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## **Intensive Archeological Survey of FM 1488 from Existing FM 1488 West of Magnolia to Proposed SH 249 Montgomery County, Texas**

Brett Lang

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## Intensive Archeological Survey of FM 1488 from Existing FM 1488 West of Magnolia to Proposed SH 249 Montgomery County, Texas

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Intensive Archeological Survey of FM 1488 from Existing  
FM 1488 West of Magnolia to Proposed SH 249  
Montgomery County, Texas  
(CSJs: 0523-09-018 and 0523-08-013)

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*Under*  
Texas Antiquities Permit 7914  
Melissa M. Green (Principal Investigator)

Cox | McLain Environmental Consulting Inc. Archeological Report 150  
(CMEC-AR-150)



September 30, 2017

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## ABSTRACT

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The Houston District of the Texas Department of Transportation (TxDOT) proposes to construct a new roadway on primarily undeveloped land around the north side of the City of Magnolia in Montgomery County, Texas. The proposed roadway will be the Farm-to-Market (FM) 1488 Magnolia Relief Route extending from the existing FM 1488 west of Magnolia to the proposed State Highway (SH) 249 east of Magnolia. The proposed project would be approximately 5.4 miles (8.7 kilometers) in length. The proposed roadway will consist of four lanes, two in each direction, separated by a median. This project will also include grade-separated overpasses at FM 1774, at the Union Pacific Railroad, and at the proposed SH 249 extension. The project and archeological area of potential effects totals 199.88 acres, 155.0 of which are new right-of-way, 41.5 acres that overlap with the proposed SH 249 project, and 3.38 acres of existing right-of-way.

Section 106 of the National Historic Preservation Act (NHPA) applies to this project; the Antiquities Code of Texas also applies.

Based on a review of the Houston Potential Archeological Liability Map (PALM), 73 percent of the 199.88-acre (80.8-hectare) project area (146.91 acres or 59.45 hectares) is designated as Map Unit 2, for which a surface survey is recommended. The total acreage includes right-of-way that overlaps with the proposed SH 249 project. PALM data also indicated that the remaining area, 27 percent (52.97 acres or 21.43 hectares), is located within Map Unit 4, for which surface survey is not recommended.

Cox | McLain Environmental Consulting, Inc. (CMEC) completed an intensive archeological survey to inventory and evaluate archeological resources within the area of potential effects (APE). Fieldwork was conducted April 11-13, 2017, under Texas Antiquities Permit 7914. Only 48 percent of the total acreage was surveyed since access was not granted for the remaining 52 percent. The majority of accessible parcels where intensive survey was conducted was determined to have been heavily disturbed by activities associated with agriculture and cattle grazing, as well as erosion.

No new archeological sites were identified during the survey and no artifacts were identified or recovered. Project records will be curated at the Center for Archaeological Studies at Texas State University per TAC 26.16 and 26.17.

The Texas Historical Commission concurred with the findings and recommendations of this report on September 1, 2017.

## MANAGEMENT SUMMARY

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The Houston District of Texas Department of Transportation (TxDOT) proposes to construct the Farm-to-Market Road 1488 Magnolia Relief Route around the north side of the City of Magnolia in Montgomery County, Texas. The proposed project would consist of four lanes, two in each direction, separated by a median. This project would include grade-separated overpasses at FM 1774, at the Union Pacific Railroad, and at the proposed State Highway (SH) 249 extension. This project would be on new location with limits extending from FM 1488 west of Magnolia to the proposed SH 249 east of Magnolia.

The project is sponsored and funded by the TxDOT Houston District. Because TxDOT receives federal funding, the project is subject to Section 106 of the National Historic Preservation Act (NHPA) as well as the Antiquities Code of Texas. TxDOT contracted with Klotz Associates, Inc. to carry out environmental studies in support of the project. Klotz contracted with Cox|McLain Environmental Consulting, Inc. (CMEC) to conduct the cultural resource studies required for compliance with the NHPA.

The project area of potential effects (APE) is approximately 5.4 miles or 8.7 kilometers in length and has a typical width between 200 and 350 feet or 61 and 106 meters. The APE will be up to 900 feet (274 meters) wide at the intersection north of FM 1774. The APE is 199.88 acres, 155 of which are new right-of-way, 41.5 acres that overlap with the proposed SH 249 project, and 3.38 acres of existing right of way. Typical roadway construction depths would reach 2 feet (0.6 meter), drainage ditches would reach between 1 and 5 feet (0.3 to 1.5 meters) in depth, and the extents of deeper bridge support column location depths will be determined later.

On April 11-13, 2017, CMEC archeologists conducted an intensive survey in order to inventory and evaluate archeological resources within the APE. The fieldwork was carried out under Texas Antiquities Permit 7914 by Brett Lang and Joseph Motley of CMEC. Melissa M. Green served as Principal Investigator on the project.

Access was restricted to the western portion of the APE; no access was granted to the entire eastern half of the APE. Where access was allowed, the APE was subjected to an intensive pedestrian survey; additionally, shovel tests were excavated in areas identified as Potential Liability Archeological Map (PALM) Map Unit 2. Ground surfaces within the APE were of varying visibilities (10 to 90 percent) due to cattle and horse grazing practices, housing and commercial development, and a sand mining operation facility. Other portions of the APE cross areas that have been disturbed by pipeline corridors. The eastern end of the APE is mostly characterized by a thickly wooded setting and includes large areas where no access was granted for survey.

A review of the Houston PALM reveals that the majority of the APE (146.91 acres or 59.45 hectares) falls within Map Unit 2. Within this unit, surface survey was recommended only with moderate deep potential. The other PALM Map Unit present in the APE was Map Unit 4, covering 52.97 acres (21.43 hectares). No survey was recommended for Map Unit 4 due to the low chance of prehistoric archeological deposits.

In all, 39 shovel tests were excavated within the APE. A majority of the shovel tests revealed sandy loam or sand deposits to a depth of 25 to 60 centimeters below surface (cmbs) underlain with clay or sandy clay. Nine of the shovel tests extended to 80 to 100 cmbs in sandy loam or sand deposits and did not encounter clay. Shovel tests were only excavated in areas where previous agricultural impacts were not apparent, ground visibility was less than 30 percent, and the PALM map units suggested the likely presence of intact soils that could contain prehistoric archeological deposits.

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 Center for Archaeological Studies at Texas State University.

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# 1 INTRODUCTION

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## Overview of the Project

The Houston District of the Texas Department of Transportation (TxDOT) has proposed the construction of a new-location 5.4-mile (mi), or 8.7-kilometer (km) relief route around the north side of the city of Magnolia, Montgomery County, Texas.

The proposed Farm-to-Market (FM) 1488 Relief Route would consist of four lanes, two in each direction, separated by a median. This project would include grade-separated overpasses at FM 1774, at the Union Pacific Railroad (UPRR), and at the proposed State Highway (SH) 249 extension. This project would be on new location. The project limits would be from the existing FM 1488 west of Magnolia to the proposed SH 249 east of Magnolia. The project and archeological area of potential effects (APE) totals 199.88 acres, 155.0 of which are new right-of-way, 41.5 acres that overlap with the proposed SH 249 project, and 3.38 acres of existing right of way. Typical roadway construction depths would reach 2 feet (ft) or 0.6 meter (m), drainage ditches would reach depths between 1 and 5 ft (0.3 and 1.5 m). The subsurface extents of the deeper bridge support column will be determined later.

Brett Lang and Joseph Motley of Cox | McLain Environmental Consulting, Inc. (CMEC) performed the fieldwork on April 11-13, 2017. Melissa M. Green served as Principal Investigator. Placement of shovel test units within the APE was based on observed disturbance levels, ground surface visibility, the professional judgment of the archeologists in the field, the analysis of Houston Potential Archeological Liability Map (PALM) data, and guidelines established by the Council of Texas Archeologists (CTA) and approved by the Texas Historical Commission (THC).

