dense vegetation	No gravels or concretions. Soil is a bit grittier than previously encountered.
		-	14-45	10YR 3/4 dark yellowish brown	Sandy clay loam, firm and dry			No gravels, concretions, or artifacts. Soil increased in firmness from first level.
		-	45-65	10YR 2/1 black with 10YR 6/1 gray	Clay, very sticky and hard			No gravels, concretions, or artifacts. Very sticky and hard. Terminated due to compactness.
41	EV13	-	0-45	10YR 4/1 dark gray	Very dry sandy clay loam	0%	On edge of canal bank, Inc. slope. Grassy area with pines @ 20m. Near residential area. 10m from pedestrian bridge.	Plastic/trash throughout, very compact, CaCO3 throughout, terminated because very compact
42	MH15	-	0-30	10YR 4/2 dark grayish brown	Clayey loam. Dry	0%	Bank of drainage channel. Low mowed grass.	No artifacts. Modern trash throughout. Small roots throughout. No gravels.
		-	30-52	10YR 5/3 Brown	Loamy clay. Dry.			No artifacts. Modern trash throughout. Small roots throughout. No gravels. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
43	CJ015	-	0-50	10YR 2/2 very dark brown	Sandy clay loam	0%	Located in middle of channel next to drainage	No gravels or concretions. Modern glass and plastic throughout. Terminated due to impassable cement at base
44	EV14	-	0-30	10YR 4/1 dark gray	Semi-moist clay	0%	On slope on the edge of the canal bank. Grassy area, pine trees @ 50m	No cultural materials, very few gravels, compact soil, sudden change in soil, mild CaCO3.
		-	30-35	7.5YR 4/6 strong brown with 10% 7.5YR 6/1 gray	Moist clay	0%		No cultural materials, compact soil, iron oxide, Terminated at basal clay
45	No Dig					0%	Bank of drainage channel. Low mowed grass. Steep slope 30-40 degrees.	No dig, steep slope 30-40 degrees.
46	No Dig					0%	Grassy slope	No dig. Slope greater than 30°
47	MH16	-	0-5	10YR 4/2 dark grayish brown	Sandy loam. Humic. Dry.	0%	~2m south of bayou. 1m above bayou. Low mowed grass. Trees nearby	No cultural materials. No gravels. Small number of small roots.
		-	5-35	10YR 5/3 Brown	Clayey sand. Dry.			No cultural materials. No gravels. Small number of small roots.
		-	35-53	10YR 3/3 dark brown	Sandy clay. Semi-moist			No cultural materials. No gravels. Small number of small roots. Terminated due to clay.

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48	CJ016	-	0-8	10YR 3/3 dark brown	Sandy loam, dry and friable	0%	ST is north of embankment that slopes upward to the south (>30 degrees). ST itself is on flat surface at base of slope. Approximately 1-2m from the bayou. Short/medium grass that are recently mowed. Tree line top of embankment to the south	Humic layer with small rootlets. No gravels, concretions, or artifacts.
		-	8-15	10YR 6/2 light brownish gray	Loamy sand, dry and loose			No gravels, concretions, or artifacts. Band of alluvial sand under humic layer
		-	15-32	10YR 3/3 dark brown	Sandy clay loam, compact and dry			No gravels, concretions, or artifacts. Soils fairly homogenous
		-	32-35	10YR 6/2 light brownish gray	Loamy sand, loose and dry			No gravels, concretions, or artifacts. Narrow band of alluvial sand.
		-	35-63	10YR 3/3 dark brown	Sandy clay loam			No gravels, concretions, or artifacts. Increase in clay content in this level.
		-	63-80	10YR 5/6 yellowish brown	Silty clay loam			Noticeable change in soil texture. Did not reach subsoil. Terminated at depth. No gravels, concretions, or artifacts.
49	No dig						On bank slope of the canal. 30m from bridge and golf course.	Slope of the banks has a greater than 30-degree slope.

