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David Sandrock

Haley Rush

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Archeological Survey Report

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Brazoria and Galveston Counties

Houston District

CSJs: 1002-01-006 and 1002-02-016

Principal Investigator: Haley Rush
Cox|McLain Environmental Consulting, Inc.

September 2016

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT

Intensive Archeological Survey for Proposed Improvements to Farm-to-Market Road 517 from SH 35 to FM 646 Brazoria and Galveston Counties, Texas

(CSJs: 1002-01-006 and 1002-02-016)

Prepared by

David Sandrock (Project Archeologist)
Haley Rush, MA, RPA (Principal Investigator)
Cox|McLain Environmental Consulting, Inc.
6010 Balcones Drive, Suite 210
Austin, TX 78731

For
Texas Department of Transportation
Houston District

Under
Texas Antiquities Permit 7713

Cox|McLain Environmental Consulting Inc.
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Abstract

An intensive archeological survey was completed in order to inventory and evaluate archeological resources within the footprint of proposed widening improvements to Farm-to-Market Road (FM) 517 between State Highway (SH) 35 in eastern Brazoria County and FM 646 in western Galveston County, Texas. The project is sponsored and funded by the Texas Department of Transportation (TxDOT) Houston District. The project is subject to Section 106 of the National Historic Preservation Act (NHPA) as well as the Antiquities Code of Texas.

The project is approximately 8.7 miles (mi) or 13.9 kilometers (km) in length. The width of the project right-of-way (ROW) generally varies between 222 and 360 feet (ft) or 68 to 110 meters (m) but extends up to 500 ft (152 m) at some intersections. The archeological area of potential effects (APE) is defined as the largest possible footprint for all three alternatives or 232.3 acres (ac) or 94.0 hectares (ha). The APE includes 110.5 ac or 44.72 ha of existing right-of-way and 121.7 ac or 49.25 ha of proposed new right-of-way. At the time of the survey, right-of-entry was granted to 29.57 acres of areas for proposed right-of-way.

Typical roadway construction would reach depths of 2 ft or 0.6 m, with possible deeper impacts for construction of drainage elements. Fieldwork was conducted July 25-29, 2016 under Texas Antiquities Permit 7228. Based on the review of the Houston Potential Archeological Liability Map (PALM), some of the project area (60.3 ac [24.4 ha]) was determined to fall within Map Unit 4, for which survey is not recommended. The review of the PALM indicated that the remainder of the project area (172 ac [69.6 ha]) should be subjected to varying stages of intensive survey, including the excavation of shovel tests and/or mechanical trenching. Of the 172 ac (69.6 ha) recommended for survey, 70.54 ac (28.55 ha) did not have right-of-entry at the time of the survey.

A majority of the APE was determined to have been disturbed by agricultural activities, erosion, and construction and maintenance of the existing road. At the time of the present investigation right-of-entry was not granted to the entire area proposed for new right-of-way. In those areas where right-of-entry was granted, 24 shovel tests were placed, all of which were negative for cultural materials. Additionally, five trenches with a combined length of 692 ft (210.9 m) were excavated near the Confederate Cemetery. No new archeological sites were identified during the survey and no artifacts collected. Project records will be curated at the Center for Archeological Studies (CAS) at Texas State University.

The Texas Historical Commission concurred with the findings of this report on May 26, 2016.

Management Summary

On July 25-29, 2016, an intensive survey was completed in order inventory and evaluate archeological resources within the footprint of improvements to Farm-to-Market (FM) 517, between State Highway (SH) 35 and FM 646 in western Galveston County and eastern Brazoria County, Texas. The proposed improvements include three alternative design solutions: north right-of-way, middle right-of-way, and south right-of-way. For all three alternatives, the proposed improvements include widening the existing facility from two to four lanes with two 12-foot (ft)-wide travel lanes in each direction. The facility would have 14-ft-wide shoulders, an 18-ft-wide raised median with turn lanes, and 5-ft-wide sidewalks on both sides of the roadway. The roadway would be converted to a curb and gutter system with open vegetated ditches. The project would also include intersection improvements at FM 646. The proposed additional right-of-way required for all three alternatives is approximately 60 ft wide throughout the project limits. The archeological area of potential effects (APE) is defined as the largest possible footprint for all three alternatives. The total APE acreage is 232.3 ac or 94.0 ha. The APE includes 110.5 ac or 44.72 ha of existing right-of-way and 121.7 ac or 49.25 ha of proposed new right-of-way. The project is approximately 8.7 m or 13.9 km in length. The APE width generally varies between 222 and 360 ft (68 and 110 m) and can extend up to 500 ft (152.4 m) at some intersections.

The fieldwork was carried out under Texas Antiquities Permit 7713 by David Sandrock (Project Archeologist) and Shannon Smith of Cox|McLain Environmental Consulting, Inc. (CMEC). Approximately 80 labor-hours have been invested in the archeological field phase of compliance work for the overall project. The project is sponsored and funded by the TxDOT Houston District. The project is subject to Section 106 of the NHPA as well as the Antiquities Code of Texas.

The entire alignment was subjected to a reconnaissance survey. Areas of specific interest, where right-of-entry was allowed were subjected to an intensive archeological survey; at the time of the survey, right-of-entry was granted to 29.57 acres of areas for proposed right-of-way. All properties for which access was denied or there was no response to an access request were examined from adjacent properties or the current right-of-way (total area of 92.21 acres). Ground surfaces within the APE generally exhibited low visibility (under 30 percent) due to vegetation overgrowth and tall grasses. The existing TxDOT right-of-way runs through the center of the APE (i.e., existing FM 517 roadway), and much of the remainder of the APE appears to have been severely impacted by agricultural practices and modern development. In addition, the portion of the APE that is immediately adjacent to the existing FM 517 roadway has been impacted by previous roadway construction, roadway maintenance, and utility installations (electric, gas, telecommunication) that follow and/or cross the right-of-way.

A review of the Houston Potential Archeological Liability Map (PALM) reveals that the majority of the APE falls within Map Units 2 and 2a. In areas mapped as Units 2 and 2a, only surface survey is recommended; for areas designated as Unit 2a, surface survey is recommended only for mounds. The acreage that would fall in Units 2 and 2a is 172 ac (69.6 ha). The remainder of the APE (60.3 ac [24.4 ha]) falls in Map Unit 4, where no survey is recommended. Shovel tests were excavated in areas where right-of-entry was obtained and that also fell in Units 2 and 2a.

A review of the Houston PALM reveals that deep reconnaissance (i.e., mechanical trenching) is not recommended for any of the APE; however, due to the proximity of the Confederate Cemetery to the APE, backhoe trenches were excavated at that location. Excavated trenches yielded disturbed soils and varying clay deposits from the surface to a depth of about 220 cmbs. No evidence of burials was observed.

Shovel tests were excavated in areas where previous agricultural impacts were not apparent, ground visibility was less than 30 percent, and the PALM map units suggested intact soils that would possibly contain archeological deposits. Typical shovel tests contained one of two soil types. Roughly half of all shovel tests contained a highly disturbed mixture of very firm clays and clay loam with sporadic carbonates, gravels, and roots from 0-50 centimeters below surface (cmbs). Most of the remaining shovel tests contained firm to friable, very dark gray (10YR 3/1) clay loam with many roots and few gravels from 0-30 cmbs over firm/friable light gray (10YR 7/2) clay from 30-40 cmbs with carbonate flecking increasing with depth.

No new archeological sites were identified and no artifacts were collected; therefore, only project records will need to be curated per TAC 26.16 and 26.17. Project records will be permanently housed at the CAS at Texas State University.

The Texas Historical Commission concurred with the findings of this report on May 26, 2016.

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1 INTRODUCTION

Overview of the Project

The Houston District of the Texas Department of Transportation (TxDOT) proposes improvements to Farm-to-Market (FM) 517 from State Highway (SH) 35 to FM 646 (**Figure 1**). The proposed improvements include three alternative design solutions: north right-of-way, middle right-of-way, and south right-of-way (**Figures 2a-c, 3a-g**). For all three alternatives, the proposed improvements include widening the existing facility to four travel lanes (two travel lanes in each direction); each travel lane would be 12 feet (ft) wide. The facility would have 14-ft-wide shoulders, an 18-ft-wide raised median with turn lanes, and 5-ft-wide sidewalks on both sides of the roadway. The roadway would be converted to a curb and gutter system with open vegetated ditches. The project would also include intersection improvements at FM 646.

The archeological area of potential effects (APE) is defined as the largest possible footprint for all three alternatives. The APE measures 8.7 miles (mi) or 13.9-kilometer (km) long. The width of the APE generally varies between 222 and 360 ft or 68 and 110 meters (m) but extends up to 500 ft (152.3 m) at some intersections. The proposed additional right-of-way required for all three alternatives is approximately 60 ft (18.3 m) wide. The total project acreage for all alternatives is between 232.3 (ac) (94.0 hectares [ha]). The APE includes 110.5 ac or 44.72 ha of existing right-of-way and 121.7 ac or 49.25 ha of proposed new right-of-way. Typical roadway construction would reach depths of 2 ft or 0.6 m, with possible deeper impacts for construction of drainage elements.

David Sandrock (Project Archeologist) and Shannon Smith of Cox|McLain Environmental Consulting, Inc. (CMEC) performed all fieldwork July 25-29, 2016. In all, 24 shovel test units were placed within areas of the APE based on observed disturbance levels, ground surface visibility, and guidelines established by the Council of Texas Archeologists (CTA) and approved by the Texas Historical Commission (THC). In addition, five backhoe trenches spanning 692 ft (210.9 m) were placed north of the Confederate Cemetery, on the north and south sides of Dickinson Road, immediately west of the intersection of FM 517 and SH 35. The methods employed during this study and relevant constraints are discussed further in Sections 3 and 4.

Regulatory Context

FM 517 is owned and sponsored by TxDOT Houston District, a political subdivision of the State of Texas, rendering the project subject to the Antiquities Code of Texas (9 TNRC 191). Antiquities Permit 7713 was assigned to this project by the THC. The project also has a federal nexus, triggering Section 106 of the National Historic Preservation Act (NHPA), as amended

(16 USC 470; 36 CFR 800). Reconnaissance and intensive archeological survey was completed in order to inventory and evaluate archeological resources within the footprint of the proposed improvements. No new archeological sites were identified and no artifacts were collected. All other materials (notes, photographs, administrative documents, and other project data) generated from this work will be curated at the Center for Archaeological Studies (CAS) at Texas State University where they will be made permanently available to future researchers per 13 TAC 26.16-17.

Structure of the Report

Following this introduction, Section 2 presents environmental parameters, a brief cultural context, and a summary of previous archeological research near the APE. Section 3 discusses research goals, relevant methods, and the underlying regulatory considerations. Section 4 presents the results of the survey and summarizes the implications of the investigations. Figures are in Section 5, and references are in Section 6.

2 ENVIRONMENTAL AND CULTURAL CONTEXT

Topography, Geology, and Soils

The counties of Galveston and Brazoria are located within the Coastal Prairies of the Gulf Coastal Plain physiographic province, a plain of relatively flat topography that dips slightly toward the Gulf of Mexico (Texas Almanac 2016). The APE is located at elevations between approximately 15 and 40 feet (4.6 and 12.2 m) above mean sea level in western Galveston County and eastern Brazoria County, Texas (**Figures 2a-c, 3a-g,** and **4a-k**). The APE is surrounded by dense development near FM 646 and SH 35, but along the central length of the project there is a mix of developed and undeveloped land (**Figures 5, 6,** and **7**). The APE is geologically underlain by the Quaternary-age Beaumont Formation (USGS 2016). The Beaumont Formation is primarily clay and mud with a high potential for shrink-and-swell action. According to Natural Resources Conservation Service (NRCS) data, the soils in the APE are generally deep to very deep and include Verland silty clay loam, Edna fine sandy loam, Bernard-Edna complex, Mocarey-Cieno complex, Bernard clay loam, and Lake Charles clay on both 0 to 1 percent and 2 to 5 percent slopes (NRCS 2016).

Vegetation, Physiography, and Land Use

The project is located in the Gulf Prairies ecoregion according to the Texas Parks and Wildlife (TPWD) Ecoregion Map (TPWD 2011), derived from Gould et al. (1960). According to the TPWD's *Vegetation Types of Texas* map and accompanying descriptions, the APE is in an area mapped as being covered with "Crops" and "Bluestem Grassland" (Type 44 and 3, respectively) (McMahan et al. 1984). Vegetation noted during the survey included various types of native and invasive grasses, blackberry bushes, thorny vines, and oak (**Figure 8**). Many of the surrounding parcels are currently agricultural fields or transplant nurseries (**Figures 9** and **10**).

Archeological Chronology for Southeast Texas

The APE lies within the Southeast Texas archeological region (Kenmotsu and Perttula 1993; Patterson 1995; Perttula 2004; Story et al. 1990), which has a cultural history extending back at least 12,000 years into the past. Human occupation of the area during these 12,000 years is divided into four broad periods: Paleoindian, Archaic, Late Prehistoric, and Historic. The periods are based on a proposed sequence of economic strategies identified in the archeological and historical records. These proposed shifts in dominant lifeways consider cultural, economic, and technological factors in order to provide a model useful for attempting to understand ancient and early historic populations. The dates assigned to the period interfaces represent a generalized time range but are based on scientific results from archeological research. The dates presented in **Table 1** are derived from Perttula (2004).

Further discussion of the prehistory of Southeast Texas is beyond the scope of this document. For such a discussion regarding the prehistoric record, the reader is referred to Aten (1983), Ensor (1991), Patterson (1995), and Story et al. (1990, among others.

Table 1: Archeological Chronology for Southeast Texas*

Period	Years Before Present**
Paleoindian	
Early	11,500 – 10,000 B.P.
Late	10,000 – 8, 000 B.P.
Archaic	
Early	8,000 – 6,000 B.P.
Middle	6,000 – 3,500 B.P.
Late	3,500 – 2,200 B.P.
Tchula	2,200 – 2,000 B.P.
Ceramic	
Early	2,000 – 1,200 B.P.
Late Prehistoric	12,000 – 270 B.P.
Protohistoric	270 B.P.

*From Perttula 2004: 9, Table 1.1
**Based on uncalibrated radiocarbon dates, which are typical in Texas archeology (see Perttula 2004: 14, Note 1).

Historic Context

The earliest known European exploration of the region possibly dates to the early sixteenth century with Álvar Núñez Cabeza de Vaca's travels up the San Jacinto River from Galveston Island around 1529 to trade with the woodland Indians. Spanish soldiers under the command of Coahuila's governor, Alonso De León, passed through the region in 1689, followed by Joaquín de Orobio y Basterra in 1727 (Kleiner 2016a). The Spanish continued to expand their occupation in Texas, but likely entered the future Brazoria County area mostly to conduct trade with local Indians (Kleiner 2016a).

Anglo-American settlement in modern Brazoria County began in the early 1820s, when Stephen F. Austin proposed his local settlement. By 1824, 89 of his "Old Three Hundred" grantees held land grants in what is now Brazoria County. The area grew fairly rapidly as more families arrived, and several communities began to grow, such as Velasco, East Columbia, Columbia, and Brazoria. In 1832, the Coahuila legislature separated San Felipe from the Brazoria Municipality, and made the town of Brazoria the capital. As surrounding counties were established (Fort Bend in 1837, Galveston in 1838), the present county boundaries were

drawn, and the Congress of the Republic incorporated the towns of Brazoria, Columbia, and Velasco in 1837 (Kleiner 2016a).