## Regulatory Context

The APE is subject to the Antiquities Code of Texas (9 TNRC 191). The project also has a federal nexus due to federal funding, triggering Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470; 36 CFR 800). Antiquities Permit 7914 was assigned to this project by the THC.

## Structure of the Report

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

## 2 ENVIRONMENTAL AND CULTURAL CONTEXTS

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### Topography, Geology, and Soils

The APE is located at approximate elevations of between 220 and 280 ft (67 and 85 m) above sea level in eastern Montgomery County, Texas (see **Figures 1 and 2**). The area is surrounded by a mix of developed and undeveloped areas. The APE crosses numerous tributaries to Mill Creek at the northern and eastern ends of the alignment and two branches of Mink Branch Creek at the western end. Geologically, the APE is primarily underlain by the Pleistocene-age Wills Formation with some occurrences of the Pleistocene-age Beaumont Fluvial terrace deposits along Mill Creek (USGS 2017). Wills Formation is primarily clay with some limestone; the Beaumont Formation is primarily sand with occurrences of gravels.

According to Natural Resources Conservation Service, or NRCS, data (2017), the mapped soils in the APE include:

- Conroe gravelly loamy fine sand on 0 to 5 percent slopes
- Conroe loamy fine sand on 0 to 5 percent slopes
- Fetzer loamy fine sand on 1 to 5 percent slopes
- Katy fine sandy loam on 0 to 1 percent slopes
- Edna-Katy complex, Betis fine sand on 0 to 5 percent slopes
- Splendora fine sandy loam on 0 to 2 percent slopes
- Frequently flooded Bibb soils
- Lilbert loamy fine sand

Most of these soils are deep to very deep and occur in upland settings. With the exception of the Bibb soils, which are also deep but are located on floodplains, all of these soils have shallow A horizons [0 to 10 centimeters (cm) deep], often with E horizons below that extend to approximately 60 cm deep. The E horizon is over a Bt Horizon.

### Vegetation, Physiography, and Land Use

The APE is located in the Southern Tertiary Uplands within the South-Central Plains ecoregion, according to the Griffith, et al. Ecoregion Map (2007) derived from Gould et al. (1960). According to the Texas Parks and Wildlife Department's *Vegetation Types of Texas* map and accompanying descriptions, the APE is in an area mapped as being covered with Pine-Hardwood Forest (McMahan et al. 1984). Vegetation noted during the survey included manicured grazing lands, various types of native and invasive grasses, blackberry bushes, and thorny vines, as well as oak and other hardwood trees. In the eastern portion of the APE, dense woods replace slightly undulating pasture land. Many of the surrounding parcels are primarily used for cattle or horse grazing.

### 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	1,200 – 270 B.P.
Protohistoric	270 B.P.

Source: 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 dates to the early seventeenth century with René Robert Cavalier, Sieur de La Salle in 1687. Spanish soldiers followed in order to reclaim the land from the French. The Spanish continued to expand their occupation in Montgomery County, eventually establishing three missions along Spring Creek. By 1756 no permanent Spanish settlements existed and the missions were abandoned (Long 2016).

Anglo-American settlement began in the early 1820s when Stephen F. Austin proposed his local settlement. Originally 42 families of Austin’s Colony acquired land titles from the Mexican government, settling in western Montgomery County. One of the earliest settlers was Andrew Montgomery who set up a trading post at the Loma del Toro and lower Coushatta traces crossroads. The population increased greatly in the 1830s and in December of 1837 the Republic of Texas

Congress established Montgomery County. The modern boundaries of the county were in place after 1870 when Waller County was established (Long 2016).

## Previous Investigations and Previously Identified Resources

A review of the Houston PALM revealed that the majority of the APE [146.91 ac (59.45 ha) or 73 percent] falls within Map Unit 2. For the portions of the APE that fall within this unit, a surface survey is recommended (**Figures 3a-d**; Abbott 2001). The remaining APE falls within Map Unit 4 [52.97 acres (21.43 ha) or 27 percent], an area for which no survey is recommended.

A search of the Texas Archeological Sites Atlas (Atlas) maintained by the THC and the Texas Archeological Research Laboratory was conducted in order to identify archeological sites, historical markers (Recorded Texas Historic Landmarks), properties or districts listed on the National Register of Historic Places, State Antiquities Landmarks, 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 larger 1-km study area around the APE was also examined (**Figure 2**).

According to the Atlas search, the majority of the APE has not been previously surveyed, although two linear surveys cross the alignment (THC 2017). One linear survey was performed in 2015 for TxDOT by Prewitt and Associates, Inc. (PAI) for the proposed SH 249 roadway to which this project will ultimately connect (Fields and Burden 2015; THC 2017). The other was performed in 2005 for TxDOT by Moore Archeological Consulting, Inc. for widening FM 1774 (THC 2017).

There are no recorded archeological sites within the APE or within the 1-kilometer buffer area surrounding the APE. There are three cemeteries within the buffer area surrounding the APE: Old Sanders Cemetery, “unknown” Magnolia (or Turner-Thomas Cemetery), and “unknown” Missionary Church (Unknown Cemetery No. 5). There is little information about Old Sanders Cemetery (MQ-C036), Turner-Thomas Cemetery (MQ-C034), or Unknown Cemetery No. 5 (MQ-C031) on the Atlas (THC 2017). According to findagrave.com (Tipton 2017), the Old Sanders Cemetery has only one burial, which dates to 1992, and the Turner-Thomas Cemetery has 12 burials dating from the late nineteenth century to the 1940s. No information on the Missionary Church (Unknown Cemetery No. 5) was available on findagrave.com.

A review of available historic aerial photos and topographic maps on Google Earth™ and the Nationwide Environmental Title Research (NETR) website, [www.historicaerials.com](http://www.historicaerials.com), was also undertaken to determine how the corridor has been utilized over time. According to the earliest aerial photo (1957) and topographic map (1964) available, most of the development, outside of Magnolia, was between existing FM 1488 and FM 1774 (NETR 2017). The vegetation depicted on the 1957 aerial makes it difficult to identify the types of structures present, but many are likely residences. The remaining portion of the APE is still undeveloped, primarily between FM 1486 and the planned SH 249 corridor, as much of the development is along the existing FM 1488 roadway.

### 3 RESEARCH GOALS AND METHODS

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#### 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 One;
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); and
3. 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.
- 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 and resources 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. SALs 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 procedure for the evaluation of cultural resources as SALs, 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

CMEC conducted an intensive survey according to the guidelines provided in 13 TAC 26.13-26.18 and using the definitions in 13 TAC 26.3. Field methods and strategies complied with the requirements of 13 TAC 26.10 and 13 TAC 26.15-26.18, as elaborated by the THC and the CTA.

Shovel test units were focused in areas where ground surface visibility was below 30 percent, soils appeared deep enough to contain subsurface cultural materials, potential for historic archeological sites was high based on map data, and/or disturbance appeared minimal. All shovel tests were excavated in natural levels to subsoil or 60 centimeters (cm) 24 inches [in]), whichever was encountered first. Excavated matrix was screened through 0.635 or 0.25-in hardware cloth as allowed by moisture and clay content; in some cases sediments required examination by hand or trowel. Deposits were described using conventional texture classifications and Munsell color designations. If any shovel tests had contained cultural materials, radial shovel tests would have been placed at 10-m (33-ft) intervals around each positive shovel test until two negative units had been established in each cardinal direction, as allowed by project limits. Mechanical trenching was not anticipated based on PALM analysis and was not used in this investigation. No parts of the APE fall within areas flagged for deep testing (see **Figures 3a-d**).

The APE has a low probability of encountering human burials; if burials are found, TxDOT would be notified and all requirements of 8 THSC 711 would be followed.