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50	EV15	-	0-45	10YR 4/2 dark grayish brown	Dry loam	0%	On grassy bank of canal. Between both golf courses. About 100m from bridge. Gators in water.	Bits of plastic, 0 gravels, soil is loose, sudden change in soil, slight CaCO3.
		-	45-50	10YR 5/6 yellowish brown with 10% 7.5YR 5/6 strong brown	Dry clay			Few gravels <5cm, no cultural materials, compact clay, iron oxide, mild CaCO3, Terminated at basal clay.
51	MH17	-	0-30	10YR 4/2 dark grayish brown	Loamy clay. Semi-moist	0%	~2m south of bayou. 1m above bayou. Low mowed grass. Trees nearby	No cultural materials. No gravels. Small number of small roots.
		-	30-48	10YR 5/3 Brown	Loamy clay. Dry.			No cultural materials. No gravels. Small number of small roots. Terminated due to clay.
52	EV16	-	0-52	10YR 4/1 dark gray	Dry clay loam	0%	On grassy bank of canal. Near golf course.	Plastic @ 45, few gravels <3 cm, firm soil, slight iron oxide, slight soil change
		-	52-61	10YR 4/2 dark grayish brown with 20% mottling 10YR 5/1 gray	Dry clay			No cultural materials, few gravels <3 cm, Heavy iron oxide, compact soil, Terminated at subsoil

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
53	CJ017	-	0-9	10YR 6/2 light brownish gray	Loamy sand, loose and dry	0%	ST is located north of embankment that slopes upward to the south where golf course is located. Grasses of varying sizes. More marshy vegetation in this area.	Alluvial sand layer with small rootlets throughout. No gravels, concretions, or artifacts.
		-	9-33	10YR 3/3 dark brown	Sandy clay loam, dry, compact			Golf ball found at 30 cmbs. No gravels, concretions, or artifacts.
		-	33-50	10YR 4/4 dark yellowish brown	Sandy clay loam			No artifacts. Golf ball found at 40 cmbs. Increase in iron concretions and small clay conclusions.
		-	50-60	10YR 4/1 dark gray	Clay, sticky and compact			Some iron concretions. No gravels or cultural materials. Terminated in subsoil.
54	MH18	-	0-22	10YR 4/2 dark grayish brown	Clayey loam. Humic. Semi-moist	0%	~2m south of bayou. 1m above bayou. Low mowed grass. Trees nearby	No artifacts. Modern trash throughout. Small roots throughout. No gravels.
		-	22-68	10YR 5/3 Brown	Loamy clay. Dry.			No artifacts. Modern trash throughout. Small roots throughout. No gravels. Terminated due to clay.
55	EV17	-	0-57	10YR 4/2 dark grayish brown	Dry sandy clay loam to clay loam	0%	Grassy bank of canal. Across from bridge and dam. 3m from rusty drainage pipe.	Plastic @ 22 cmbs, 0 gravels, slight CaCO3, slight soil transitions
		-	57-63	10YR 3/2 very dark grayish brown with 20% mottling 10YR 5/1 gray	Dry Clay			No cultural materials, 0 gravels, moderate CaCO3, Heavy iron oxide, Terminated at subsoil

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
56	CJ018	-	0-20	10YR 3/3 dark brown	Compact sandy loam. Dry.	0%	Located east of bridge (~10m) and west of drainage pipe (~5m) feeding into bayou. Tall dense grasses. Small incline (~5-10 degrees)	No gravels, concretions, or artifacts.
		-	20-45	10YR 3/4 dark yellowish brown	Compact sandy loam. Dry.			No gravels, concretions, or artifacts. Soils are very compact. Terminated due to large rocks at base.
57	MH19	-	0-12	10YR 4/2 dark grayish brown	Clayey loam. Humic. Semi-moist	0%	~2m south of bayou. 1m above bayou. Low mowed grass. Trees nearby	No cultural materials. No gravels. Small number of roots throughout.
		-	12-43	10YR 6/1 gray with 15% redox	Loamy clay. Dry.			No cultural materials. No gravels. Small number of roots throughout. Clay content increased with depth. Terminated due to clay.
58	MH20	-	0-19	10YR 4/2 dark grayish brown	Clayey loam. Humic. Dry.	0%	~2m south of bayou. 1m above bayou. Low mowed grass.	No artifacts. Modern trash throughout. Small roots throughout. No gravels.
		-	19-50	10YR 5/3 Brown	Loamy clay. Dry			No artifacts. Modern trash throughout. Small roots throughout. No gravels.
		-	50-68	10YR 6/1 gray with 10% redox	Clay. Dry.			No artifacts. Modern trash throughout. Small roots throughout. No gravels. Terminated due to clay.