Although Galveston County was likely home to Native American groups for nearly 10,000 years, Indian inhabitants began to leave when European settlers arrived, and most had retreated from the area by 1850. Sixteenth-century Spanish explorers knew Galveston Island as Isla de Malhado, the "Isle of Misfortune," or Isla de Culebras, the "Isle of Snakes" (Kleiner 2016b)

American presence in Galveston County began in September 1815 when Henry Perry and Warren D. C. Hall landed at Bolivar Point with 3 ships and 200 men. The period from 1815 to 1821, however, was dominated by freebooters, filibusters, and pirates, notably the Frenchmen Louis Michel Aury and Jean Laffite. Jean Laffite, who was appointed governor of Galveston Island by the Republic of Mexico, established a community at the site of the present Sealy Hospital in Galveston. The fort Jean Laffite constructed in 1817 lasted only a year before it was destroyed by a storm, but by 1819 the community had a population between 1,000 and 2,000. Laffite was also appointed governor of the island by the provisional government of American merchant James Long, who promised land for recruits. Long planned to set up a new republican government and attract immigrants with the offer of large land grants (Kleiner 2016b).

Mexican jurisdiction over the Galveston port continued until the Texas Revolution; colonization had been organized under the Mexican empresario system, and Stephen F. Austin encouraged the Mexican government to establish a provisional port at Galveston. Settlement proceeded slowly while the area remained part of Mexico, and in 1827 the first American colonists settled on Galveston Island near Offat's Bayou. David G. Burnet and Lorenzo de Zavala acquired contracts to settle families in the area in accordance with the Mexican colonization laws and, on October 16, 1830, formed a stock company called the Galveston Bay and Texas Land Company to promote their effort. They succeeded in bringing settlers to Texas only after 1835, however, when Mexico had surrendered control of the area. In 1834, Michel B. Menard purchased the first claim on what was to become the site of Galveston, and commercial traffic began to move through the port thereafter. During the revolution, Texans fortified Galveston and the Texas Navy berthed in its port. The *ad interim* government under David G. Burnet took refuge on Galveston Island in April, 1836, and made Galveston the temporary capital of the new republic. Congress made Galveston a port of entry in 1837. Galveston County was formed in 1838 and organized in 1839 (Kleiner 2016b).

By 1839, steamers that furnished supplies to much of Texas plied the distance between the port of Galveston and New Orleans, and construction of the Galveston wharves began in that year. The antebellum port shipped cotton and cottonseed oil, along with less economically important quantities of sugar, molasses, cattle, hides, and pecans, while Galveston finance

and commission businesses supported the region's agriculture and commerce (Kleiner 2016b).

Railroad development in the region began in earnest as early as the 1870s, bringing a new era of prosperity and new settlers following the Civil War. Agricultural lands transitioned from large-acreage sugar cane plantations to small farms, and rural communities formed to support the new settlers, many of whom were tenant farmers. Rice cultivation was introduced to Brazoria County by the early 1900s, and the Cane and Rice Belt Irrigation Company was established to construct an irrigation canal system for the region. In the 1940s, the Briscoe Irrigation System was also established to provide more canals, including the American and Briscoe Canal Systems. Agriculture was the mainstay of Brazoria County and rural Galveston County until the mid-twentieth century. Oil production, which began in Brazoria County in the early 1900s and in Galveston County in the 1920s, also contributed to the economies of both counties.

The Great Storm of 1900 hit the Texas Gulf Coast at Galveston, causing extensive damage and destruction in the study area, as well as a substantial economic impact. The region suffered another major economic downturn with the Great Depression of the 1930s. However, in the post-World War II era, the economic base of both counties began transitioning from one dominated by agriculture to a diversified economy based on industry, commerce, and home development. Due to the study area’s proximity to Houston and Galveston, more intense residential and commercial development began in the 1970s as these metropolitan areas expanded to the west and southwest.

Alvin

The Santa Fe Railroad established a station near Alvin in the 1860s, and in 1872 hired Alvin Morgan to supervise the shipping of cattle from nearby ranches. Morgan’s house, the first in the area, was built in 1879. After Morgan persuaded more travelers to settle nearby, the settlement acquired a post office in 1881, and the residents named the community Morgan. After learning of another Morgan, Texas, the residents renamed the town Alvin (Blanchette 2011).

By the mid-1890s, Alvin had experienced a population explosion, increasing from 100 in 1890 to an estimated 2,000 by 1896. At this time, Alvin's economy was based primarily on farming and fruit growing. Alvin had a reported population of 3,087 in 1940 and 3,701 by the mid-1950s. The community's economic growth was based on livestock, poultry, dairy, agriculture, jasmine, oil, natural gas, and petrochemicals. During World War II businessmen persuaded the United States government to place an internment camp in Alvin. About 500 Germans from the camp worked in the local canning factory and rice fields for two years (Blanchette 2011).

Dickinson

The town of Dickinson was named after John Dickinson, who received a Mexican land grant in 1824 covering an area north of the present-day community (Rocap 2010). The Galveston, Houston and Henderson Railroad line was constructed through the area in the 1850s, but the town did not begin to see growth and development until the turn of the twentieth century. The Dickinson Land and Improvement Association was founded in 1890 to market land in the area, bringing a wave of people to the area. The area received another influx of settlers following a series of natural disasters in the surrounding areas (Rocap 2010). A group of Italian immigrants came to Dickinson after experiencing flooding in Bryan, Texas, and many new settlers came to the area from Galveston following the hurricane of 1901 (Rocap 2010).

In 1911 the Galveston and Houston Electric Railway Company had three stops in the town (Rocap 2010). By the late 1940s, Dickinson was already home to workers commuting to Galveston and Houston, and half of the town's workers were estimated to be employed by industrial plants along Galveston Bay (Collier [no date]). Truck farming was also considered a "sturdy element" of the local economy at this time, with produce being transported primarily to Houston for sale (Collier [no date]). Rice farming was considered a new addition to Dickinson's agricultural economy around the mid-twentieth century, with rice fields extending to the west and northwest of Dickinson proper.

Dickinson and other northern Galveston County communities also experienced growth following the establishment of the Manned Space Center (later renamed the Johnson Space Center) in nearby Clear Lake in 1963. The facility brought thousands of new jobs to the area in a short period of time (Alexander and Kleiner 2016). The area became increasingly developed in the 1970s, including the expansion of Texas City and League City. The City of Dickinson incorporated in 1977, in order to avoid encroachment from nearby communities (City of Dickinson 2016). The City added additional areas to the city limits in the 1990s (City of Dickinson 2016).

Previous Investigations and Previously Identified Resources

A search of the *Texas Archeological Sites Atlas* (Atlas) maintained by the THC and the Texas Archeological Research Laboratory (TARL) was conducted in order to identify archeological sites, historical markers, Recorded Texas Historic Landmarks (RTHLs), properties or districts listed on the National Register of Historic Places (NRHP), State Antiquities Landmarks (SALs), cemeteries, or other cultural resources that may have been previously recorded in or near the APE, as well as previous surveys undertaken in the area.

A review of the Houston Potential Archeological Liability Map (PALM) reveals that the majority of the APE falls within Map Units 2 and 2a. In areas mapped as Units 2 and 2a, only surface

survey is recommended; for areas designated as Unit 2a surface survey is recommended only for mounds (Abbott 2001). The acreage that would fall in Units 2 and 2a is 172 ac (69.6 ha). The remainder of the APE falls in Map Unit 4, where no survey is recommended (**Figures 3a-3g**).

According to Atlas survey coverage data, the APE has not been surveyed previously (THC 2016). There are, however, a few surveys in the 1-km study area surrounding the APE. The three nearest surveys include a survey of FM 646 by Blanton and Associates Inc. in 2003 for TxDOT, a small survey just north of the APE by South Texas Archeological Research Services in 2008, and a small survey for the U.S. Army Corps of Engineers (USACE) at Cedar Creek in 2005 by SWCA Environmental Consultants. Other surveys in the study area include a small linear survey of Steele Road near SH 35 performed for the State Department of Highways and Public Transportation (SDHPT, now TxDOT) in 1989, a small survey for a bridge replacement north of the APE at McFarland Road for TxDOT performed by Hicks and Company in 2012, a small survey for USACE by HRA Gray and Pape west of FM 646 in 2003, and a survey for TxDOT by Moore Archeological Consulting, Inc. south of the APE for a bridge replacement at FM 646 and Dickinson Bayou in 2008 (THC 2016).

The Confederate Cemetery is located near the intersection of FM 517 and SH 35 (**Figure 4a and Figure 11**); it dates to the late 1800s and contains 861 burials (THC 2016). The historical marker for the Confederate Cemetery is incorrectly mapped on the Atlas as being north of the cemetery; it is actually embedded in the entrance wall (**Figures 12 and 13**). According to the marker, the Confederate Cemetery was established in the 1890s by John A. Wharton for Confederate veterans and their families. There are reportedly 4,714 burials in the Confederate Cemetery (Tipton 2016), a number much greater than recorded in Atlas data.

Personal communications with Mrs. Jamie Murray at the Brazoria County Historical Museum and Ms. Mindie Ward-Saenz (current director of the Confederate Cemetery) suggest that it is unlikely that any burials are present outside of the current known boundary of the Confederate Cemetery. Hard copies of the cemetery records were reviewed prior to conducting fieldwork. Additionally, based on the review of the Houston PALM, no part of the APE is recommended for deep reconnaissance (i.e., mechanical trenching). In consultation with the TxDOT Environmental Affairs Division, mechanical trenching was carried out within the project right-of-way adjacent to the Confederate Cemetery to evaluate the likelihood of burials being present in the area between the current Confederate Cemetery and the roadway right-of-way. No improvements are planned at that specific location.

In addition to the Confederate Cemetery and its associated marker, another cemetery, its associated marker, and two other historical markers are located within the 1-km buffer area. The other cemetery (Evergreen Cemetery) and its associated marker are south of the APE near Dickinson Bayou. The Evergreen Cemetery (also known as the Old Arcadia Cemetery) was used

by the former town of Arcadia, which had been located near this cemetery. The town was near a railroad depot for the Gulf, Colorado, and Santa Fe Railroad (THC 2016). According to information on the Atlas, the last burial occurred in 1958 and the existing fence may have been installed inside the actual boundary of the cemetery; some burials may be located outside of the fence. Like the marker for the Confederate Cemetery, the Evergreen Cemetery historical marker is mapped northeast of the cemetery location but is thought to be located at the cemetery.

The other two markers are located east of the APE near Interstate Highway (I-45) and are for the Dickinson Station of the Galveston, Houston, and Henderson Railroad (GH&H) and the First United Methodist Church of Dickinson (THC 2016). The GH&H was the first railroad to reach the Texas Coast; the trestle bridge built across Galveston Bay first carried passenger and freight lines in 1859 (THC 2016). The First United Methodist Church of Dickinson was erected in 1885; that building was destroyed in 1900. The present building was built in 1901 and added to in 1909 and 1935.

Historic and modern aerial photographs and topographic maps (from Nationwide Environmental Title Research or NETR and Google Earth) were reviewed. The most recent topographic maps of the area are from 1974 (Algoa quadrangle) and 1995 (Dickinson quadrangle); those maps were compared to earlier topographic maps (1929, 1932, 1946, and 1957). All topographic maps reviewed showed structures near Dickinson Bayou (NETR 2016). Aerial photographs confirmed that structures were at this location (years reviewed include 1955, 1969, 1981, 2008, and 2012); however, based on variations in vegetation cover it is difficult to tell if those structures are the same as the structures depicted on the 1929 topographic map (NETR 2016 and Google Earth 2016). Other possible historic structures are present near the western terminus of the project; this area was not depicted on topographic maps until 1957, but on that map structures are present and they appear on aerial photographs as early as 1955 (NETR 2016). Again, because of variations in vegetation and the poor resolution of the aerial photographs, it is difficult to tell if the structures shown on the 1955 aerial photograph are the same as those shown on the 2012 aerial photograph.

3 RESEARCH GOALS AND METHODS

Purpose of the Research

The present study was carried out to accomplish three major goals:

1. To identify all historic and prehistoric archeological resources located within the APE defined in chapter 1;
2. To perform a preliminary evaluation of the identified resources' potential for inclusion in the NRHP and/or for designation as a SAL (typically performed concurrently);
3. To investigate the potential for unmarked burials associated with the Confederate Cemetery to extend into the APE; and
4. To make recommendations about the need for further research concerning the identified resources based on the preliminary NRHP/SAL evaluation, with guidance on methodology and ethics from the THC and CTA.

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA of 1966, as amended (16 USC 470; 36 CFR 800), directs federal agencies and entities using federal funds to "take into account the effects of their undertakings on historic properties" (36 CFR 800.1a). The CFR defines "historic property" as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places [NRHP] maintained by the Secretary of the Interior" (36 CFR 800.16).

In order to determine the presence of historic properties (with this phrase understood in its broad Section 106 sense), an APE is first delineated. The APE is the area in which direct impacts (and in a federal context, indirect impacts as well) to historic properties may occur. Within the APE, resources are evaluated to determine whether they are eligible for inclusion in the NRHP, and to determine the presence of any properties that are already listed on the NRHP. To determine whether a property is significant, cultural resource professionals and regulators evaluate the resource using these criteria:

> . . . The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or

c. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d. that have yielded or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Note that significance and NRHP eligibility are determined by two primary components: integrity *and* at least one of the four types of association and data potential listed under 36 CFR 60.4(a-d). The criterion most often applied to archeological sites is the last—and arguably the broadest—of the four; its phrasing allows regulators to consider a broad range of research questions and analytical techniques that may be relevant to the specific resource (36 CFR 60.4[d]).

Occasionally, certain resources fall into categories which require further evaluation using one or more of the following Criteria Considerations. If a resource is identified and falls into one of these categories, the Criteria Considerations listed below may be applied in conjunction with one or more of the four National Register criteria listed above:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c. A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life, or

d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or

g. A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR 60.4).

Resources listed in the NRHP or recommended eligible for the NRHP are treated the same under Section 106; they are generally treated the same at the state level as well.

After cultural resources within the APE are identified and evaluated, effects evaluations are completed to determine whether the proposed project has no effect, no adverse effect, or an adverse effect on the resources. Effects are evaluated by assessing the impacts that the proposed project will have on the characteristics that make the property eligible for listing in the NRHP and on its integrity. Types of potential adverse effects considered include physical impacts, such as the destruction of all or part of a resource; property acquisitions that adversely impact the historic setting of a resource, even if built resources are not directly impacted; noise and vibration impacts evaluated according to accepted professional standards; changes to significant viewsheds; and cumulative effects that may occur later in time. If the project will have an adverse effect on cultural resources, measures can be taken to avoid, minimize, or mitigate this adverse effect. In some instances, changes to the proposed project can be made to avoid adverse effects. In other cases, adverse effects may be unavoidable, and mitigation to compensate for these impacts will be proposed and agreed upon by consulting parties.

Antiquities Code of Texas

Because the project is currently owned and funded by TxDOT Houston District, a political subdivision of the State of Texas, the project is subject to the Antiquities Code of Texas (9 TNRC 191), which requires consideration of effects on properties designated as—or eligible to be designated as—SALs, which are defined as:

> . . . sites, objects, buildings, structures and historic shipwrecks, and locations of historical, archeological, educational, or scientific interest including, but not limited to, prehistoric American Indian or aboriginal campsites, dwellings, and habitation sites, aboriginal paintings, petroglyphs, and other marks or carvings on rock or elsewhere which pertain to early American Indian or other archeological sites of every character, treasure imbedded in the earth, sunken or abandoned ships and wrecks of the sea or any part of their contents, maps, records, documents, books, artifacts, and implements of culture in any way related to the inhabitants, prehistory, history, government, or culture in, on, or under any of the lands of the State of Texas, including the tidelands, submerged land, and the bed of the sea within the jurisdiction of the State of Texas. (13 TAC 26.2)

Rules of practice and procedures for the evaluation of cultural resources as SALs and/or for listing on the NRHP, which is also explicitly referenced at the state level, are detailed at 13 TAC 26. An archeological site identified on lands owned or controlled by the State of Texas may be of sufficient significance to allow designation as a SAL if at least one of the following criteria applies:

1. the site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information;

2. the site's archeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interests of the site;
3. the site possesses unique or rare attributes concerning Texas prehistory and/or history;
4. the study of the site offers the opportunity to test theories and methods of preservation, thereby contributing to new scientific knowledge;
5. the high likelihood that vandalism and relic collecting has occurred or could occur, and official landmark designation is needed to insure [sic] maximum legal protection, or alternatively further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected (13 TAC 26.10).