Most of the APE was located on privately owned land anticipated for acquisition; therefore, any artifacts found from shovel tests and surface contexts would have been noted, described, photographed, and returned to their original contexts. Since access was not available at the time of the survey for approximately half of the APE, a reasonable and good-faith effort was made to document inaccessible areas from accessible areas for the purposes of Permit 7914.

No new sites were observed or recorded during the investigation. Had a site been identified, a temporary marker would have been placed on the site. The markers would have included an identifying name employing the last name of the CMEC employee who recorded the site or corresponding landform. The temporary site nomenclature would be superseded by a formal site trinomial obtained following the completion of fieldwork. Site designations would have been applied only to features (whether surface or subsurface) that appeared to represent occupation or activity areas and/or to clusters of artifacts (whether surface or subsurface) that met the minimum threshold of two contiguous positive shovel test units.

CMEC personnel kept a complete record of field notes supplemented by digital photographs, with observations including (but not limited to) identified sites, cultural materials, location markers, contextual integrity, estimated time periods of occupations, vegetation, topography, hydrology, land use, soil exposures, general conditions at the time of the survey, and field techniques employed. All materials (notes, photographs, administrative documents, and other project data) generated from this work will be curated at the Center for Archeological Studies 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

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### General Field Observations and Results

On April 11-13, 2017, CMEC personnel conducted an intensive archeological survey of sections of the APE for which access had been granted. Accessible portions of the APE began at the western end of the APE and extended approximately 3.2 mi (5.1 km) east. Within this western section, properties for which access was not granted were intermixed with those to which access had been granted. Thus, CMEC archeologists were able to access a total of approximately 2.6 mi (4.2 km) or about half, of the 5.4-mi (8.7 km) length of the APE. No access was granted for the remaining segment extending to the eastern terminus.

The intensive survey included both pedestrian survey and shovel testing. More than half (143.6 ac (58.11 ha) of the APE falls within PALM Map Unit 2 where a surface survey was recommended. For these sections, a CMEC crew conducted pedestrian survey, photographed the areas, and excavated shovel tests. The remaining sections of the APE were located within PALM Map Unit 4 where no survey is recommended. Pedestrian surveys were conducted and photographs were taken of the segments in Map Unit 4, but these areas were not shovel tested. In all, 39 shovel tests were excavated in locations mapped in Map Unit 2 and shown in **Figures 4a-h**. Complete shovel test descriptions are listed in **Appendix A**.

The survey began at the western end, north of FM 1488 (see **Figure 4a**). The APE starts in a sand mining yard with disturbances from cleared roads and large piles of sand (**Figure 5**). Other than the cleared area for the sand piles where ground visibility was 100 percent and a semi-cleared field with blackberry vines, other unidentified grasses and scattered trees allowed for only 0 to 20 percent ground visibility. Two shovel tests (BL01 and JM02) extended from 55 to 100 cmbs with sand or loamy sand exposed. Both shovel tests were negative for cultural material on the surface and subsurface. Continuing north, the APE partially enters one of the properties with no access; only the western boundary edge could be surveyed along a fence line (**Figure 6**). The area is less disturbed along the edge of a wooded area in a cleared section with short prairie grasses and 10 to 50 percent ground visibility. Four shovel tests (BL02, BL03, JM03, and JM04) were excavated along the fence line before encountering another property with no access for the next 0.27 mi (0.43 km). All four shovel tests were negative for cultural material.

Continuing north, the APE crosses Old Hempstead Road (see **Figures 4b-c**). After meeting with the landowner, access was granted onto the APE 0.48 mi (0.77 km) south of Old Hempstead Road. The terrain is a cleared, mowed field used for cattle grazing with short prairie grasses, scattered oaks, pines, and other large trees, along with 20 to 50 percent ground visibility (**Figure 7**). The landowner stated that the landscape has been used only for cattle grazing for as long as she can remember, and she has lived there for 80 years (personal communication, Joyce Gilliams, May 11, 2017). No disturbance has come from agricultural practices or terracing of the land, nor has she found any cultural material. The ground surface is relatively level with low, rolling hills (**Figure 8**). The property is in the PALM Map Unit 4 area; however, one shovel test (JM01) was excavated on the biggest hilltop to determine the subsurface potential. The shovel test was negative for cultural material and extended to 55 cmbs before compact loamy sand was encountered.

North of Old Hempstead Road to FM 1774 the setting is manicured yard for an abandoned modern house. The front yard of the house (**Figure 9**) has short manicured grass with 10 to 30 percent ground visibility. The house, located at the northern end of the property (**Figure 10**), appears to have been burned based on the interior damage. Behind the house, UPRR tracks immediately south of FM 1774 were located. The vegetation changed to 0 to 20 percent ground visibility in the disturbed area with taller chest- to head-high grasses of various types. Ten shovel tests were excavated in this area. Disturbance was located north of the house with evidence of a gravel layer from 10 to 30 cmbs. Shovel tests BL08 to BL12 and JM09 to JM13 were excavated with clay commonly encountered from 30 to 50 cmbs overlain with sandy loam soils. Four of the shovel tests contained multiple layers of sandy loams to 90 cmbs. Nothing cultural was observed on the surface or subsurface.

The APE continued to the northeast north of FM 1774 widening out to approximately 738 ft (225 m, see **Figure 4c**). The entire width of the APE was available for survey at FM 1774 to FM 1486, except for the corner parcel in the southwest corner of the intersection. The APE in this area began in a heavy wooded parcel north of FM 1774 (**Figure 11**) then extended north into a semi-cleared field up to a farmstead with barns and fences. Ground visibility was 20 to 50 percent in the wooded section and vegetation included pines, cedars, oaks, and blackberry bushes, along with other unidentified trees and grasses. In the semi-cleared field ground visibility was 10 to 30 percent on the hilltop with ankle- to waist-high prairie grasses; oaks and other unidentifiable trees and prairie grasses were elsewhere (**Figure 12**). Eight shovel tests were excavated, BL04 to BL07 and JM05 to JM08, with clay observed at 50 to 60 cmbs only in the area close to FM 1774 and sand or sandy loam extending to 60+ cmbs in the remaining shovel tests leading up to the hilltop location. No cultural material was observed in any of the shovel tests or on the surface.

An adjoining parcel contained a manicured horse grazing field with short ankle-high grasses, large oaks and pines more than 40 ft (12.2 m) tall, and other unidentifiable tree and grass species (**Figure 13**). Ground visibility ranged from 10 to 40 percent on a relatively level surface. A small stream located close to the western boundary of the APE measured less than 1.6 ft (0.5 m) deep and wide; it continued south into the no access property (**Figure 14**). In all, 10 shovel tests were placed from FM 1486 to the southern property with no access (BL15 to BL19 and JM16 to JM20). Clay was commonly encountered at 50 cmbs along the western boundary of the APE. On the eastern boundary of the APE sand extended to 70 to 90 cmbs. No cultural materials were observed on the surface or subsurface.

East of FM 1486, land access was limited and restricted to various parcels for approximately 1.12 mi or 1.79 km. At that point, no access was granted all the way to the eastern terminus (see **Figures 4e-h**). Parcels near and adjacent to the high school included a disturbed cleared area behind the high school where a large water runoff area (**Figure 15**) and wooded area extended to FM 1486. East of the disturbed cleared area a young-growth dense woods setting extended to the next no access property (**Figure 16**). This section is in the PALM Map Unit 4 zone for which shovel testing is not recommended; therefore, the segment was only pedestrian surveyed. No cultural materials were observed on the surface. Ground visibility ranged from 10 to 30 percent in the cleared/disturbed section and 0 to 20 percent in the dense woods. Vegetation in the cleared/disturbed area included

only short mowed grass; other areas were characterized by mostly young oaks, pines, cedars, green briar, and other unidentified trees and grasses.