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59	CJ019	-	0-14	10YR 3/3 dark brown	Compact and dry sandy clay loam	0%	Dense recently mowed grasses. Landscape is fairly flat embankment to the south and north of channel.	Some small rootlets throughout. No gravels, concretions, or artifacts.
		-	14-40	10YR 4/4 dark yellowish brown	Compact and dry sandy clay loam			Small calcium concretions present. Soils are very compact. No artifacts
		-	40-55	10YR 6/1 gray with 10YR 2/1 black	Clay, sticky and compact			Some (~10%) redox staining present. No gravels or concretions. No artifacts present.
60	EV18	-	0-35	10YR 4/2 dark grayish brown	Dry sandy loam	0%	Edge of canal bank. Grassy area. Area has been heavily modified.	No cultural materials, Very few gravels, slight soil change, dry, friable
		-	35-53	10YR 5/2 grayish brown	Moist Sandy clay			No cultural materials, Lots of gravels <5cm, iron oxide, increase in clay content, Terminated at subsoil.
61	MH21	-	0-30	10YR 4/2 dark grayish brown	Loamy clay. Dry.	0%	~2m south of bayou. 1m above bayou. Low mowed grass.	No cultural materials. Small roots throughout. No gravels.
		-	30-50	5YR 7/6 Reddish yellow	Clayey silt. Moist.			No cultural materials. Small roots throughout. No gravels. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
62	CJ020	-	0-20	10YR 3/3 dark brown	sandy clay loam, compact and dry	0%	Dense recently mowed grasses. Located downslope on flat landscape beside bayou.	Small rootlets throughout. No gravels, concretions, or artifacts.
		-	20-50	10YR 5/1 gray with 10YR 4/6 dark yellowish brown	Mottled clay. Compact and sticky			Increase in calcium concretions. Some iron concretions also present. No artifacts. Terminated in subsoil.
63	EV19	-	0-30	10YR 4/2 dark grayish brown	Loam. Dry	0%	Edge of canal bank. Tall grasses. At base of slope. Near golf course. Topo heavily modified.	No cultural materials. Few gravels <3 cm, soil compact, sudden soil change
		-	30-40	10YR 6/1 gray with 70% mottling 7.5YR 5/6 strong brown	Sandy clay. Moist			No cultural materials, several gravels <3 cm, soft soil, clay inclusions, pockets of 10YR 5/1, Heavy iron oxide, Terminated at subsoil
64	No dig						Dense vegetation	Dense vegetation/understory, could not access.
65	No dig					0%	ST located under two overpasses with concrete slopes to bayou	no dig concrete
66	CJ021	-	0-11	10YR 6/2 light brownish gray	Alluvial loamy sand. Dry and loose	0%	Located on flat landscape at base of slope. Grasses of varying size.	No gravels, concretions, or artifacts. Small rootlets throughout.
		-	11-80	10YR 3/4 dark yellowish brown	Sandy clay loam. Compact			No gravels, concretions, or artifacts. Increased clay content towards base of layer. Did not reach subsoil. Terminated at depth.

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67	EV20	-	0-53	10YR 3/2 very dark grayish brown	Dry. Clayey loam	0%	Edge of canal bank. Tall grasses. At base of slope. Near golf course. Topo heavily modified.	No cultural material, compact soil, 0 gravels, slight soil change
		-	53-60	10YR 4/2 dark grayish brown with 10% mottling 10YR 5/1 gray	Moist. Clay loam		5m after the fork in the canal. Moving away from the bridge.	No cultural materials, very few gravels <3 cm, firm soil, more clay, inc. iron oxide, Terminated at subsoil
68	MH22	-	0-20	10YR 4/2 dark grayish brown	Clay. Dry.	0%	~2m south of bayou. 1m above bayou. Low mowed grass.	No cultural materials. Small # of roots. No gravel. Terminated due to clay.
69	MH23	-	0-45	10YR 4/2 dark grayish brown with 15% redox	Clay. Moist	5%	Wooded area ~2m west of bayou.	No cultural materials. Large number of roots throughout. No gravel. Water table @ 40 cmbs. Terminated due to water table.
70	CJ022	-	0-30	10YR4/2 dark grayish brown with 10YR 2/1 black	Clay. Extremely sticky	0%	Flat open field beside drainage. Mowed grasses	Some iron concretions seen throughout. No gravels. No artifacts. Terminated at water table.
71	EV21	-	0-35	10YR 4/2 dark grayish brown	Clay	0%	At the very edge of canal. On base of grassy slope. ST moved 10m to flat area.	Modern glass, heavy iron oxide, lots of marine shells, very few gravels, Terminated at subsoil