For archeological resources, the state-level process requires securing a valid Texas Antiquities Permit from the THC, the lead state agency for Antiquities Code compliance. This permit must be maintained throughout all stages of investigation, analysis, and reporting.

Survey Methods and Protocols

With the goals and guidelines above in mind, on July 25-29, 2016, CMEC personnel conducted an intensive survey to search for previously identified and unidentified archeological sites per category 6 under 13 TAC 26.15 and using the definitions in 13 TAC 26.3. Field methods complied with the coverage requirements of 13 TAC 26.15, as elaborated by the THC and CTA, as well as applicable TxDOT standards.

A review of the Houston PALM reveals that a majority of the APE falls within Map Units 2 and 2a. In areas mapped as PALM Map Units 2 and 2a, only surface survey is recommended; for areas designated as Unit 2a, surface survey is recommended only for mounds (Abbott 2001). The acreage that would fall in Units 2 and 2a varies from 129.08 to 132.43 ac (52.2 to 53.6 ha), depending on the alternative chosen. The remainder of the APE falls in Map Unit 4, where no survey is recommended (Figures 3a-3h). Approximately 70.54 acres (28.55 ha) of the acres in Map Unit 2 and 2a also did not have right-of-entry; those areas could not be surveyed during the present investigation.

Shovel tests were excavated within the portion of the APE for which intensive survey was required. Shovel test units were placed in areas without high ground visibility (areas with less than 30 percent visibility), without extensive ground disturbance, and where the PALM map units suggested intact soils that would possibly contain archeological deposits. All shovel tests were excavated in natural levels to subsoil or 50 cm (20 inches [in]), whichever was encountered first. Excavated matrix was screened through 0.635-centimeter (cm) or 0.25-in hardware cloth as allowed by moisture and clay content; a high clay content typically requires that the removed sediment be crumbled/sorted by hand, trowel, and/or shovel point. Deposits were described using conventional texture classifications and Munsell color designations, and

all observations were recorded on standard CMEC shovel test forms. The testing protocol detailed in the approved scope for Texas Antiquities Permit 7713 called for shovel tests to be placed at 5-m (16-ft) intervals in each cardinal direction around each shovel test containing cultural material until two negative units have been established in each cardinal direction, as allowed by project limits, observed disturbance, and other constraints. Deviations from THC and CTA standards were explicitly justified. No shovel tests were positive for cultural materials.

Based on a review of the Houston PALM, deep reconnaissance investigation (i.e., mechanical trenching) is not recommended for any portion of the APE. However, per consultation with the TxDOT Environmental Affairs Division, mechanical scraping was conducted in the existing right-of-way north of the Confederate Cemetery, to investigate whether burials are present within the right-of-way.

Mechanical scraping was performed under the supervision of archeologists, who examined the scraped surface, profiles, and backdirt for the presence of human remains or coffin hardware (**Figure 14**). Scraping occurred in 10-cm (4-in) depth increments, with samples from each level screened through 0.635-cm (0.25-in) hardware cloth. The depth goal for the deep testing was 2.5 m (8.2 ft), although the actual depth reached in each trench varied based on pedogenic and depositional horizons observed, the presence or absence of cultural materials, the local water table, and safety concerns related to soil stability. After completion of the mechanical excavations, CMEC personnel examined the exposed deposits (as allowed by trench configuration and safety issues) and described them using conventional texture classifications and Munsell color designations. Following description of the deposits and sketching/photography of the trenches, CMEC personnel supervised the complete backfilling and leveling of each trench area (**Figure 15**).

Much of the APE is located on privately owned land; therefore, any artifacts found from shovel tests, surface contexts and/or trenches was noted, described, photographed, and returned to their original contexts. However, all shovel tests excavated for this project were negative. At the time of the survey, landowner permission was denied for some parcels. However, a reasonable and good-faith effort was made to document inaccessible areas from accessible areas for the purposes of the present permit. However, not all areas could be sufficiently examined from areas that access. A survey of the no-access parcels that are within PALM Map Units 2 and 2a may be required once right-of-entry is obtained.

All materials (notes, photographs, administrative documents, and other project data) generated from this work will be curated at CAS at Texas State University where they will be made permanently available to future researchers as per 13 TAC 26.16-17.

4 RESULTS AND RECOMMENDATIONS

General Field Observations and Results

On July 24-29, 2016, CMEC personnel conducted an intensive archeological survey of the 8.7-mi (13.9-km) or 171.01- to 172.12-ac (68.8- to 69.7-ha) APE as allowed by right-of-entry. This intensive survey included both shovel testing and mechanical trenching.

The APE is located in a flat coastal prairie that is still mostly rural, although urban development is gradually encroaching, particularly in Crosby on the eastern end of the APE. In addition, much of the project APE has been subjected to ground-disturbing activities associated with agriculture, residential and commercial development (**Figure 16**), oil and gas storage and transmission activities (**Figure 17**), installation of utilities (**Figure 18**), and construction and maintenance of the existing road and ditches.

In all, 24 shovel tests were excavated in areas where previous agricultural impacts were not apparent, ground visibility was less than 30 percent, the PALM map units suggested intact soils that would possibly contain archeological deposits, and right-of-entry was granted (**Table 2**). Typical shovel tests contained one of two soil types (**Figure 19**). Roughly half of all shovel tests contained a highly-disturbed mixture of very firm clays and clay loam with sporadic carbonates, gravels, and roots from 0-50 cm below surface (cmbs). Most of the remaining shovel tests contained firm to friable, very dark gray (10YR 3/1) clay loam with many roots and few gravels from 0-30 cmbs over firm/friable light gray (10YR 7/2) clay from 30-40 cmbs with carbonate flecking increasing with depth (**Figure 20**).

Table 2. Shovel Test Unit Excavation Results

Shovel Test #	Depth (cmbs*)	Description/ Notes
1	0-20	Firm very dark gray (10YR 3/1) clay of moderate grade with many roots and gravels
	0-40	Firm but friable pale brown (10YR 6/3) clay loam of moderate grade with less than 5% brown (7.5YR 4/3) mottling
	40-50+	Firm to very firm light gray (10YR 7/2) clay of massive grade with no roots or gravels and 30% brown (7.5YR 4/3) mottling
2	0-20	Firm very dark gray (10YR 3/1) clay of moderate grade with many roots and gravels
	0-40	Firm but friable pale brown (10YR 6/3) clay loam of moderate grade with less than 5% brown (7.5YR 4/3) mottling

Table 2. Shovel Test Unit Excavation Results		
Shovel Test #	Depth (cmbs*)	Description/ Notes
	40-50+	Firm to very firm light gray (10YR 7/2) clay of massive grade with 30% brown (7.5YR 4/3) mottling; no root or gravel inclusions
3		Not excavated, highly disturbed area
4	0-25	Firm/friable very dark gray (10YR 3/1) clay of moderate grade with many roots and few gravels
	25-45	Friable pale brown (10YR 6/3) clay loam of moderate grade with no roots and few gravels
	45+	Very firm light gray (10YR 7/2) clay of massive grade with no roots or gravels and less than 15% brown (7.5YR 4/3) mottling
5	0-25	Firm/friable very dark gray (10YR 3/1) clay of moderate grade with many roots and few gravels
	25-45	Friable pale brown (10YR 6/3) clay loam of moderate grade with no roots and few gravels
	45+	Very firm light gray (10YR 7/2) clay of massive grade with no roots or gravels and less than 15% brown (7.5YR 4/3) mottling
6	0-25	Firm/friable very dark gray (10YR 3/1) clay of moderate grade with many roots and few gravels
	25-45	Friable pale brown (10YR 6/3) clay loam of moderate grade with no roots and few gravels
	45+	Very firm light gray (10YR 7/2) clay of massive grade with no roots or gravels and less than 15% brown (7.5YR 4/3) mottling
7	0-25	Firm/friable very dark gray (10YR 3/1) clay of moderate grade with many roots and few gravels
	25-45	Friable pale brown (10YR 6/3) clay loam of moderate grade with no roots and few gravels
	45+	Very firm light gray (10YR 7/2) clay of massive grade with no roots or gravels and less than 15% brown (7.5YR 4/3) mottling
8	0-30	Firm very dark gray (10YR 3/1) clay loam of moderate grade with many roots

Table 2. Shovel Test Unit Excavation Results		
Shovel Test #	Depth (cmbs*)	Description/ Notes
	30-35+	Firm/friable light gray (10YR 7/2) clay with no roots, few gravels, and less than 20% calcium carbonate pebbles and flecking that increase with depth
9	0-35	Firm very dark gray (10YR 3/1) clay loam of moderate grade with many roots
	35-40+	Firm/friable light gray (10YR 7/2) clay with no roots, few gravels, and less than 20% calcium carbonate pebbles and flecking that increase with depth
10	0-30	Firm very dark gray (10YR 3/1) clay loam of moderate grade with many roots
	30-35+	Firm/friable light gray (10YR 7/2) clay with no roots, few gravels, and less than 20% calcium carbonate pebbles and flecking that increase with depth
11	0-35+	Firm/friable highly disturbed soil of moderate grade with 20% very dark gray (10YR 3/1) clay loam, 40% light gray (10YR 7/2) clay, and 40% reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking is present throughout
12	0-35+	Firm/friable highly disturbed soil of moderate grade with 20% very dark gray (10YR 3/1) clay loam, 40% light gray (10YR 7/2) clay, and 40% reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking is present throughout
13	0-30+	Firm/friable highly disturbed soil of moderate grade with 20% very dark gray (10YR 3/1) clay loam, 40% light gray (10YR 7/2) clay, and 40% reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking is present throughout
14	0-30+	Firm/friable highly disturbed soil of moderate grade with 20% very dark gray (10YR 3/1) clay loam, 40% light gray (10YR 7/2) clay, and 40% reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking is present throughout
15	0-30	Firm/friable very dark gray (10YR 3/1) clay loam of moderate grade with many roots, few gravels, and a diffuse horizon
	30-50+	Firm to very firm dark gray (10YR 4/1) clay of massive grade; no roots, rare pebbles, and 10% calcium carbonates that increase with depth along with clay density
16	0-30	Firm/friable very dark gray (10YR 3/1) clay loam of moderate grade with many roots, few gravels, and a diffuse horizon
	30-50+	Firm to very firm dark gray (10YR 4/1) clay of massive grade; no roots, rare pebbles, and 10% calcium carbonates that increase with depth along with clay density

Table 2. Shovel Test Unit Excavation Results		
Shovel Test #	Depth (cmbs*)	Description/ Notes
17	0-20+	Extremely disturbed soil with a combination of clay and clay loam; firm throughout as though it was mechanically compacted; soil colors include a mottling of very dark gray (10YR 3/1), light gray (10YR 7.2), and reddish yellow (7.5YR 6/6)
18	0-20+	Extremely disturbed soil with a combination of clay and clay loam; firm throughout as though it was mechanically compacted; soil colors include a mottling of very dark gray (10YR 3/1), light gray (10YR 7.2), and reddish yellow (7.5YR 6/6)
19	0-30+	Very disturbed soil with very dark gray (10YR 3/1) clay loam, light gray (10YR 7/2) clay, and reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking and gravels observed throughout
20	0-30	Firm/friable very dark grayish brown (10YR 3/2) clay loam with many roots and few gravels
	30-45	Dark gray (10YR 4/1) clay of massive grade; no roots, rare pebbles, and 10% calcium carbonates that increase with depth along with clay density,
	45-60+	Very firm light gray (10YR 7/2) clay, becomes more firm and massive with depth
21	0-35	Firm/friable very dark grayish brown (10YR 3/2) clay loam with many roots and few gravels
	35-45	Dark gray (10YR 4/1) clay of massive grade; no roots, rare pebbles, and 10% calcium carbonates that increase with depth along with clay density
	45-60+	Very firm light gray (10YR 7/2) clay, becomes more firm and massive with depth
22	0-35	Firm/friable very dark grayish brown (10YR 3/2) clay loam with many roots and few gravels
	35-45	Dark gray (10YR 4/1) clay of massive grade; no roots, rare pebbles, and 10% calcium carbonates that increase with depth along with clay density,
	45-60+	Very firm light gray (10YR 7/2) clay, becomes more firm and massive with depth
23	0-35+	Very disturbed soil with very dark gray (10YR 3/1) clay loam, light gray (10YR 7/2) clay, and reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking and gravels observed throughout

Table 2. Shovel Test Unit Excavation Results		
Shovel Test #	Depth (cmbs*)	Description/ Notes
24	0-35+	Very disturbed soil with very dark gray (10YR 3/1) clay loam, light gray (10YR 7/2) clay, and reddish yellow (7.5YR 6/6) clay; calcium carbonate flecking and gravels observed throughout

Five trenches were excavated along Dickinson Road (which becomes FM 517 on the east side of the FM 517/ SH 35 intersection (see **Figure 4a** and **Table 3**). On the south side of Dickinson, a single fiber optic line was located between the roadway edge and the cemetery edge, forcing excavations to take place closer to the roadway than previously anticipated (**Figure 21**). These five trenches cover a total of 210.9 m (692 ft). In order to conform to Occupational Safety and Health Administration (OSHA) safety regulations, and because the trenching created confined spaces, the first trench (Trench 1) was excavated to a depth of roughly 140 cmbs (4.6 ft). This allowed investigators to enter the trench for detailed profiling while complying with OSHA safety guidelines. Subsequent trenches (Trenches 2-5) were excavated to depths of 200 cmbs (roughly 6.6 ft) or greater.

Soils in the trenches between Dickinson Road and the cemetery (Trenches 1, 2, 3, and 5) were fairly consistent, and crews encountered no apparent burial pits, coffin hardware, or human remains. The profiles of trenches 1-3 and 5 show a series of construction-disturbed soils over a series of clays, terminating with very firm, massive clay with mottling and calcium carbonate inclusions (**Figure 22**). Cultural material observed in these trenches includes plastic, glass, brick, can pull tabs, and rusted metal items, including cabling and angle iron. All cultural materials were recovered from 0-40 cmbs in Trench 1, and photos of selected material are presented in **Figures 23-25.** Due to their location within the disturbed soils found in the trench, it is very unlikely the materials are associated with the cemetery and its construction. It is, however, very likely that these artifacts represent refuse displaced by roadway construction activities. The only cultural material recorded in the remaining four trenches was modern refuse. The trench on the north side of Dickinson (Trench 4) contained consistent soils, but no cultural material was observed during its excavation (**Figures 26**). Since the northern trench was placed approximately 3 m away from the roadway, soils in this trench were likely not subjected to the same disturbances as the southern trenches, which were located less than a meter away from the roadway. No features of any kind were observed in any of the trenches.