Access was granted to parcels near S Buckhorn Lane (see **Figure 4e**). Disturbance had occurred in the western end of the property where large trees had been cleared, resulting in nearly 100 percent ground visibility in some locations (**Figure 17**). The section is also developed with housing north and south of the proposed APE. Another wooded segment with housing intermixed started at the eastern end of the property (**Figure 18**) where a trailer home is seen partially in the woods. As with the previous area, this section fell under the PALM Map Unit 4 for which survey is not recommended. Therefore, the area was only walked—no shovel tests were conducted. Nothing cultural was observed on the surface.

Additional parcels in this area lie in very dense woods accessed from a north/south road connecting S Buckhorn Lane and S Brenda Lane (see **Figure 4e**). A small unnamed drainage (**Figure 19**) within Map Unit 2 received shovel testing (BL13, BL14, JM14, and JM15), with two shovel tests located on each bank. All four shovel tests were negative for cultural material. Sand was the prominent soil type, extending from 40 cmbs to a maximum depth of 80 cmbs. The extremely dense wooded area was accessed through an existing pipeline corridor east of S Brenda Lane (**Figure 20**). Vegetation included pines, oaks, cedar elms, greenbriar, and other unidentified trees and grasses with ground visibility at 20 to 50 percent. The trees also consisted of both young growth less than 10 feet (3.0 meters) tall and old growth from 30 to 40 ft (9.1 to 12.2 m) tall. The young growth trees were often close together (**Figure 21**) making it difficult to walk the property.

The remaining 2.2 mi (3.5 km) were not surveyed due to lack of access. Based on aerial photographs and field observations, the terrain appears very similar to the previously discussed adjacent segment in thick, dense woods. At the eastern end of the APE the future SH 249 ROW and this project's APE overlap.

## Recommendations

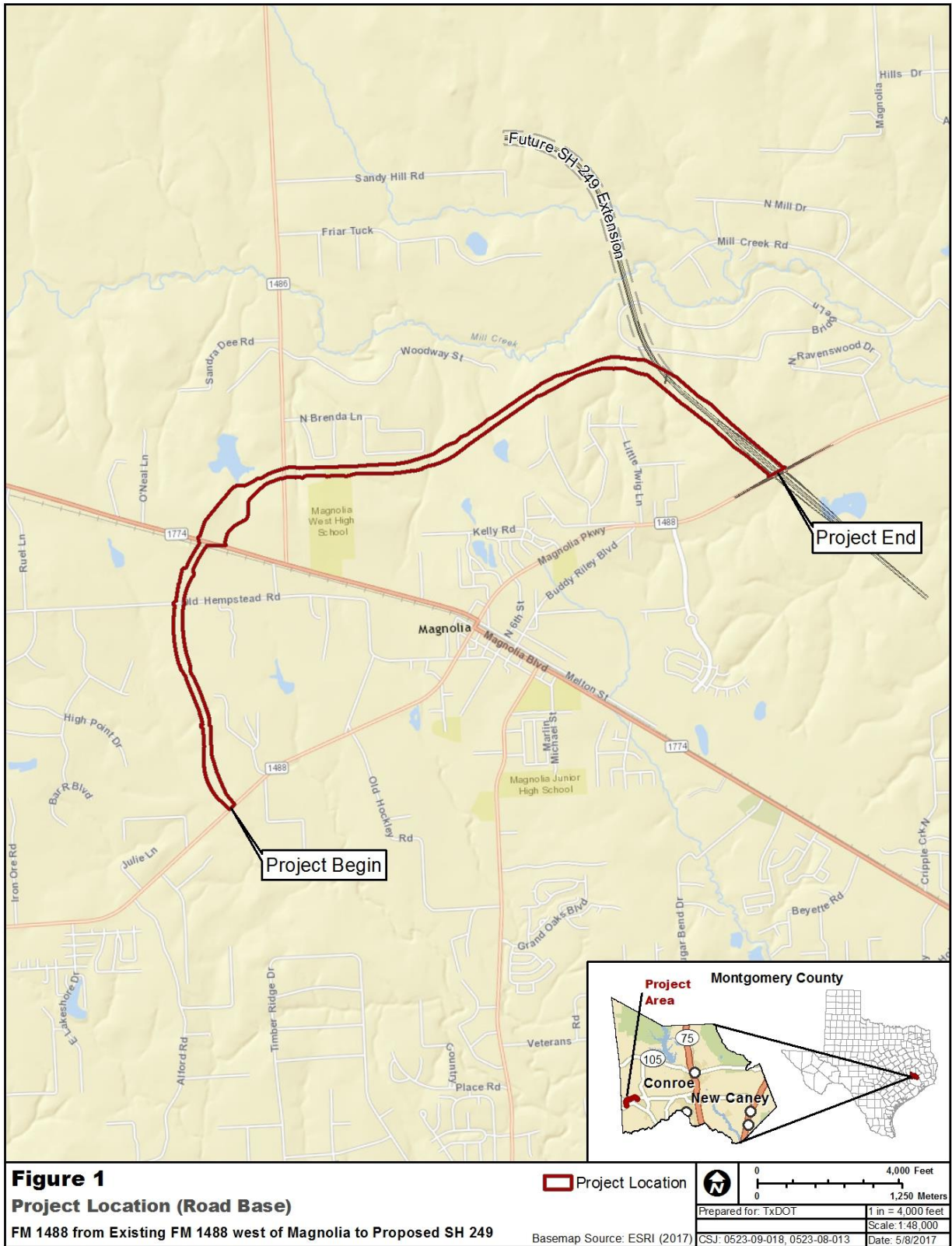
Results of the survey indicated that extensive disturbances have occurred in a majority of the APE due to previous construction activities, utility installations, commercial and residential development, sand mining operations, and cattle or horse grazing. No evidence was found of any preserved cultural deposits in any of the 39 shovel test locations or on the surface with a high degree of integrity. Additionally, personal communication with one landowner at the least disturbed environmental setting south of Old Hempstead Road confirmed that no cultural deposits or remains were ever observed or encountered on their property. Pedestrian survey was conducted on all parcels where right of entry was granted, whether shovel testing was required or not based on PALM data, since there were parcels in-between that required shovel testing. These 84.84 acres (34.3 ha) with right-of entry all occurred in the western half of the APE. No additional archeological investigations are warranted prior to construction activities for the western half of the APE. However, areas with no right of entry all fall within the eastern half of the APE and entirely within Map Unit 2 where 111.68 ac (45.2 ha) of surface survey is recommended. The parcels within the APE in the eastern half starting at S. Buckhorn Lane should be surveyed prior to any construction activities in this area.