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
72	CJ023	-	0-20	10YR 2/1 black	Extremely firm clay. Dry	0%	ST is located on a gently sloping embankment near the channel. Dense grasses	ST appears to be all clay and doesn't have the topsoil seen in other locations. No gravels or concretions present.
		-	20-50	10YR 6/1 gray	Clay. Hard/compact. Dry			Iron concretions visible. No gravels. No artifacts. ST terminated in subsoil.
73	No dig					0%	Steep (30-40 degree) slope. 2m north of bayou. Low mowed grass.	No dig, Steep slope.
74	No Dig						Bank on the edge of the bayou. Slope >30 degrees. Grassy area. Heavily modified.	No dig due to slope
75	MH24	-	0-15	10YR 3/2 very dark grayish brown	Loamy clay. Moist	50%	More wooded area. Small marsh, plants. ~10m west of bayou.	No cultural materials. Large number of small roots. No gravels.
		-	15-50	10YR 5/3 Brown	Clay. Moist			No cultural materials. Large number of small roots. No gravels. Terminated due to clay.
76	CJ024	-	0-30	10YR 4/2 dark grayish brown	Compact sandy loam. Dry.	30-40%	ST is located in mixed wooded area beside stream. Landscape is gently sloping to the west. Leaf litter.	No gravels, concretions, or artifacts. Soils may be comprised of alluvial deposits from flooding events or erosion from higher landscape.
		-	30-50	10YR 5/4 yellowish brown	Compact sandy loam. Dry.			No gravels, concretions, or artifacts. Terminated due to tree roots/compactness.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
77	EV22	-	0-39	10YR 5/1 gray	Dry. Sandy loam	5%	On the edge of the canal. Dense vegetation, palm, yaupon and other trees.	No cultural materials, 0 gravels, very compact, probably modified by golf course, built up during floods, Terminated because of roots
78	MH25	-	0-27	10YR 3/2 very dark grayish brown	Loamy clay. Dry	10%	Thick wooded area. Located on edge of golf course.	No cultural materials. Large number of small-medium roots. No gravels.
		-	27-40	10YR 5/2 grayish brown	Clay. Dry			No cultural materials. Large number of small-medium roots. No gravels. Terminated due to clay.
79	CJ025	-	0-15	10YR 4/2 dark grayish brown	Clay loam. Dry and compact.	100%	Slight rise in landscape. Dominated by mixed hardwoods. Golf course ~6m to the south	No gravels, concretions, or artifacts. Soils are extremely compact and contain roots of various sizes.
		-	15-40	10YR 5/1 gray	Clay. Hard and compact and dry.			No artifacts or gravels. Minimal amount of iron concretions. Terminated due to large impassable root.
80	EV23	-	0-33	10YR 3/1 very dark gray	Dry. Clay	0%	On bank of canal, 5m from large box culvert and 10m from road	No cultural materials, 0 gravels, very compact, modified, several roots, terminated because of compact clay, light iron oxide