Table 3: Backhoe Trench Excavation Results

Trench # and Length	Depth (cmbs*)	Description/Notes	Artifacts
1 81.8 m long	0-3	Humus and road base in very dark brown (10YR 2/2) sandy clay loam, many gravels and roots, disturbed, compacted, abrupt lower horizon	None
	3-7	Dark grayish brown (10YR 4/2) sandy clay loam, disturbed, friable, roots, gravels, abrupt lower horizon	None
	7-11	Light brownish gray (10YR 6/2) sandy clay, many gravels, few roots, moderate grade, clear lower horizon	Bottlecap, nail, cable, pull-tab
	11-40	Dark grayish brown (10YR 4/2) clay, firm, many gravels (likely old road base), no roots, very disturbed, 20% mottles (10YR 5/1), 20% mottles (10YR 6/1), some oxidation throughout, diffuse lower horizon	Angle iron
	40-58	Dark grayish brown (10YR 4/2) clay, firm, subangular blocky, very few gravels, 20% mottles (10YR 5/3), 20% mottles (2.5YR 6/4), diffuse lower horizon	None
	58-138	Light reddish brown (2.5YR 6/4) clay, very firm, no gravels or roots, massive	None
2 15.3 m long	0-4	Humus and road base in very dark brown (10YR 2/2) sandy clay loam, many gravels and roots, disturbed, compacted, abrupt lower horizon	None
	4-7	Dark grayish brown (10YR 4/2) sandy clay loam, disturbed, friable, roots, gravels, abrupt lower horizon	None
	7-11	Light brownish gray (10YR 6/2) sandy clay, many gravels, few roots, moderate grade, clear lower horizon	None
	11-40	Dark grayish brown (10YR 4/2) clay, firm, many gravels (likely old road base), no roots, very disturbed, 20% mottles (10YR 5/1), 20% mottles (10YR 6/1), some oxidation throughout, diffuse lower horizon	None
	40-60	Dark grayish brown (10YR 4/2) clay, firm, subangular blocky, very few gravels, 20% mottles (10YR 5/3), 20% mottles (2.5YR 6/4), diffuse lower horizon	None
	60-137	Light reddish brown (2.5YR 6/4) clay, very firm, no gravels or roots, massive	None
	137-210	Reddish yellow (7.5YR 6/6) clay, moist, massive, 15% mottles (10YR 6/2), 10% mottles (10YR 8/1)	None

Table 3: Backhoe Trench Excavation Results			
3 12.2 m long	0-4	Humus and road base in very dark brown (10YR 2/2) sandy clay loam, many gravels and roots, disturbed, compacted, abrupt lower horizon	None
	4-7	Dark grayish brown (10YR 4/2) sandy clay loam, disturbed, friable, roots, gravels, abrupt lower horizon	None
	7-14	Light brownish gray (10YR 6/2) sandy clay, many gravels, few roots, moderate grade, clear lower horizon	None
	14-43	Dark grayish brown (10YR 4/2) clay, firm, many gravels (likely old road base), no roots, very disturbed, 20% mottles (10YR 5/1), 20% mottles (10YR 6/1), some oxidation throughout, diffuse lower horizon	None
	43-65	Dark grayish brown (10YR 4/2) clay, firm, subangular blocky, very few gravels, 20% mottles (10YR 5/3), 20% mottles (2.5YR 6/4), diffuse lower horizon	None
	65-140	Light reddish brown (2.5YR 6/4) clay, very firm, no gravels or roots, massive	None
	140-220+	Reddish yellow (7.5YR 6/6) clay, moist, massive, 15% mottles (10YR 6/2), 10% mottles (10YR 8/1)	None
4 89.7 m long	0-25	Dark gray (10YR 4/1) clay loam, highly organic topsoil with many roots and insect burrows, friable, moderate grade, abrupt lower horizon	None
	25-65	Light brownish gray (10YR 6/2) clay, hard, firm and strong, some root inclusions near tree, clear lower horizon	None
	65-115	Light brownish gray (10YR 6/2) clay, hard, firm, 30% mottles (10YR 5/6), abruput lower horizon	None
	115-150	White (10YR 8/1) clay, friable, <5% calcium carbonates, 20% 10YR 6/2 mottles, 20% 7.5 YR 6/6 mottles, diffuse lower horizon	None
	150-220+	Reddish yellow (7.5YR 6/6) clay, moist, massive, 15% mottles (10YR 6/2), 10% mottles (10YR 8/1)	None

Table 3: Backhoe Trench Excavation Results			
5 11.9 m long	0-9	Humus and road base in very dark brown (10YR 2/2) sandy clay loam, many gravels and roots, disturbed, compacted, 20% mottles (10YR 4/2) abrupt lower horizon	None
	9-16	Light brownish gray (10YR 6/2) sandy clay, many gravels, few roots, moderate grade, clear lower horizon	None
	16-38	Dark grayish brown (10YR 4/2) clay, firm, many gravels (likely old road base), no roots, very disturbed, 20% mottles (10YR 5/1), 15% mottles (10YR 6/1), some oxidation throughout, diffuse lower horizon	None
	38-60	Dark grayish brown (10YR 4/2) clay, firm, subangular blocky, very few gravels, 20% mottles (10YR 5/3), 20% mottles (2.5YR 6/4), diffuse lower horizon	None
	60-155	Light reddish brown (2.5YR 6/4) clay, very firm, no gravels or roots, massive	None
	155-200+	Reddish yellow (7.5YR 6/6) clay, moist, massive, 15% mottles (10YR 6/2), 10% mottles (10YR 8/1)	None
* Centimeters below surface			

Recommendations

Results of the reconnaissance survey, intensive survey, shovel testing, and trenching indicate that extensive disturbances within the APE due to previous roadway construction, roadway maintenance, utility installation, commercial and residential development, and farming practices have greatly affected the potential for identifying any intact archeological deposits. Additionally, trenching effectively confirmed that no burials from the Confederate Cemetery are present in the proposed right-of-way, and it is extremely unlikely that roadway construction will encounter any burials associated with the cemetery.

No evidence was found of preserved deposits with a high degree of integrity; associations with distinctive architectural and material culture styles; rare materials and assemblages; the potential to yield data important to the study of preservation techniques and the past in general; or potential attractiveness to relic hunters (13 TAC 26.10; 36 CFR 60.4). No additional archeological investigations are warranted prior to construction activities.

No artifacts were collected; therefore, only project records will need to be curated per TAC 26.16 and 26.17. Project records will be curated at the CAS at Texas State University where they will be made permanently available to future researchers.

As right-of-entry was not granted to all parcels at the time of this study, it is recommended that prior to construction an intensive survey be conducted in those no-access parcels that are also within PALM Map Units 2 and 2a. Those areas total 70.54 ac (28.55 ha). The areas with no right-of-entry, but that are in Map Unit 4 (21.67 ac or 8.77 ha) are not recommended to be surveyed.

If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and TxDOT personnel should be notified immediately. During evaluation of any unanticipated finds and coordination between TxDOT and THC, clearing, preparation, and/or construction could continue in any other areas along the corridor where no such deposits or materials are observed.

The Texas Historical Commission concurred with the findings of this report on May 26, 2016.

5 FIGURES

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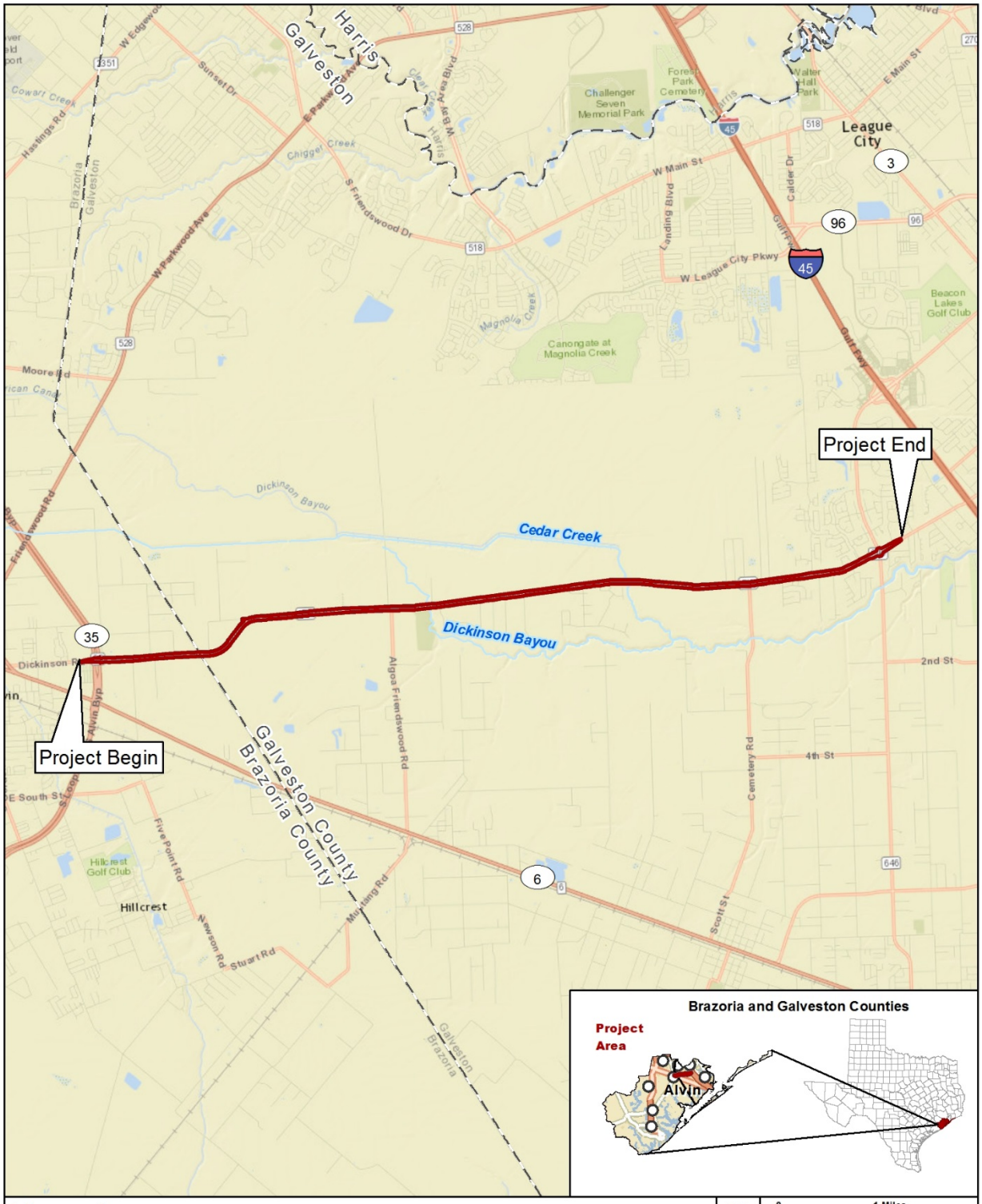

Figure 1

Project Location (Road Base)

FM 517 from SH 35 to FM 646

Project Location

Basemap Source: ESRI (2015)

0 1 Miles

0 1.5 Kilometers

Prepared for: TxDOT	1 in = 1.5 mile
	Scale:1:95,040
CSJ: 1002-01-006, 1002-02-016	Date: 8/4/2016

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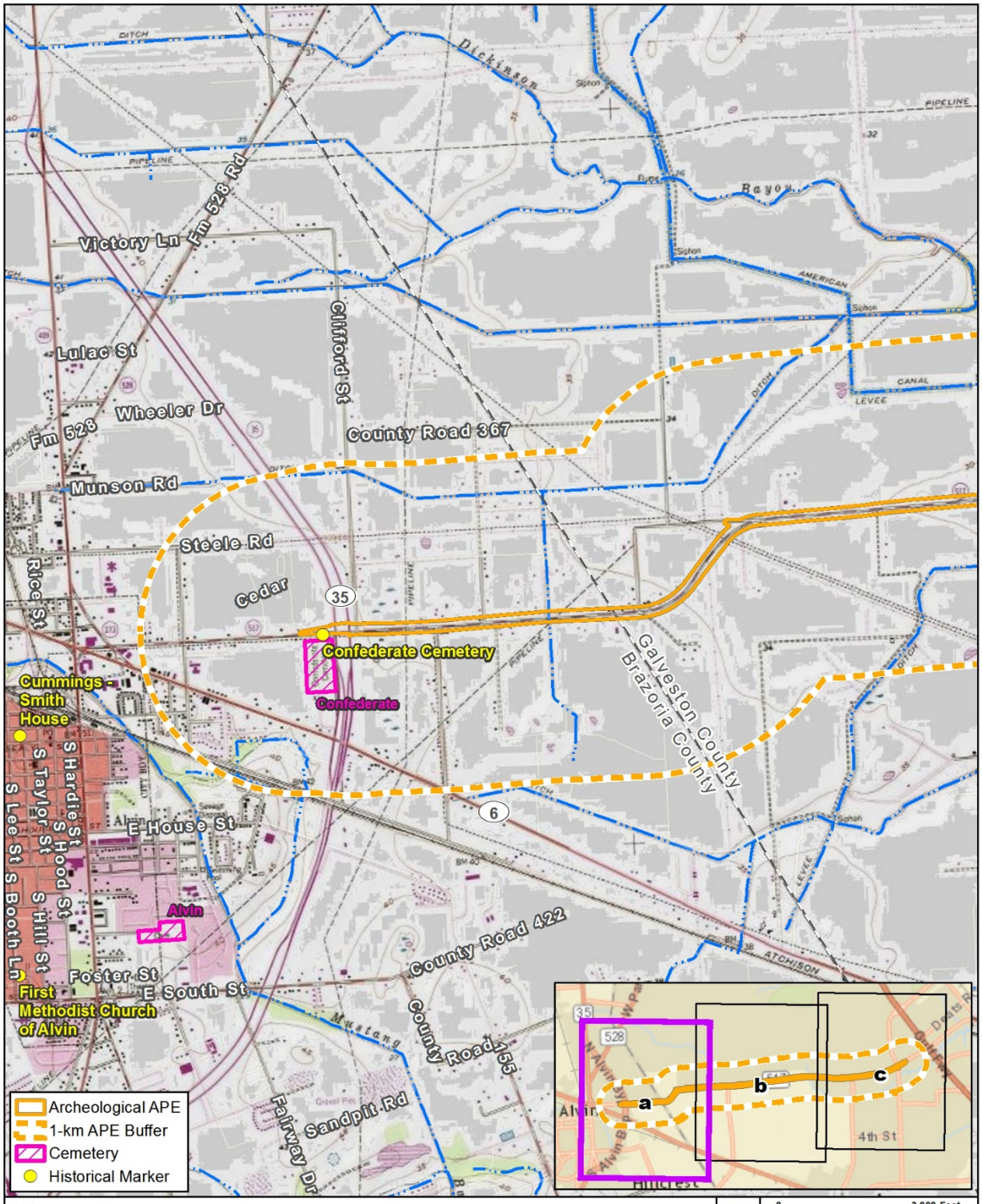

Figure 2a

Location of Archeological APE

FM 517 from SH 35 to FM 696

Topographic Source: USGS Algoa (1974) and Dickinson (1995) 7.5' Quadrangles
Data Sources: THC (2015), TARL (2015), NHD (2014)

0 3,000 Feet
0 800 Meters

Prepared for: TxDOT	1 in = 3,000 feet
	Scale:1:36,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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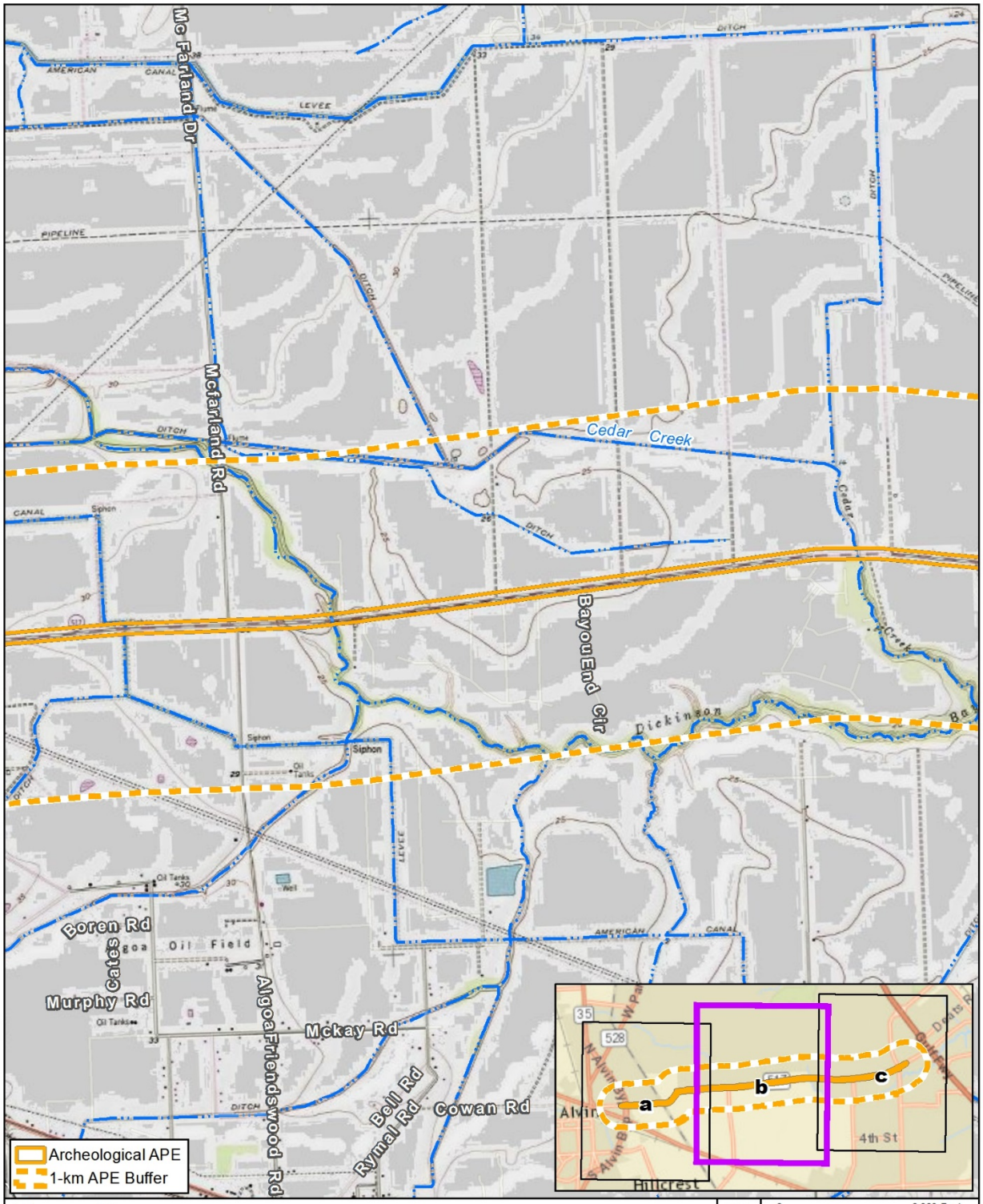