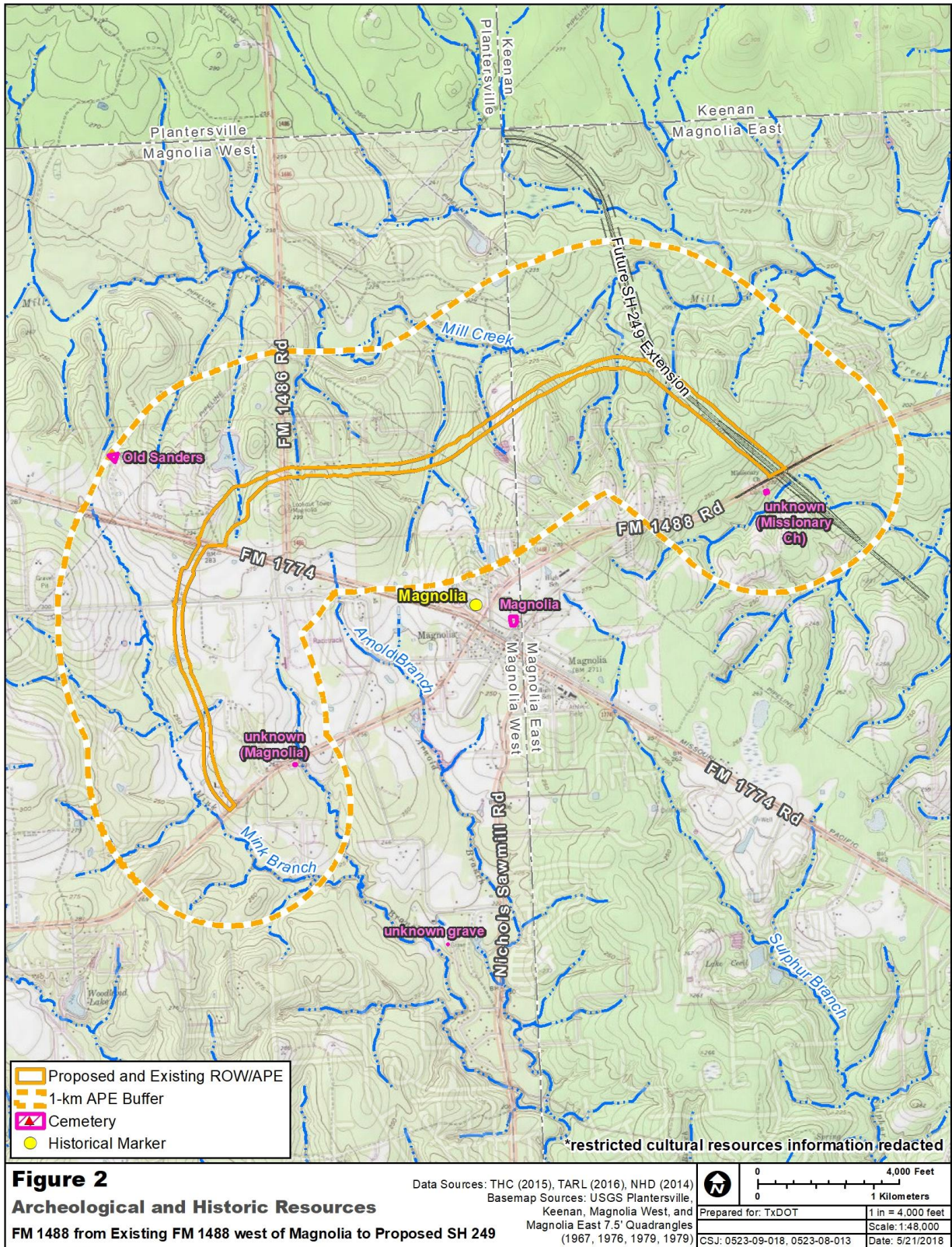
No artifacts were collected; therefore, only project records will be curated per TAC 26.16 and 26.17 at CAS at Texas State University where they will be made permanently available to future researchers.

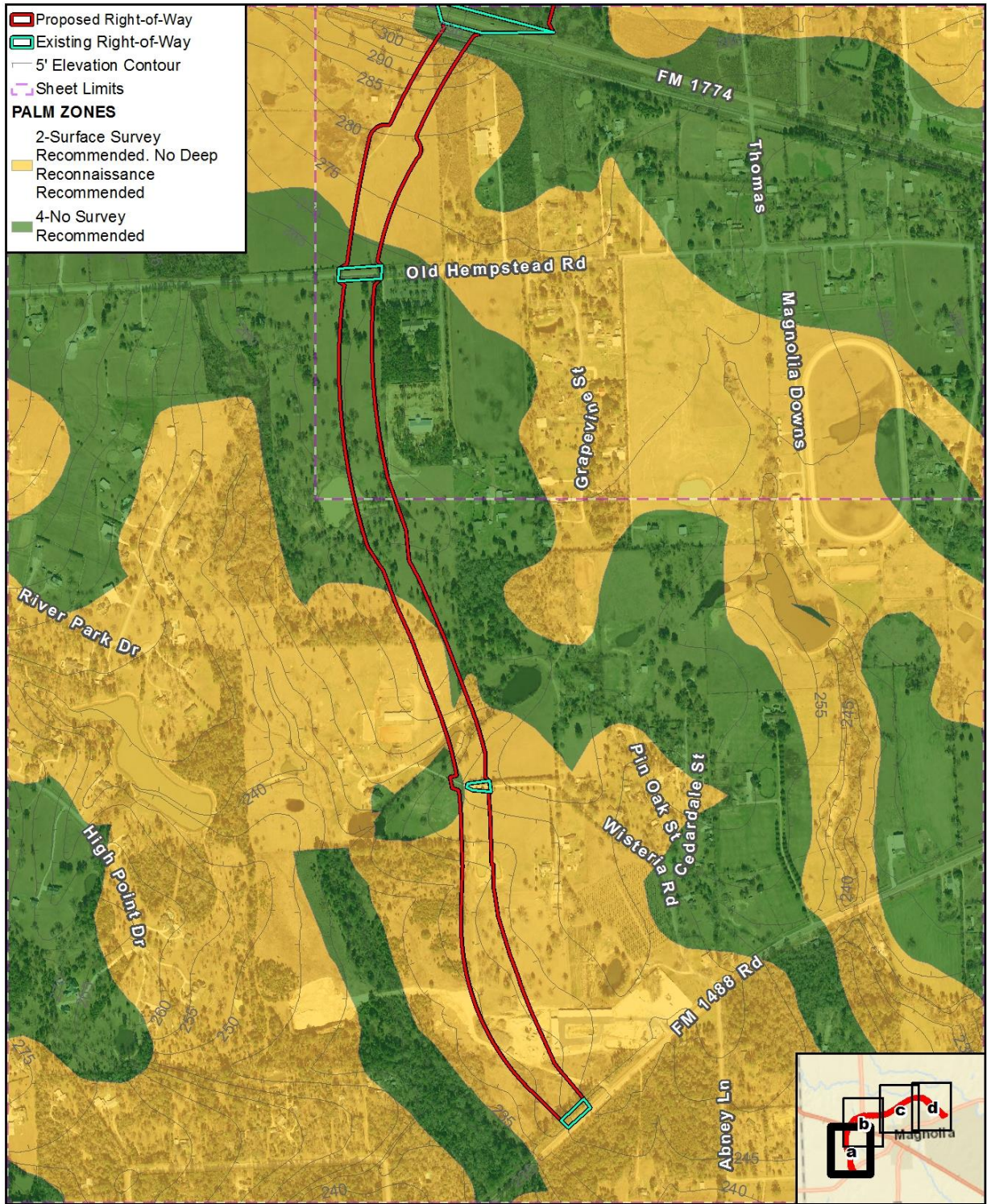
If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and TxDOT personnel should be notified immediately. During evaluation of any unanticipated finds and coordination between TxDOT and THC, clearing, preparation,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