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
81	MH26	-	0-36	10YR 5/2 grayish brown	Loamy clay. Dry. Very Compact.	2%	Wooded area. Low lying grass. 2m west of ditch	No cultural materials. Small roots throughout. No gravels. Terminated due to impassable clay.
82	CJ026	-	0-50	10YR 4/2 dark grayish brown	Clay loam. Extremely compact and dry	40%	ST is situated on banks of dry creek bed. Hard woods.	No gravels, concretions, or artifacts. Appears to be fairly homogenous. Terminated due to compactness.
83	EV24	-	0-30	10YR 3/1 very dark gray	Dry. Clay	0%	Edge of creek, base of slight rise, open grassy area	No cultural materials, very compact soil, very few roots, few pebbles, light iron oxide Terminated because compact clay
84	MH27	-	0-20	10YR 5/2 grayish brown with 15% redox	Clay. Dry. Extremely Compact.	2%	Wooded area. Low lying grass. 2m west of ditch	No cultural materials. Small roots throughout. No gravels. Terminated due to impassable clay.
85	CJ027	-	0-17	10YR 3/2 very dark grayish brown	Sandy loam, fairly dry but friable	0%	ST is located in an open area surrounded by trees. Close proximity to drainage ditch. Grasses.	Some modern plastic seen in first 10 cmbs. Small percentage of gravels. No concretions or other cultural materials.
		-	17-42	7.5YR 4/1 dark gray	Clay. Sticky and wet			Iron concretions (minimal) present. No cultural materials. Terminated at water table.

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86	EV25	-	0-30	10YR 3/1 very dark gray	Dry. Clay	5%	In dried up creek, dense vegetation, various trees and grasses, flood zone	Trash, few pebbles, modified iron oxide, in flood zone, terminated because of compact clay
87	MH28	-	0-30	10YR 5/2 grayish brown with 15% redox	Clay. Moist	0%	Wooded area to the north. Low mowed grass.	No cultural materials. Small roots throughout. No gravels. Terminated due to impassable clay.
88	CJ028	-	0-37	10YR 4/1 dark gray	Clay. Sticky and wet	0%	In wooded area beside open grassy field. Low lying brush and some mixed hardwoods.	Iron concretions throughout level. No gravels or artifacts.
		-	37-50	10YR 6/1 gray with <50% redox staining 7.5YR 5/4 brown	Clay. Sticky and wet			No gravels, concretions, or artifacts. Terminated in subsoil.
89	EV26	-	0-36	10YR 4/1 dark gray	Moist. Clay	0%	In dried up creek, dense vegetation, various trees and grasses, flood zone, 10m from box culvert	No cultural materials, mod. Iron oxide, Few shells, few rootlets, Terminated at basal clay
90	MH29	-	0-35	10YR 5/2 grayish brown with 15% redox	Clay. Dry.	0%	Wooded area to the north. Low mowed grass. Pipeline RoW just south	No cultural materials. Small roots throughout. No gravels. Terminated due to impassable clay.
91	CJ029	-	0-30	10YR4/2 dark grayish brown	Clay, sticky	0%	In clearing with tall grasses and forbs. Stand of trees to east. Dense vegetation.	No gravels. No artifacts. Some small iron concretions.
		-	30-42	10YR 6/1 gray	Clay, sticky			~20% redox staining (7.5YR 5/4 brown). No gravels, concretions, or artifacts. Terminated in subsoil.

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92	EV27	-	0-28	10YR 2/2 very dark brown	Moist. Clay	0%	Edge of creek, dense vegetation, lots of "elephant ears"	Plastic throughout, no gravels, low iron oxide, in flood zone, Terminated because of large root at base
93	No dig						Heavily wooded. Knee high grass. ~5m south of bridge. Creek 3m south and 3m lower elevation. Top of ridge	No dig, bridge
94	No dig						Marsh/wetland with dense vegetation and standing water.	No dig standing water
95	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water
96	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water
97	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water
98	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water