Figure 2b

Location of Archeological APE

FM 517 from SH 35 to FM 696

Topographic Source: USGS Algoa (1974) and Dickinson (1995) 7.5' Quadrangles
Data Sources: THC (2015), TARL (2015), NHD (2014)

0 3,000 Feet
0 800 Meters

Prepared for: TxDOT	1 in = 3,000 feet
	Scale:1:36,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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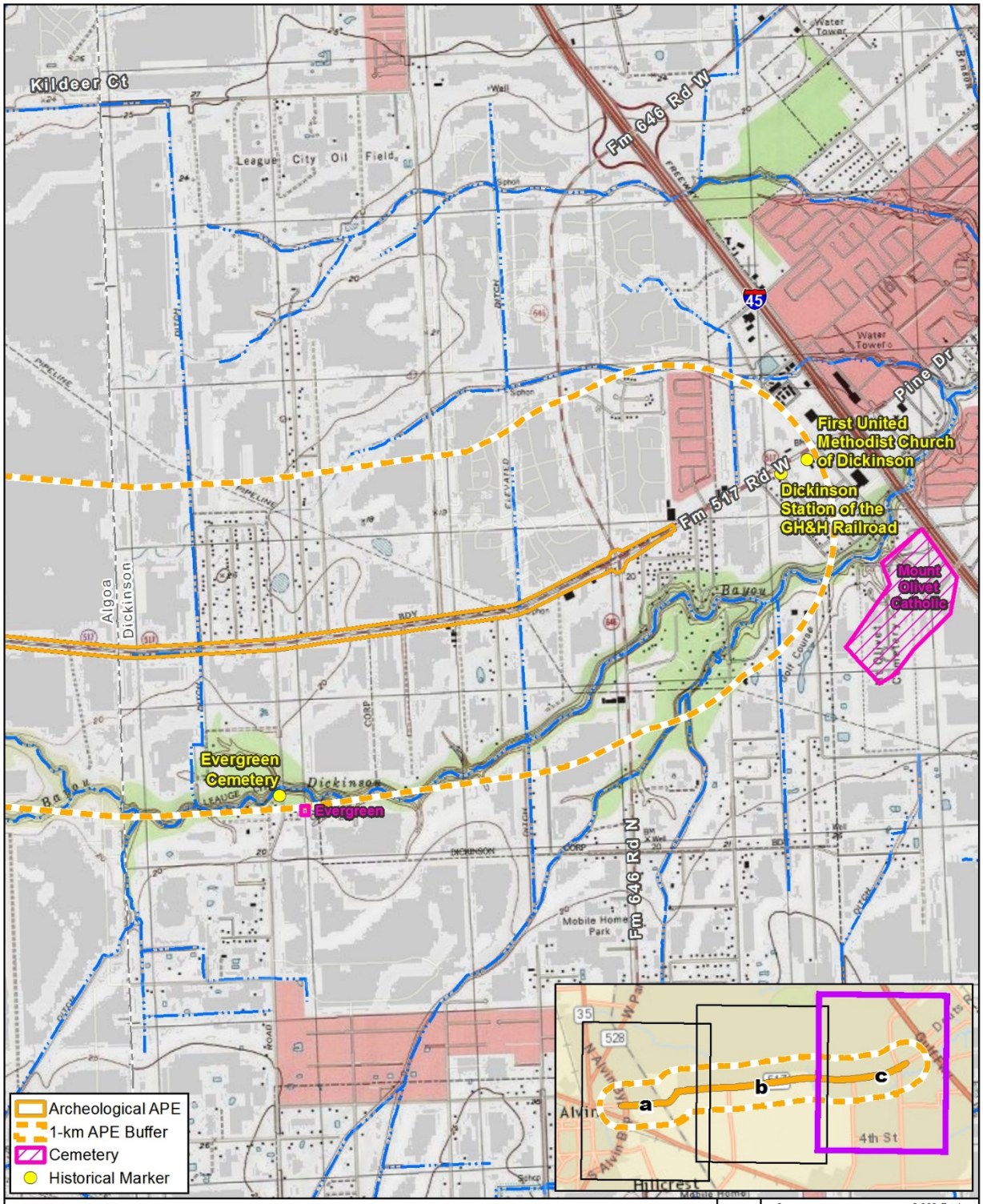

Figure 2c

Location of Archeological APE

FM 517 from SH 35 to FM 696

Topographic Source: USGS Algoa (1974) and Dickinson (1995) 7.5' Quadrangles
Data Sources: THC (2015), TARL (2015), NHD (2014)

Prepared for: TxDOT	1 in = 3,000 feet
	Scale:1:36,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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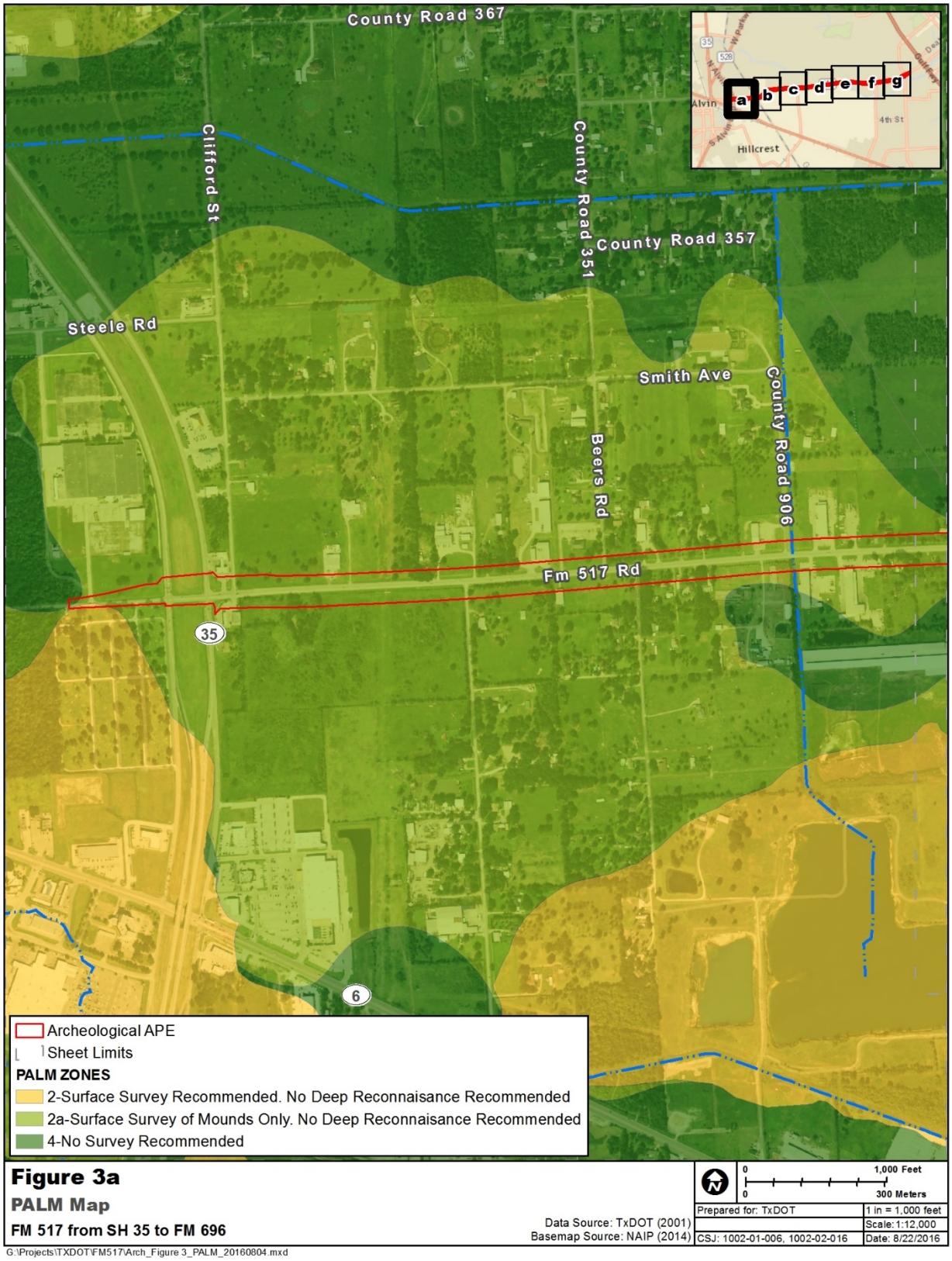

Figure 3a

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

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Figure 3b

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

0 1,000 Feet
0 300 Meters

Prepared for: TxDOT	1 in = 1,000 feet
	Scale:1:12,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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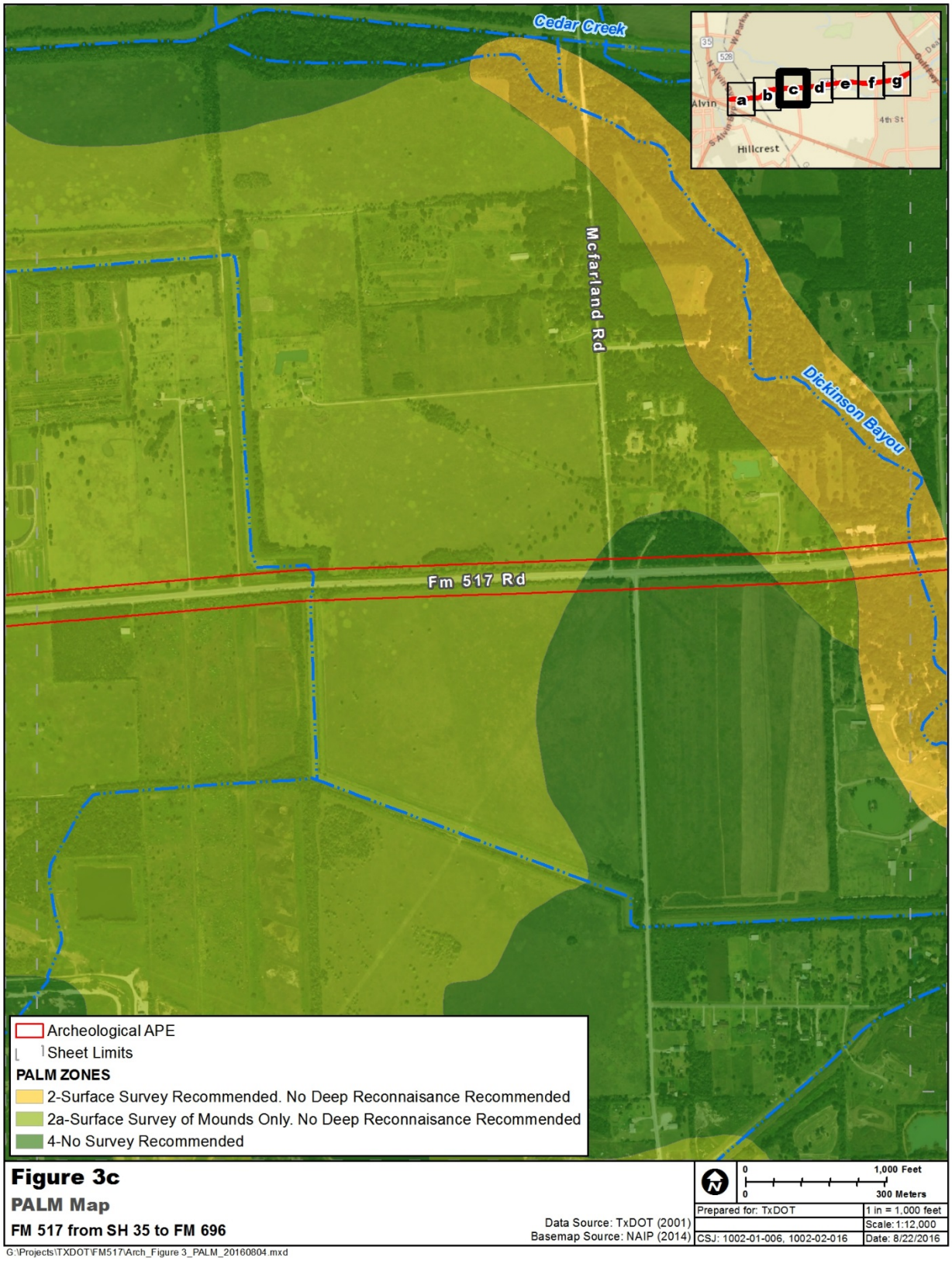