## 5 FIGURES

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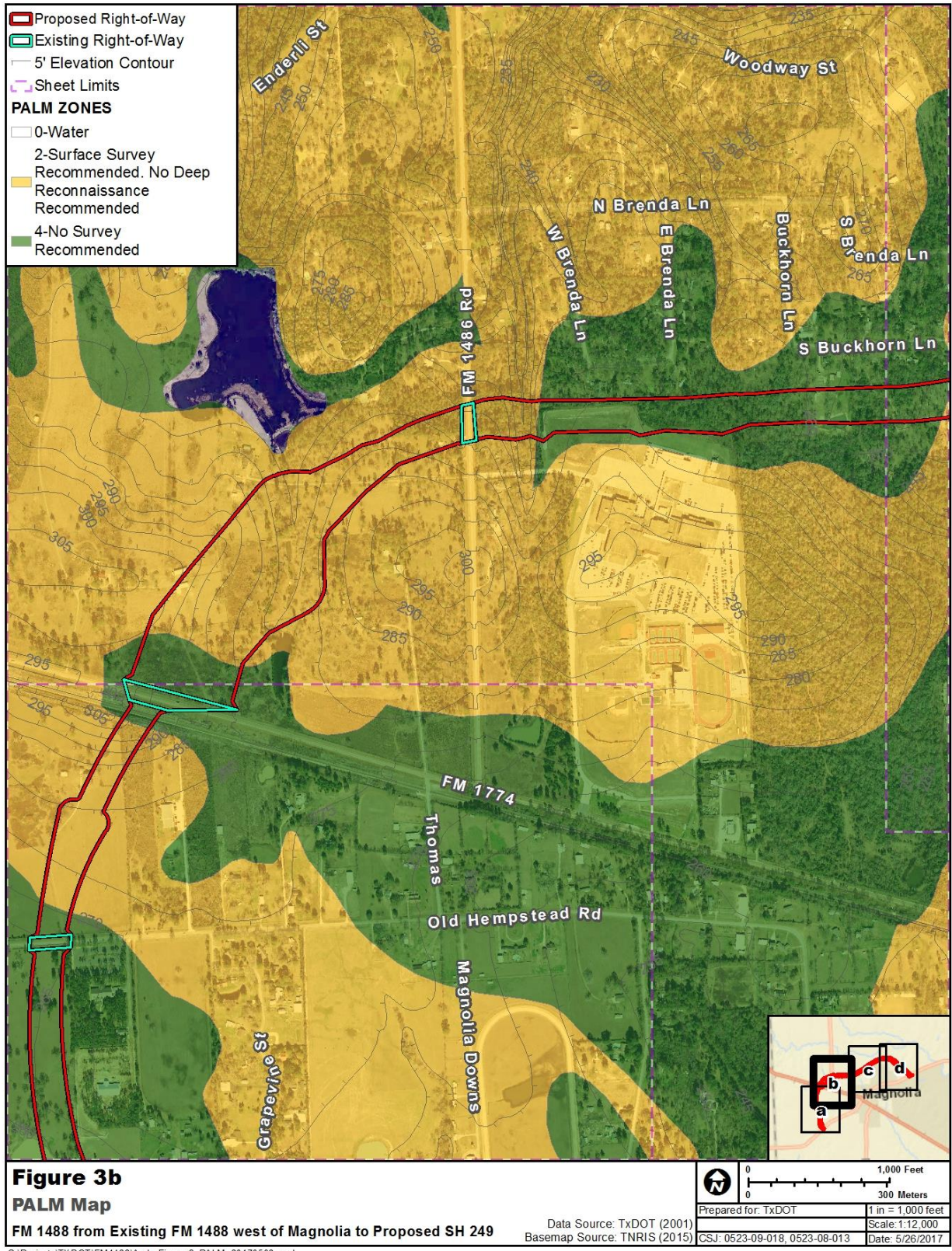
**Figure 3a**  
**PALM Map**  
 FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Source: TxDOT (2001)  
 Basemap Source: TNRIS (2015)

0 1,000 Feet  
 0 300 Meters  
 Prepared for: TxDOT  
 Scale: 1 in = 1,000 feet  
 CSJ: 0523-09-018, 0523-08-013  
 Date: 5/26/2017

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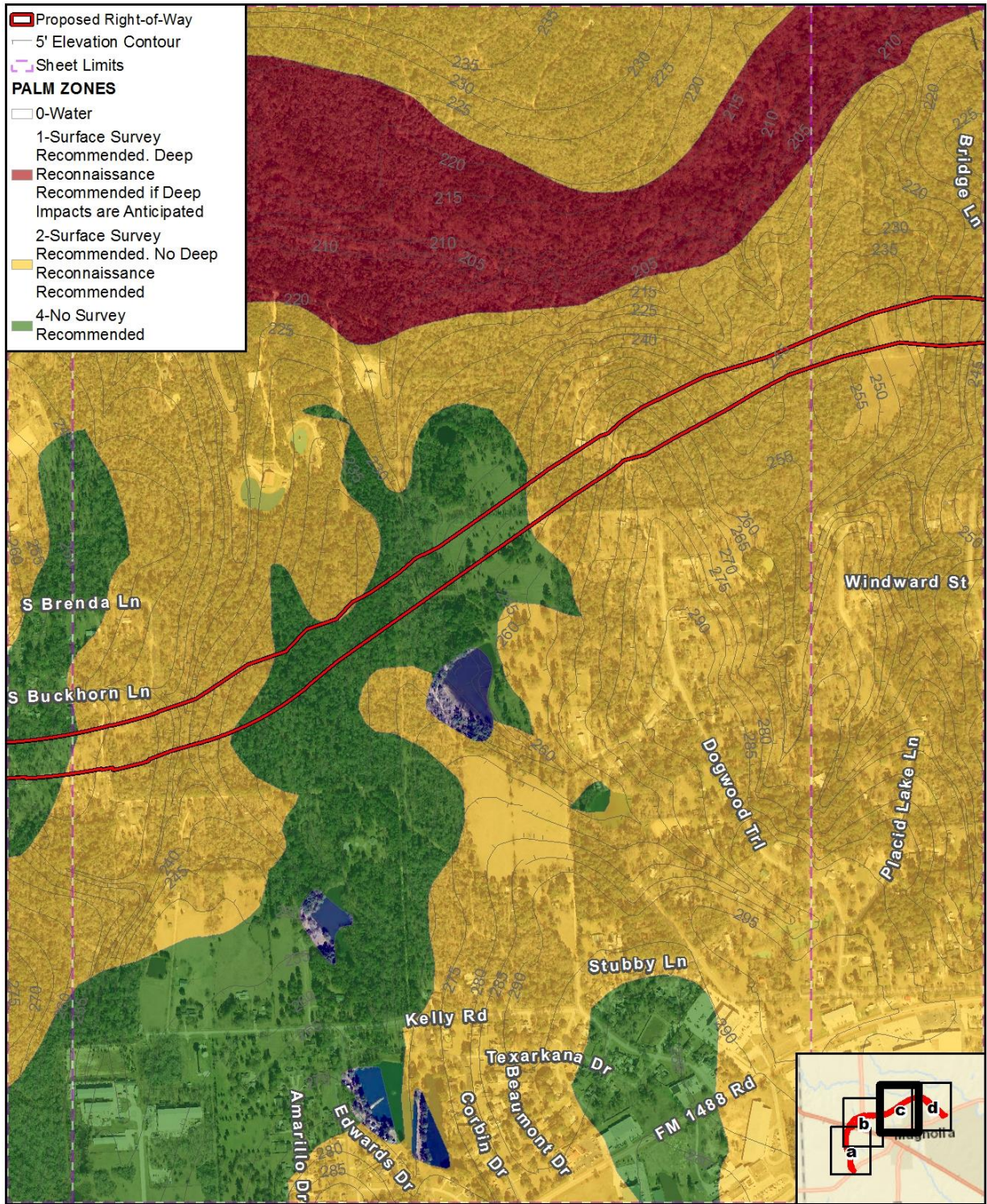