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99	MH30	-	0-35	10YR 4/2 dark grayish brown	Clay. Dry. Very compact.	0%	Waist high grass and brush. Dense. Just north of Space Center Blvd. Powerline RoW.	No cultural materials. Small roots throughout. No gravels. Very compact. Terminated due to clay.
100	MH31	-	0-47	10YR 3/2 very dark grayish brown	Clay. Dry. Compact.	0%	Waist high grass and brush. Dense. Just north of Space Center Blvd. Powerline RoW.	No cultural materials. Small roots throughout. No gravels. Very compact. Terminated due to clay.
101	No Dig					0%	Waist high grass and brush. Dense. Just north of Space Center Blvd. Powerline RoW.	No dig. Powerline RoW.
102	MH32	-	0-10	10YR 6/2 light brownish gray	Clayey loam. Dry.	0%	Chest high grass and brush. Dense. Just north of Space Center Blvd. Powerline RoW.	No cultural materials. Large roots throughout. Small # of gravels. Compact.
		-	10-38	10YR 3/2 very dark grayish brown with 5% redox	Clay. Dry.			No cultural materials. Large roots throughout. Small # of gravels. Compact. Terminated due to clay.
103	MH33	-	0-18	10YR 6/2 light brownish gray	Loamy clay. Dry.	0%	Chest high grass and brush. Dense. Just north of Space Center Blvd. Powerline RoW.	No cultural materials. Large roots throughout. Small number of gravels.
		-	18-52	10YR 3/2 very dark grayish brown	Clay. Dry			No cultural materials. Large roots throughout. Small number of gravels. Compact. Terminated due to clay.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
104	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water
105	No dig						Marsh/wetland with dense vegetation and standing water	No dig standing water
106	CJ030	-	0-50	10YR 4/3 dark grayish brown	Clay loam. Dry and compact.	0%	Wooded with low lying brush and vegetation.	Iron concretions (small) throughout. No gravels or artifacts. Terminated due to compactness.
107	EV28	-	0-30	10YR 2/1 black	Modified moist. Clay	0%	In dense vegetation, briar, yaupon, various trees and tall grasses, flat topo	No cultural materials, very few gravels, few rootlets, gravels <3 cm, no iron oxide, compact soil, terminated at compact clay
108	CJ031	-	0-35	10YR 4/3 dark grayish brown	Clay loam. Dry and compact.	0%	Wooded with low lying brush and vegetation.	No gravels, concretions, or artifacts. Terminated due to compactness.
109	EV29	-	0-30	10YR 2/1 black	Dry. Clay	0%	In dense vegetation, briar, yaupon, various trees and tall grasses, flat topo	No cultural materials, few gravels <3 cm, iron oxide, mod. CaCO ₃ , very compact soil, Terminated at subsoil
110	JL01	-	0-50	10YR3/2 very dark grayish brown	Clay	0%	Flood water basin with thick vegetation	Faint soil change ~50/40 cm to impenetrable gray/brown clay
111	CJ032	-	0-40	10YR 4/3 dark grayish brown	Clay loam. Dry and compact.	0%	Sparsely wooded with low-lying vegetation	Small iron concretions. No artifacts. Terminated due to compactness.

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IP#	ST #/ SST #	+/-	Depth (cmbs)	Munsell & Color	Soil Texture	Surface Visibility	Setting Description	Shovel Test Comments
112	MH34	-	0-42	10YR 3/2 very dark grayish brown	Loamy clay. Dry.	0%	Thick chest high brush and grass.	No gravels. Small roots throughout. No cultural materials. Terminated due to clay.
113	EV30	-	0-30	10YR 2/1 black	Dry. Clay	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo	No cultural materials, ring of iron oxide, very few gravels <3 cm, compact soil, mild CaCO3, Terminated at compact subsoil
114	JL02	-	0-55	10YR3/2 very dark grayish brown	Clay	0%	Flood water basin with thick vegetation	ST terminated at the layer with a very dense light gray clay
115	CJ033	-	0-42	10YR 4/3 dark grayish brown	Clay loam. Dry and compact.	0%	Sparsely wood with lowlying vegetation	Small iron concretions throughout. No artifacts. Terminated due to compactness.
116	MH35	-	0-34	10YR 3/2 very dark grayish brown	Loamy Clay. Moist.	0%	Thick chest high brush and grass.	No cultural materials. Small roots throughout. No gravels. Clay content increases with depth. Terminated due to clay.
117	CJ034	-	0-50	10YR 4/1 dark gray	Clay loam. Sticky, not as compact.	50%	Sparse grasses under hardwood tree canopy.	Small iron concretions throughout. No artifacts. Terminated due to impassable root.