Figure 3c

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

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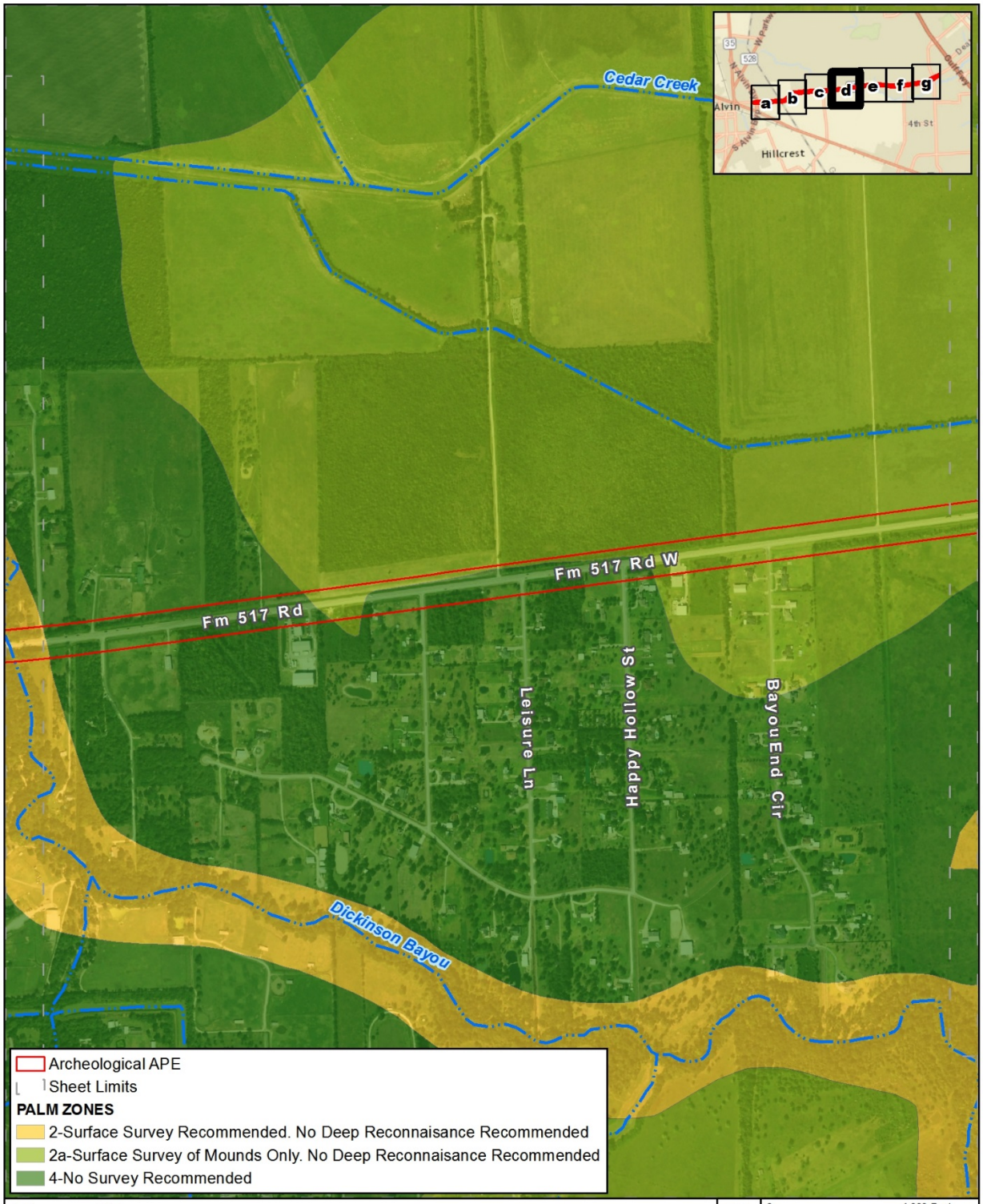

Figure 3d

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

0 1,000 Feet
0 300 Meters

Prepared for: TxDOT	1 in = 1,000 feet
	Scale:1:12,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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Figure 3e

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

Prepared for: TxDOT	1 in = 1,000 feet
	Scale:1:12,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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Figure 3f

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

Prepared for: TxDOT	1 in = 1,000 feet
	Scale:1:12,000
CSJ: 1002-01-006, 1002-02-016	Date: 8/22/2016

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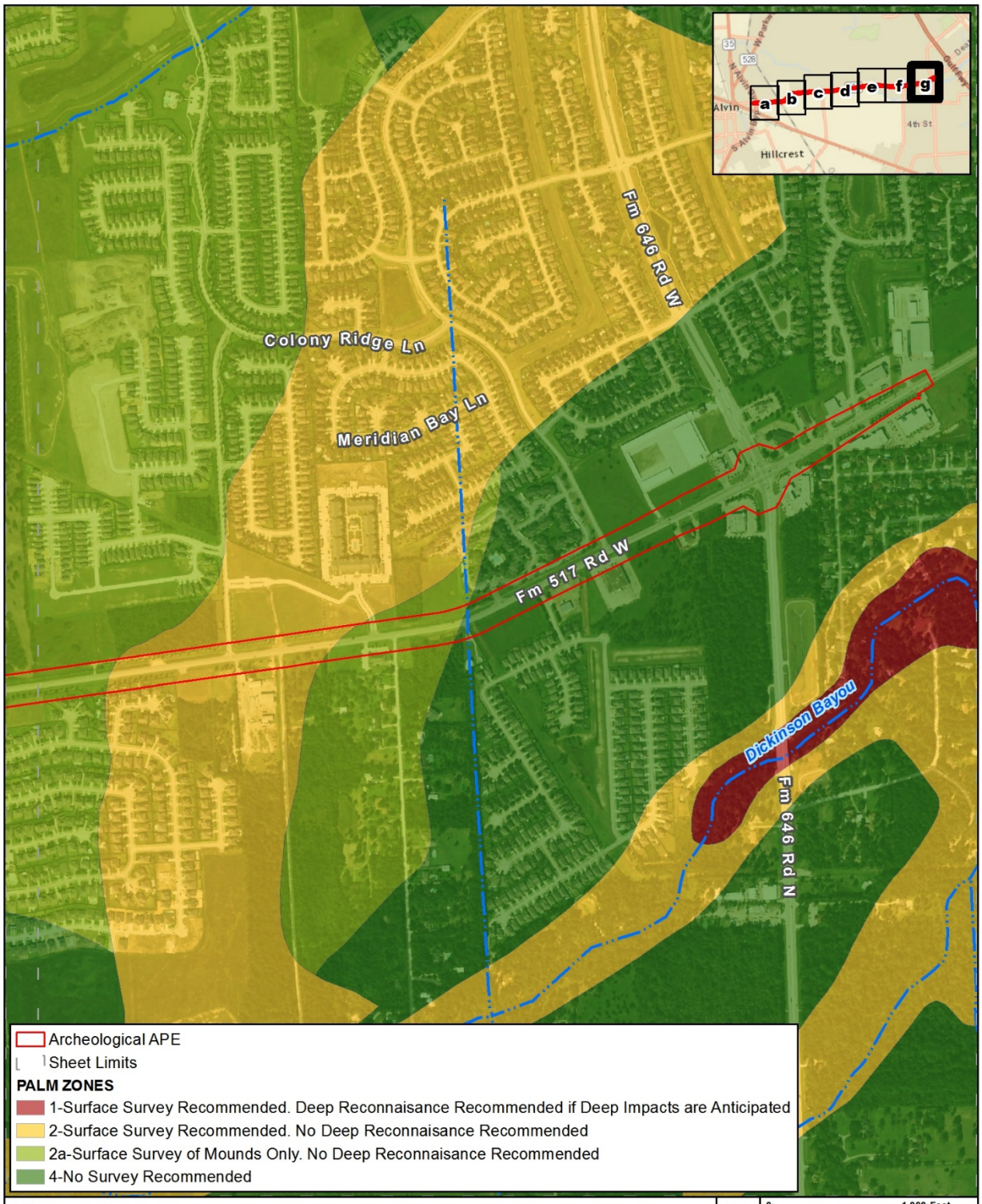

Figure 3g

PALM Map

FM 517 from SH 35 to FM 696

Data Source: TxDOT (2001)
Basemap Source: NAIP (2014)

G:\Projects\TXDOT\FM517\Arch_Figure 3_PALM_20160804.mxd

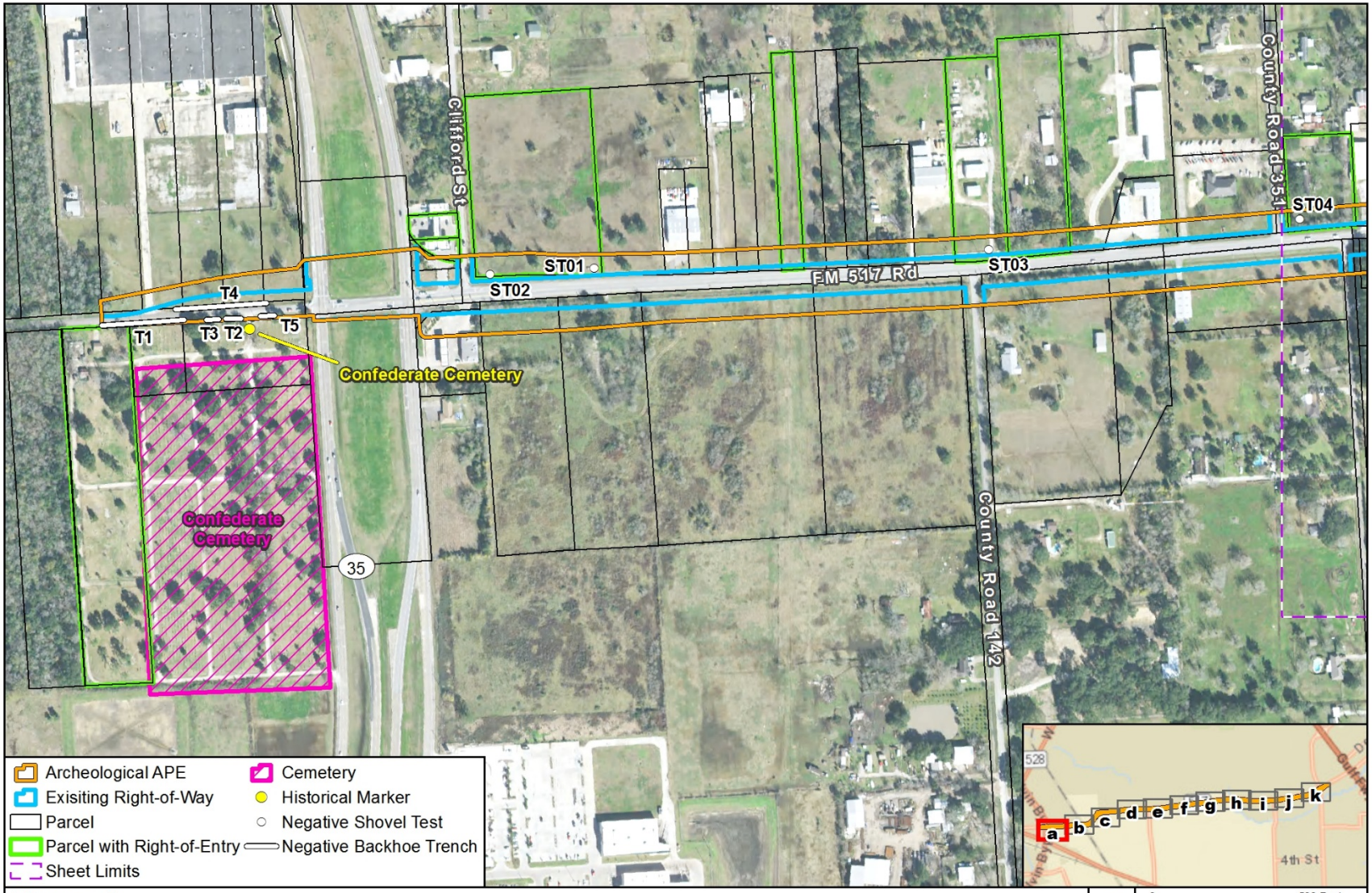

Figure 4a

Survey Results

FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

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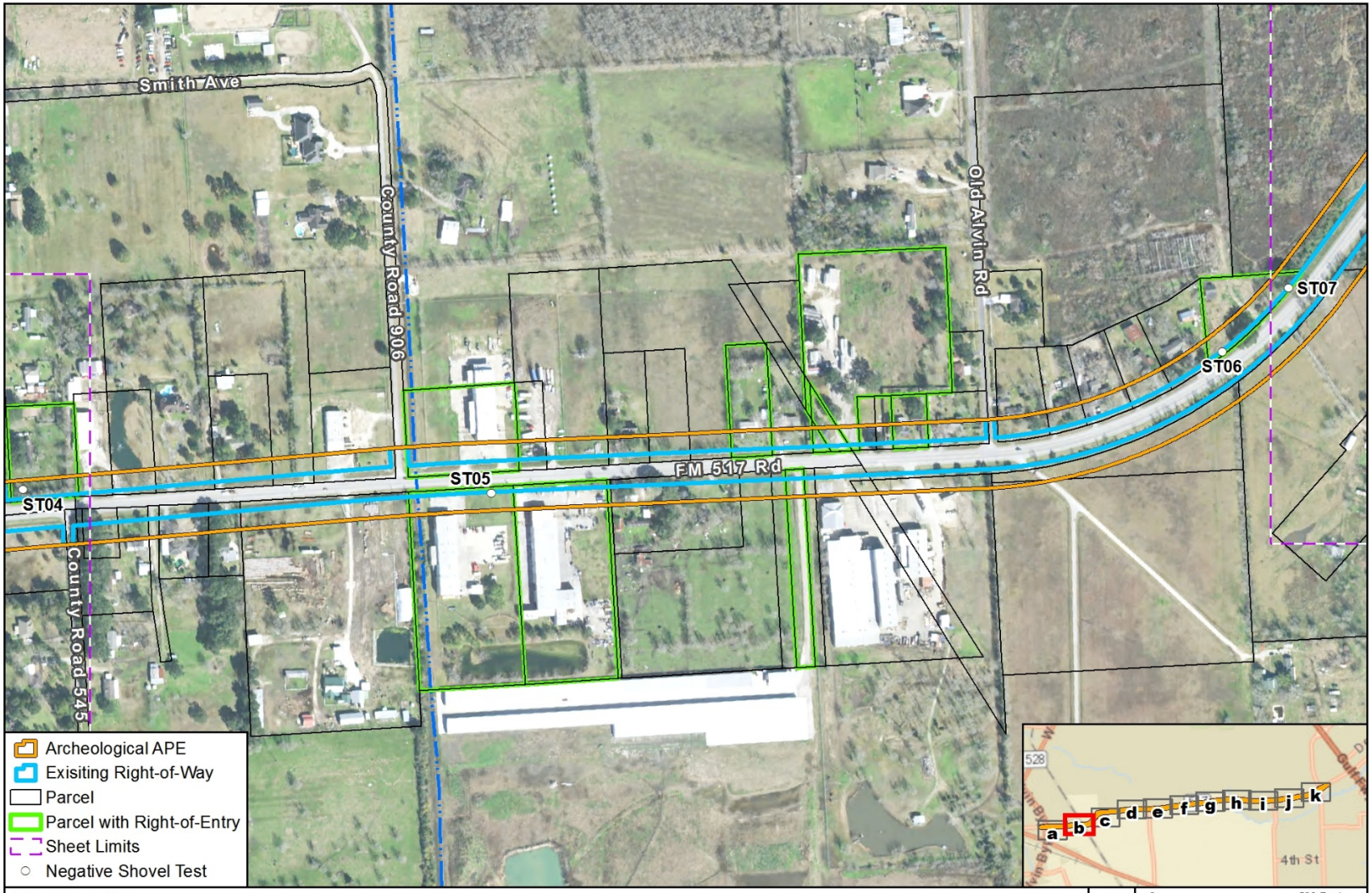