**Figure 3b**  
**PALM Map**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

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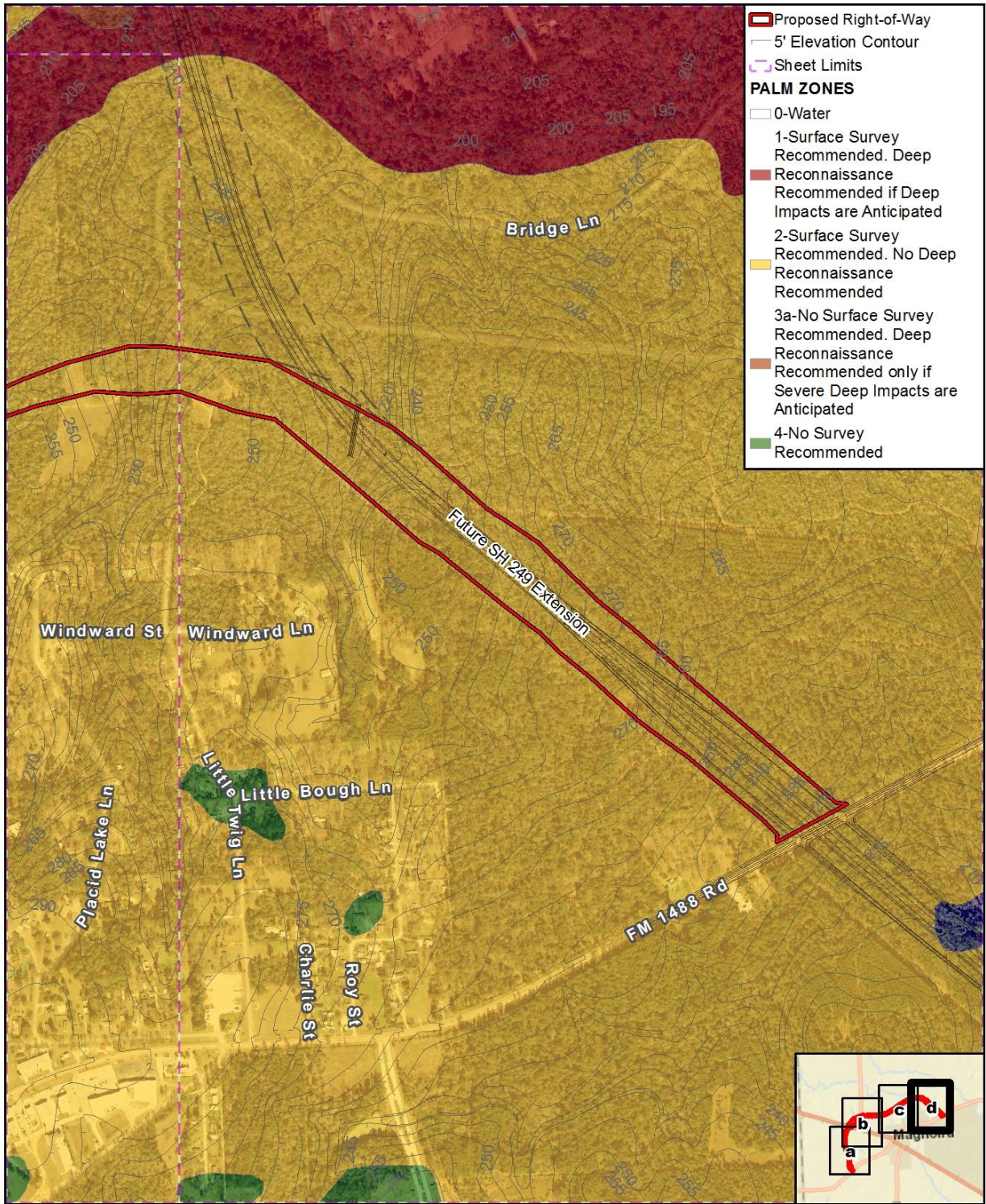


**Figure 3c**  
**PALM Map**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Source: TxDOT (2001)  
 Basemap Source: TNRS (2015)  
 Prepared for: TxDOT  
 Scale: 1:12,000  
 Date: 5/26/2017

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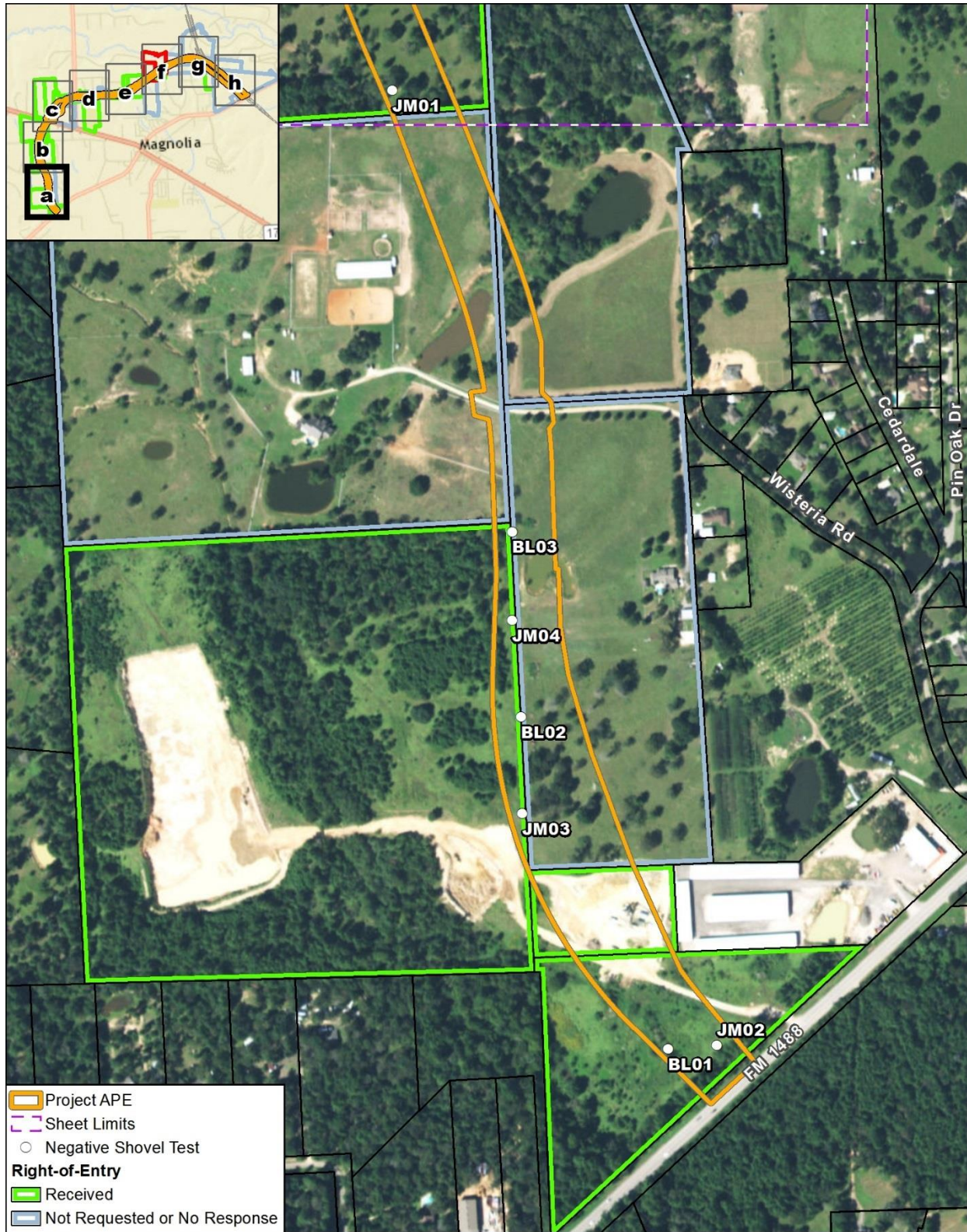


**Figure 3d**  
**PALM Map**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Source: TxDOT (2001)  
 Basemap Source: TNRS (2015)  
 Prepared for: TxDOT  
 Scale: 1:12,000  
 CSJ: 0523-09-018, 0523-08-013  
 Date: 5/26/2017

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Project APE  
 Sheet Limits  
 Negative Shovel Test  
**Right-of-Entry**  
 Received  
 Not Requested or No Response