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118	JL03	-	0-45	10YR3/2 very dark grayish brown	Clay	0%	Open grassy patch in otherwise dense underbrush	St terminated at contact with clay horizon
119	EV31	-	0-10	10YR 4/1 dark gray	Dry. Silty clay	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo	No cultural materials, fairly loose soil, 0 gravels, several rootlets, slight soil change
		-	10-32	10YR 2/1 black	Clay. Moist			No cultural materials, compact soil, more clay, 0 gravels, few rootlets, terminated compact clay
120	MH36	-	0-30	10YR 3/2 very dark grayish brown	Loamy Clay. Moist.	0%	Thick chest high brush and grass.	No cultural materials. Small roots throughout. No gravels. Clay content increases with depth. Terminated due to clay.
121	CJ035	-	0-60	10YR 4/1 dark gray	Silty clay loam. Sticky/wet	100%	Likely an area that is typically marshy but surface is dry. Surrounded by young growth hardwood and sparse tall grasses.	Small iron concretions present in first 20 cm of soil before becoming more homogenous. Terminated at water table.
122	JL04	-	0-40	10YR3/2 very dark grayish brown	Clay	0%	In a dense vine mott with low lying inundated soils	Attempted to place a few ST's before but couldn't due to thick, compact clay everywhere

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123	EV32	-	0-31	10YR 2/1 black	Dry. Clay	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo. Very dense bramble of yaupon	No cultural materials, compact soil, more clay, 0 gravels, few rootlets, terminated compact clay
124	MH37	-	0-37	10YR 3/2 very dark grayish brown	Loamy clay. 0-10 dry. 10-37 moist	0%	Thick chest high brush and grass.	No cultural materials. Small roots throughout. No gravels. Clay content increases with depth. Terminated due to clay.
125	CJ036	-	0-35	10YR 4/1 dark gray	Clay loam. Dry and extremely compact	0%	Small hardwoods and dense low-lying brush	No gravels, concretions, or artifacts. Soils are extremely dry and hard. Terminated due to compactness.
126	JL05	-	0-54	10YR3/2 very dark grayish brown	Clay	0%	Open grassy patch in otherwise dense underbrush	Soils are hummock
127	EV33	-	0-12	10YR 4/1 dark gray	Dry. Silty clay	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo. Very dense bramble of yaupon	No cultural materials, compact soil, more clay, 0 gravels, few rootlets
		-	12-31	10YR 2/1 black	Clay			No cultural materials, compact soil, more clay, 0 gravels, few rootlets, terminated compact clay
128	MH38	-	0-28	10YR 3/2 very dark grayish brown	Loamy clay. Moist	0%	Thick chest high brush and grass.	No cultural materials. Small roots throughout. No gravels. Clay content increases with depth. Terminated due to clay.

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129	CJ037	-	0-37	10YR 4/3 dark grayish brown	Clay loam. Dry and compact.	0%	Dense grasses and vegetation.	No gravels. Minimal amount of iron concretions seen at surface (0-10 cmbs). Terminated due to compactness.
130	JL06	-	0-30	10YR3/2 very dark grayish brown	Clay	0%	Pine mott, Small "bump" with sandy mantle overlay	Dense root zone with a quick transition to impenetrable clay, sub-soil
131	EV34	-	0-15	10YR 4/1 dark gray	Dry. Silty loam	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo.	No cultural materials, slightly loose soil, 0 gravels, few rootlets, no iron oxide, slight soil change
		-	15-42	10YR 2/1 black	Dry. Clay		In a partially open area, tall grass	No cultural materials, no gravels, no iron oxide or CaCO3, very few rootlets, terminated at compact clay
132	No dig						Dense vegetation.	Dense vegetation/understory, could not access area.
133	CJ038	-	0-55	10YR 4/1 dark gray	Silty clay loam. Dry and friable.	0%	Tall dense grasses surrounded by sparse hardwoods.	No gravels, concretions, or artifacts. Terminated due to compactness.
134	No dig						Dense vegetation.	Dense vegetation/understory, could not access.

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135	EV35	-	0-12	10YR 4/1 dark gray	Dry. Silty loam	0%	In dense vegetation, several shrubs and tall grasses, briar, flat topo. In a partially open area, tall grass	No cultural materials, no gravels, no iron oxide or CaCO ₃ , very few rootlets
		-	12-33	10YR 2/1 black	Dry. Clay			No cultural materials, no gravels, no iron oxide or CaCO ₃ , very few rootlets, terminated at compact clay