Figure 4b
Survey Results
FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

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Figure 4c

Survey Results

FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

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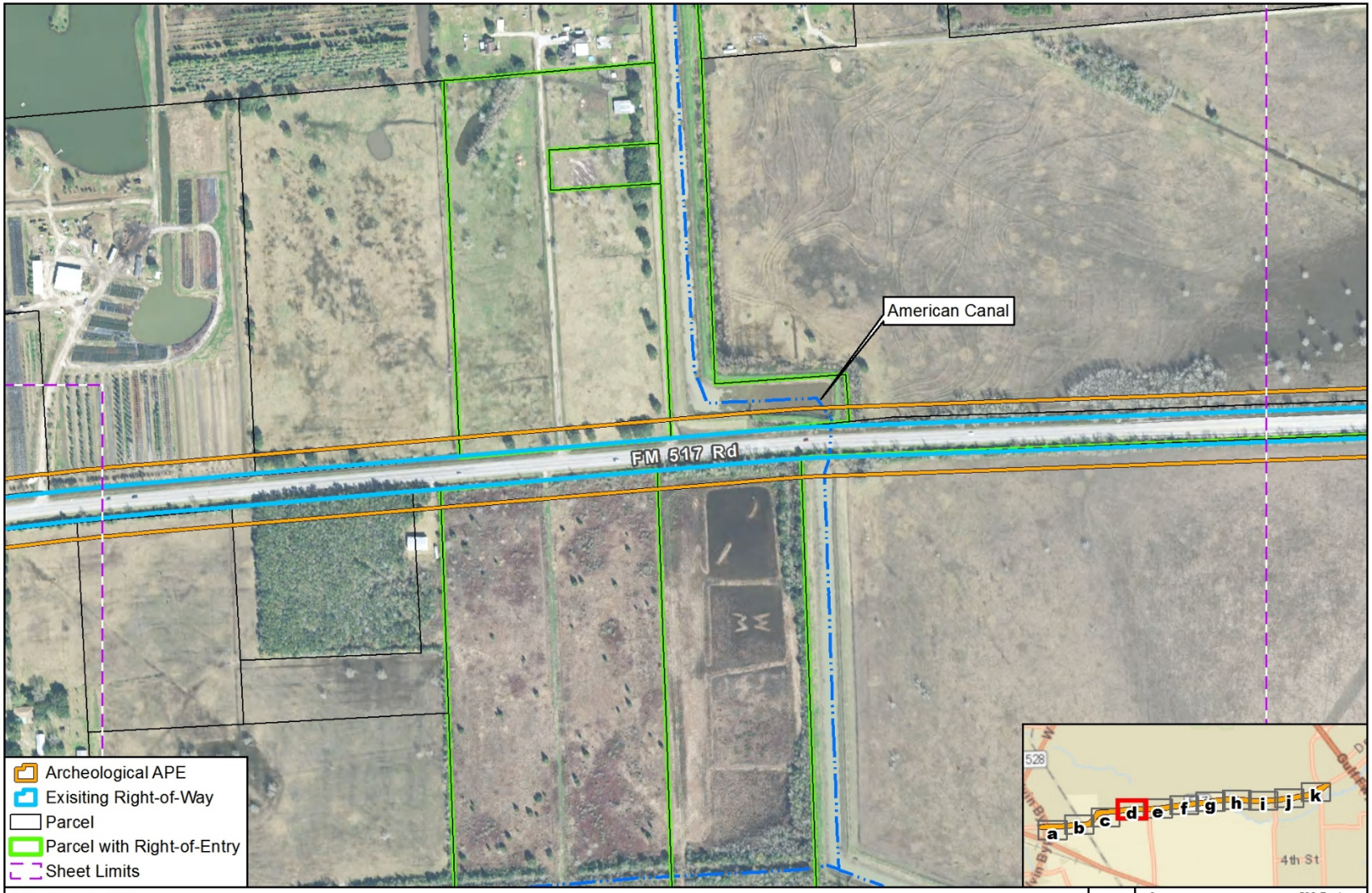

Figure 4d
Survey Results
FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

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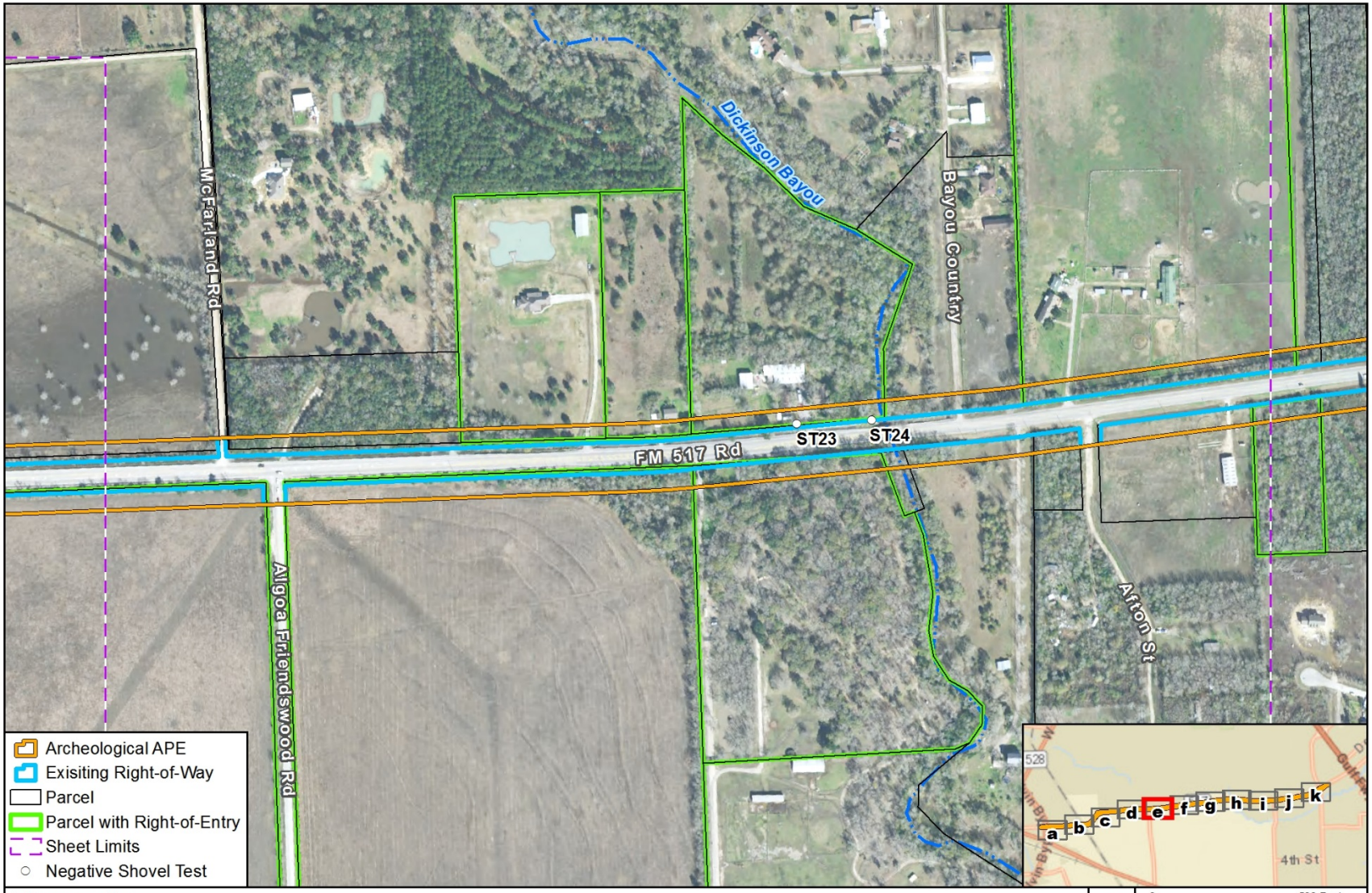

Figure 4e

Survey Results

FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

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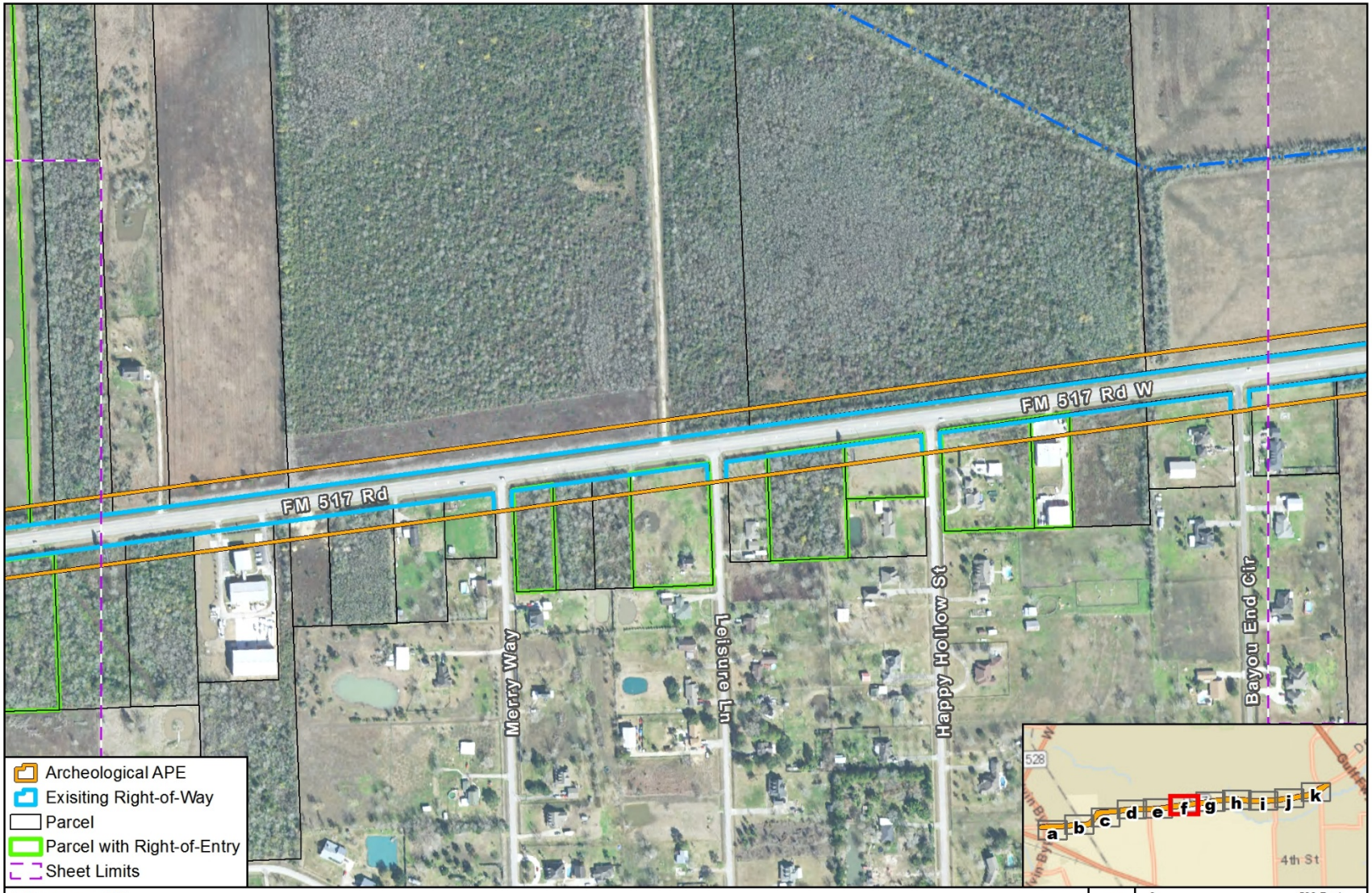

Figure 4f

Survey Results

FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

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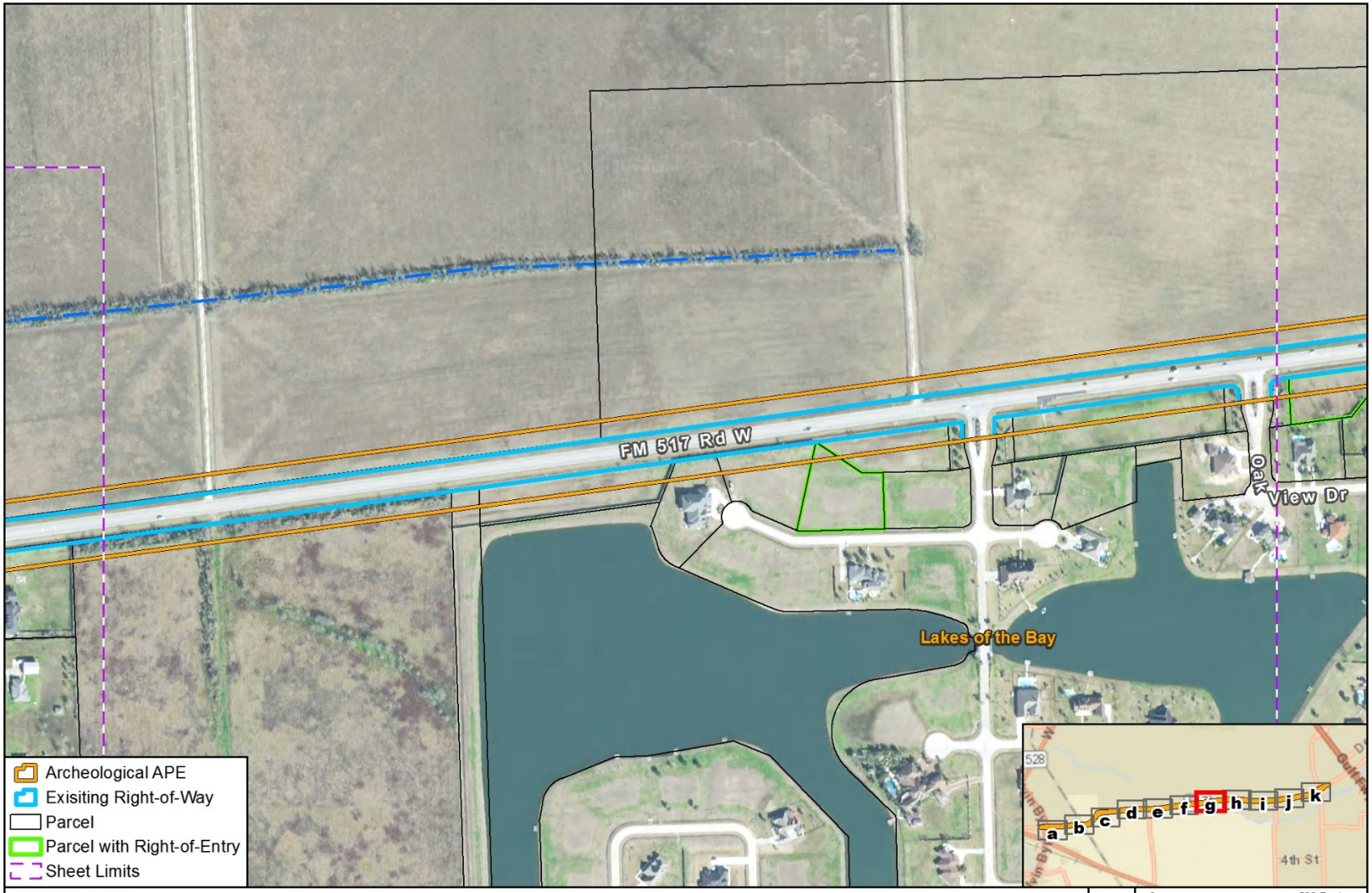
FM 517 Rd W
Deer View Dr
Lakes of the Bay
Archeological APE
Exisiting Right-of-Way
Parcel
Parcel with Right-of-Entry
Sheet Limits
a
b
c
d
e
f
g
h
i
j
k
528
4th St
0
500 Feet
0
150 Meters
Figure 4g
Survey Results
FM 517 from SH 35 to F 646
Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)
Prepared for: TxDOT
1 in = 500 feet
Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016
Date: 8/23/2016
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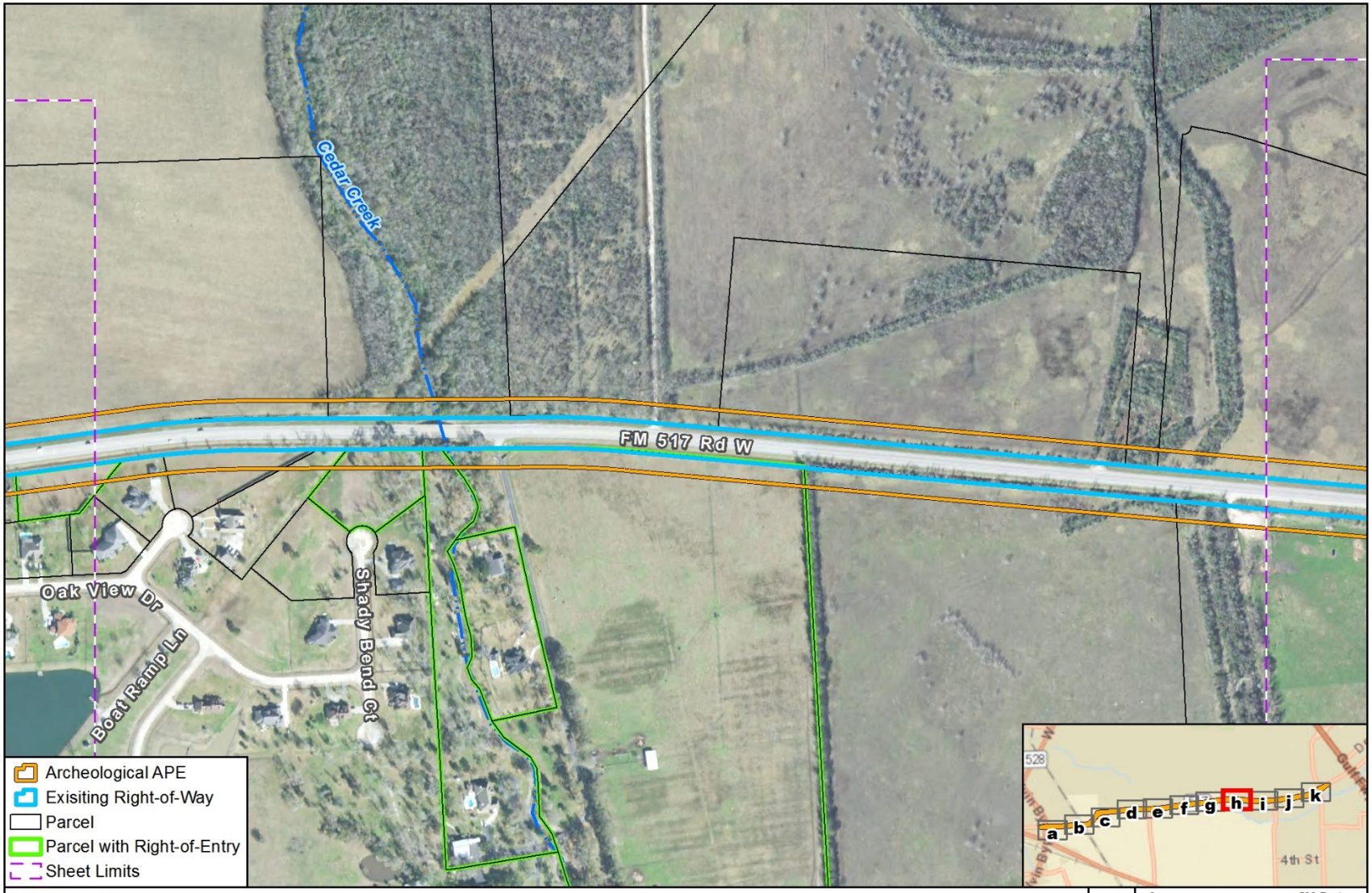

Figure 4h
Survey Results
FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

G:\Projects\TXDOT\FM517\Arch_Figure 4_SurveyResults_20160802.mxd

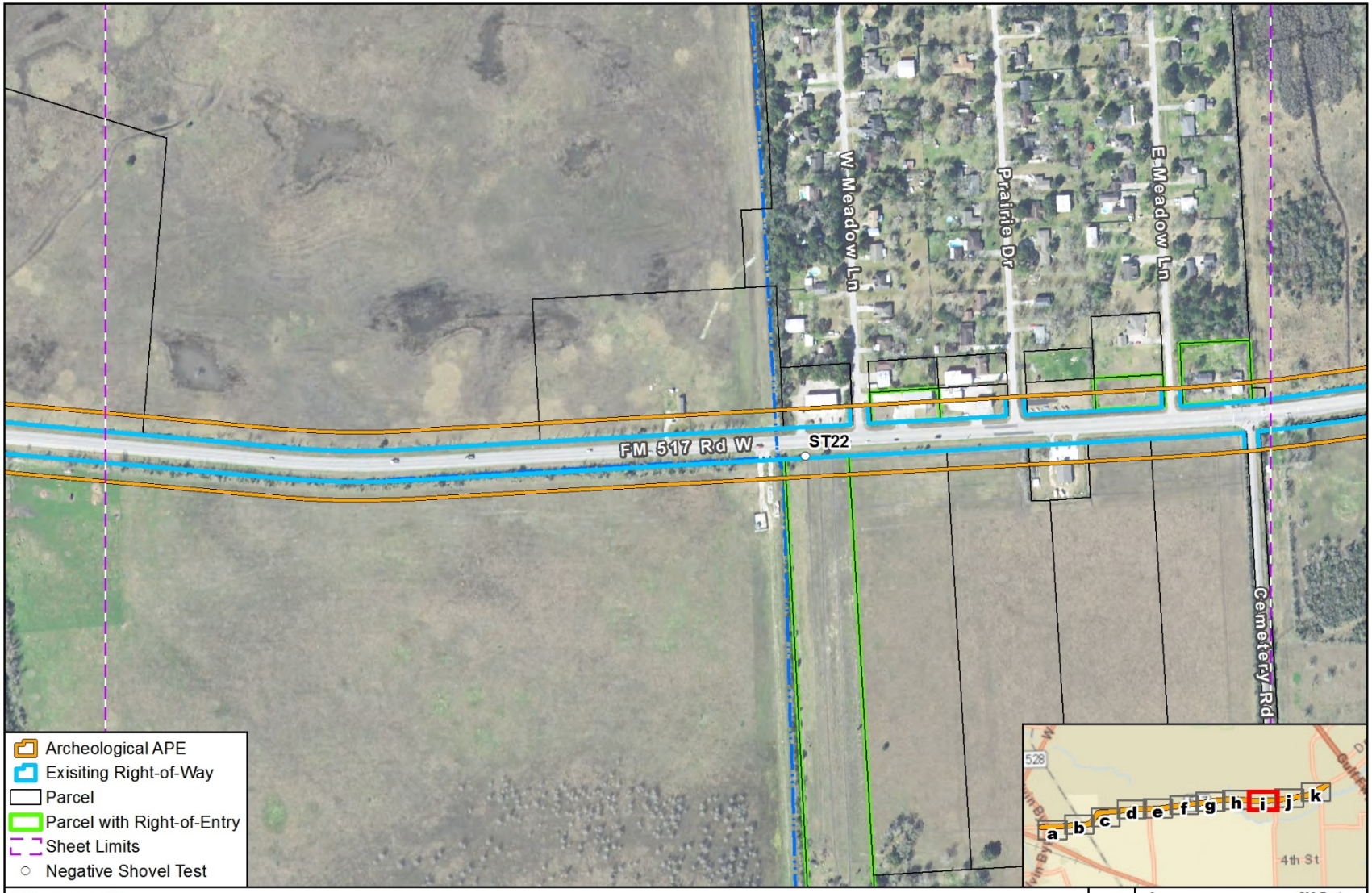

Figure 4i
Survey Results
FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

G:\Projects\TXDOT\FM517\Arch_Figure 4_SurveyResults_20160802.mxd

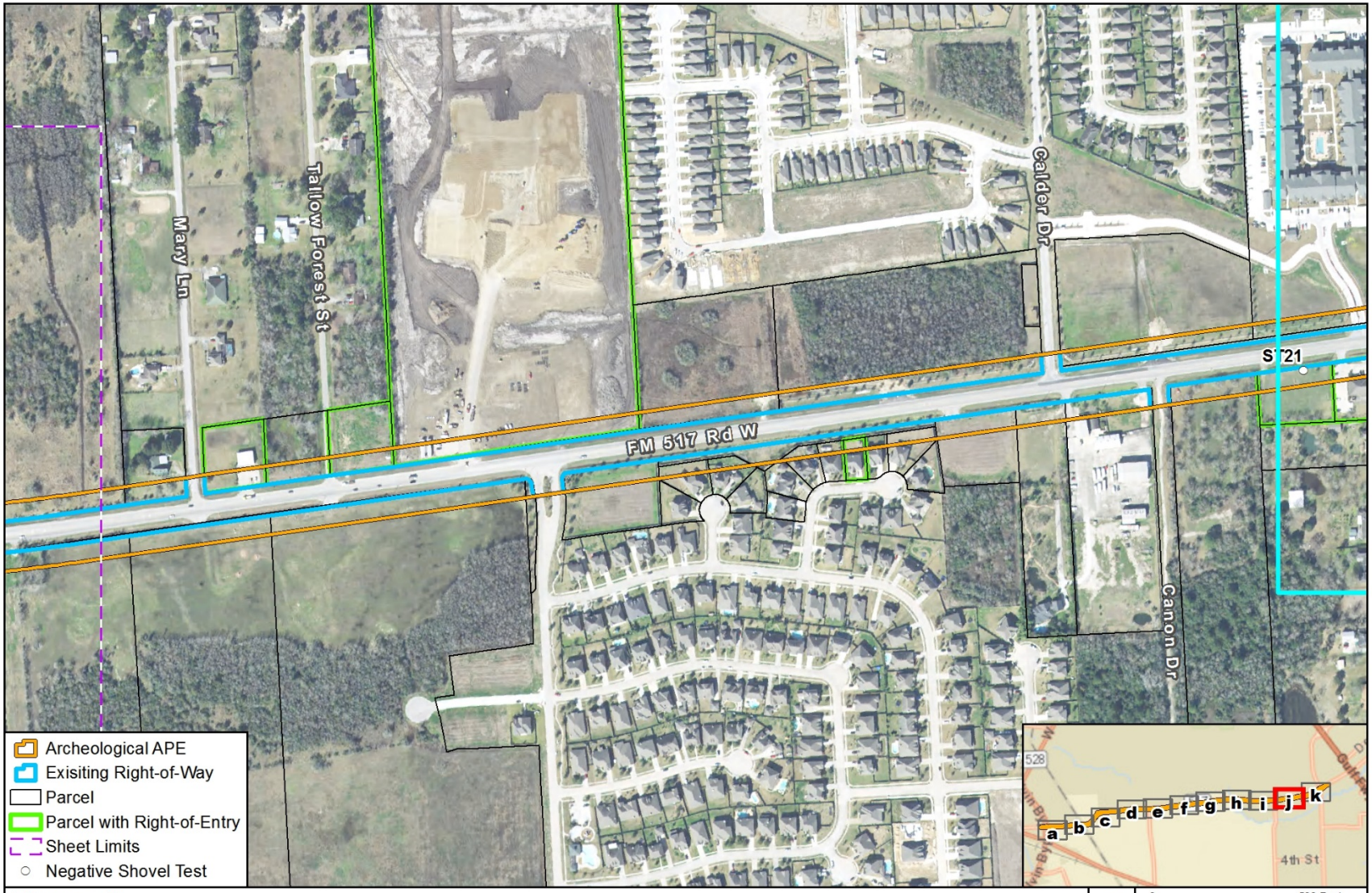

Figure 4j
Survey Results
FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

G:\Projects\TXDOT\FM517\Arch_Figure 4_SurveyResults_20160802.mxd

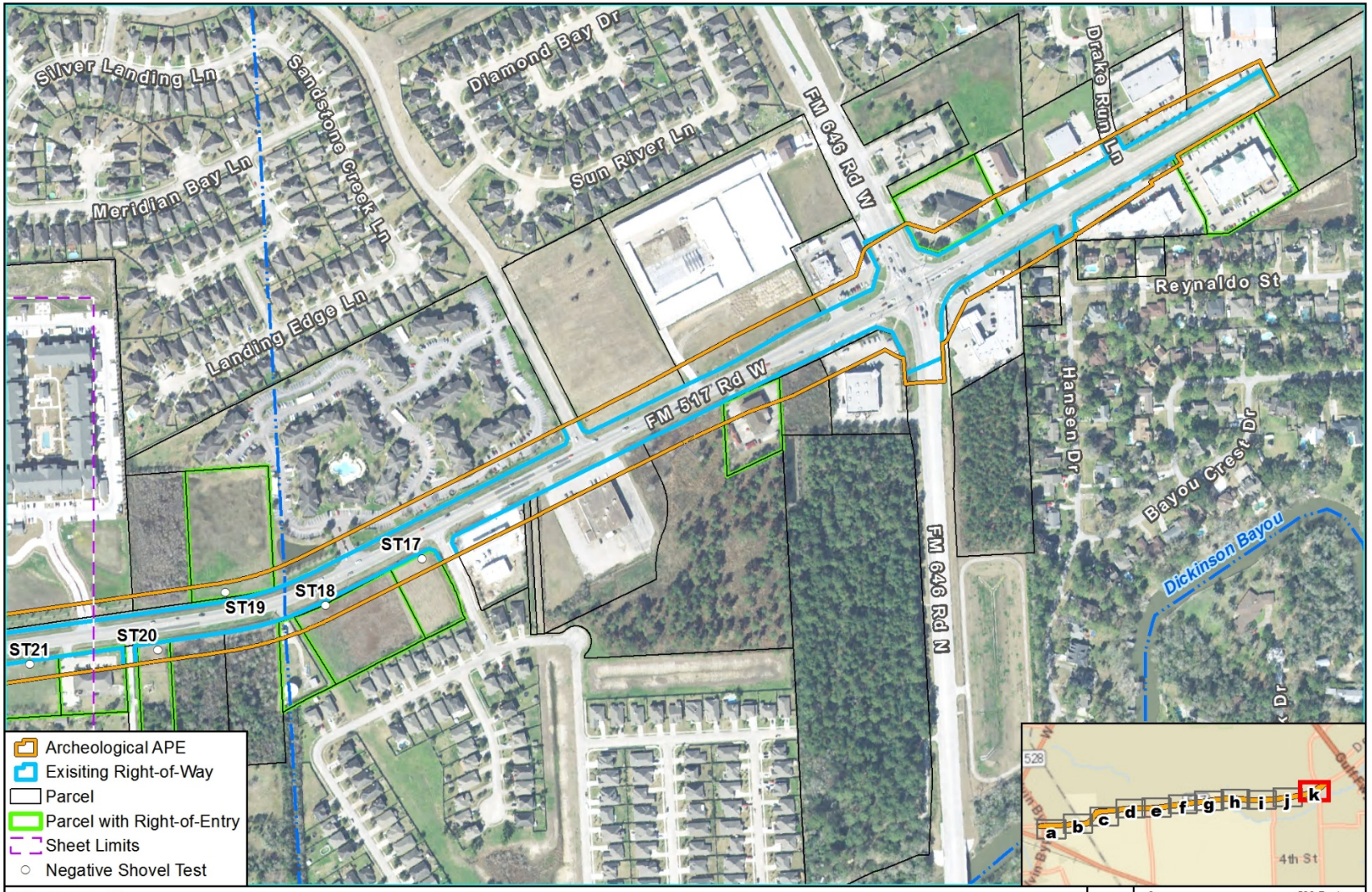

Figure 4k

Survey Results

FM 517 from SH 35 to F 646

Data Sources: CMEC (2016), THC (2015), TARL (2016), NHD (2014)
BCAD (2015), GCAD (2015)
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 1002-01-005, 1002-02-016	Date: 8/23/2016

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Figure 5. View of high school, under construction, facing north. Note highly-disturbed areas of remaining soils.

Figure 6. Undeveloped areas south of FM 517, facing east.

Figure 7. Developed areas south of FM 517, facing east. Note culverts, drainage, and pipelines/utilities.

Figure 8. View of vegetation in undeveloped area, facing west.

Figure 9. View of harvested agricultural field, facing west. Note surrounding vegetation and surface inundation.

Figure 10. View of tree sapling nursery south of FM 517, facing southwest.

Figure 11. Overview of Confederate Cemetery, facing south.

Figure 12. Overview of main entrance to Confederate Cemetery, facing southeast. Note THC marker on right-side pillar.

Figure 13. Historical marker for Confederate Cemetery, facing south.

Figure 14. Excavator engaged in trenching, view east. Note proximity to roadway.

Figure 15. Overview of completed, backfilled trench, facing west.

Figure 16. View of residential development near the APE, facing east. Note proximity to roadway, water main.

Figure 17. View of oil/gas pipeline development, facing north. Note proximity to roadway and roadway crossing.

Figure 18. View of underground and above ground utility development, facing west. Note numerous pinflags marking subterranean utility installations.

Figure 19. View of highly-disturbed soils. Notice extreme mottling.

Figure 20. View of highly-disturbed soils. Notice carbonates throughout.

Figure 21. View of trenching south of FM 517, facing east. Note trench proximity to cemetery, flag indicating fiber optic line.

Figure 22. Trench 1 profile, facing north. Notice highly disturbed soils, gravels from 0-40 cmbs.

Figure 23. Cable and tie fragment from Trench 1.

Figure 24. Rusted nail from Trench 1.

Figure 25. Glass, can pull tab, and rusted wire from Trench 1.

Figure 26. Excavation of Trench 4, facing east. Note distance between roadway and trench.

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APPENDIX A