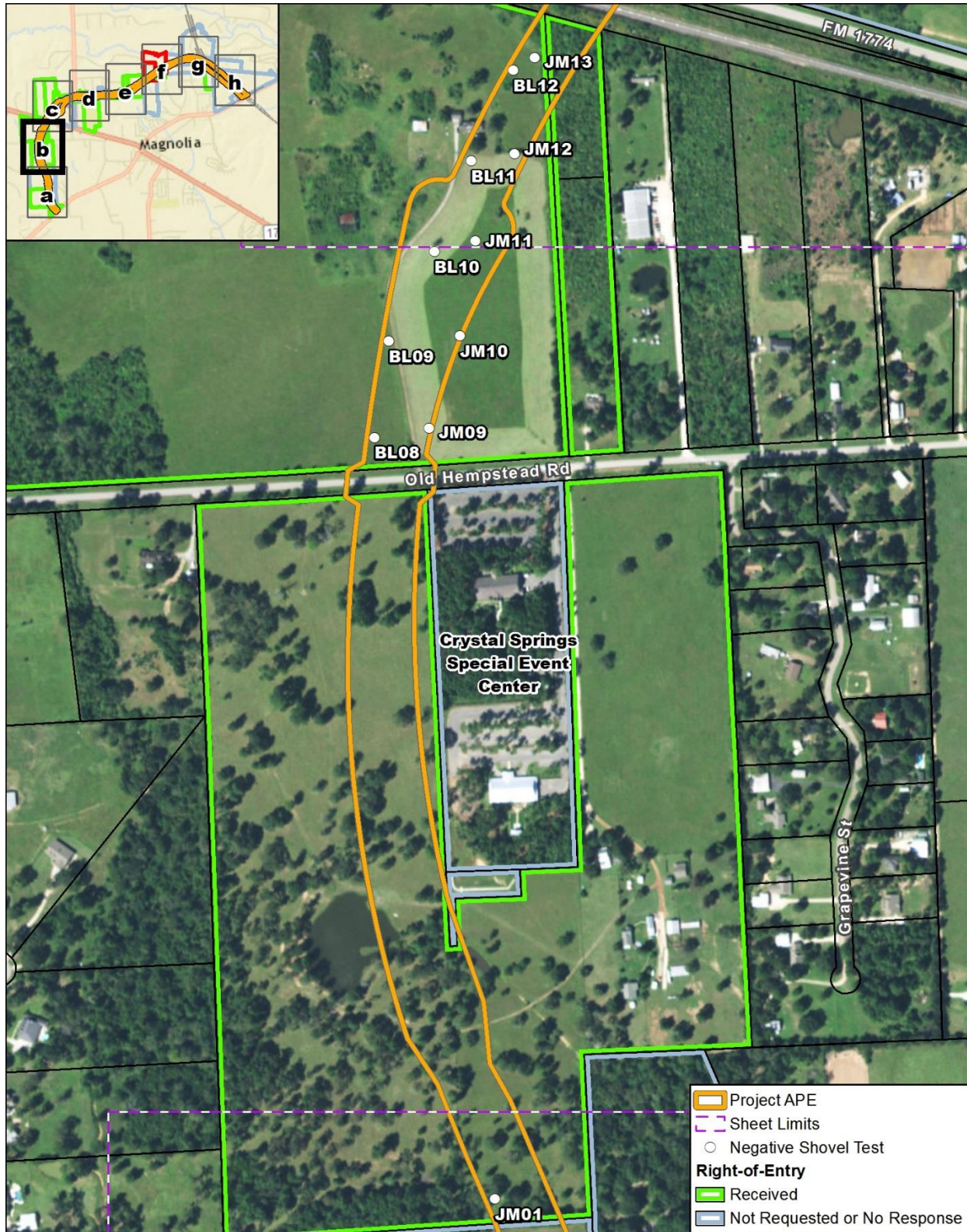
**Figure 4a**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

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	150 Meters
Prepared for: TxDOT	1 in = 500 feet
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000
	Date: 6/6/2017

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**Figure 4b**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)



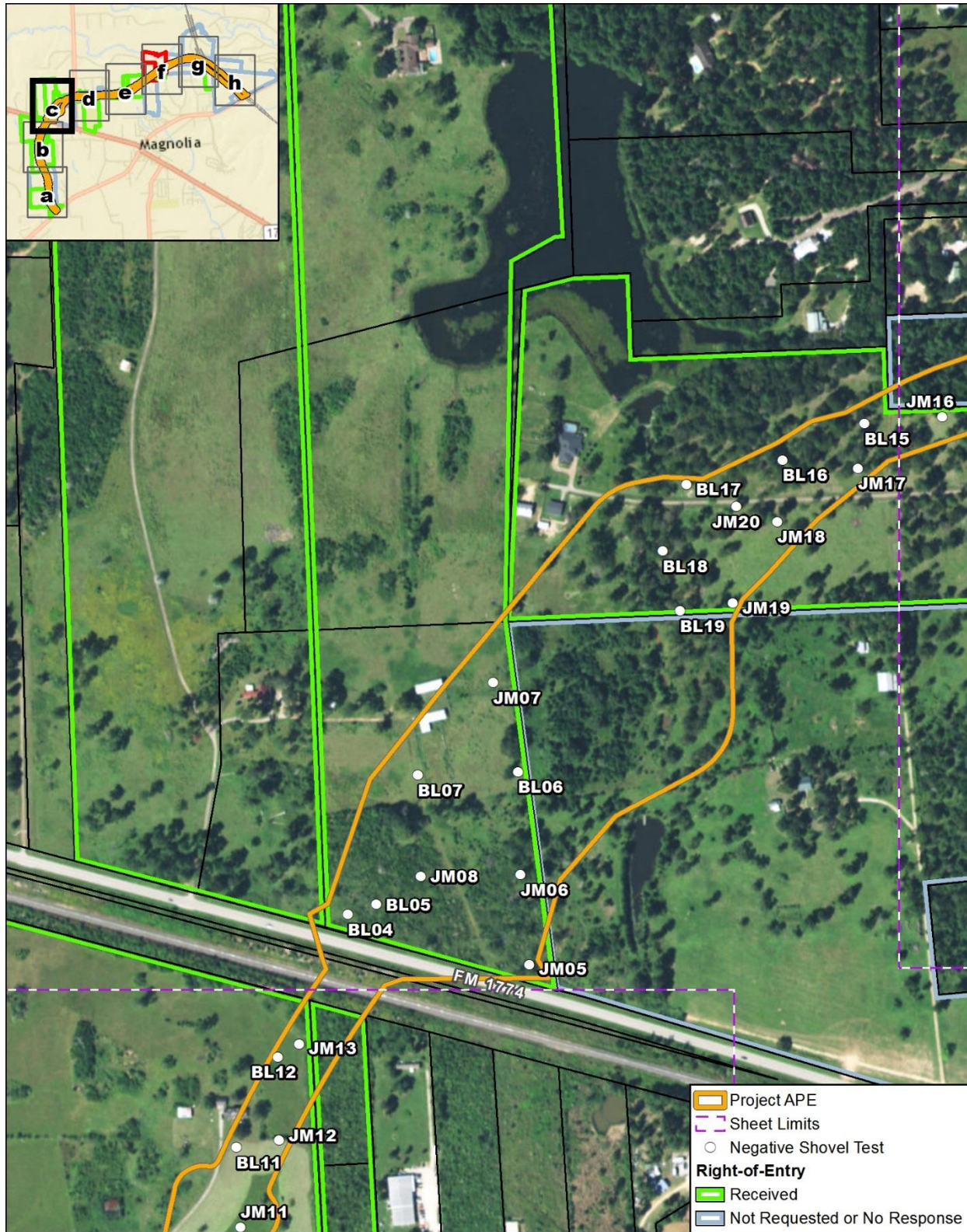
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Prepared for: TxDOT

Scale: 1:6,000

Date: 6/6/2017

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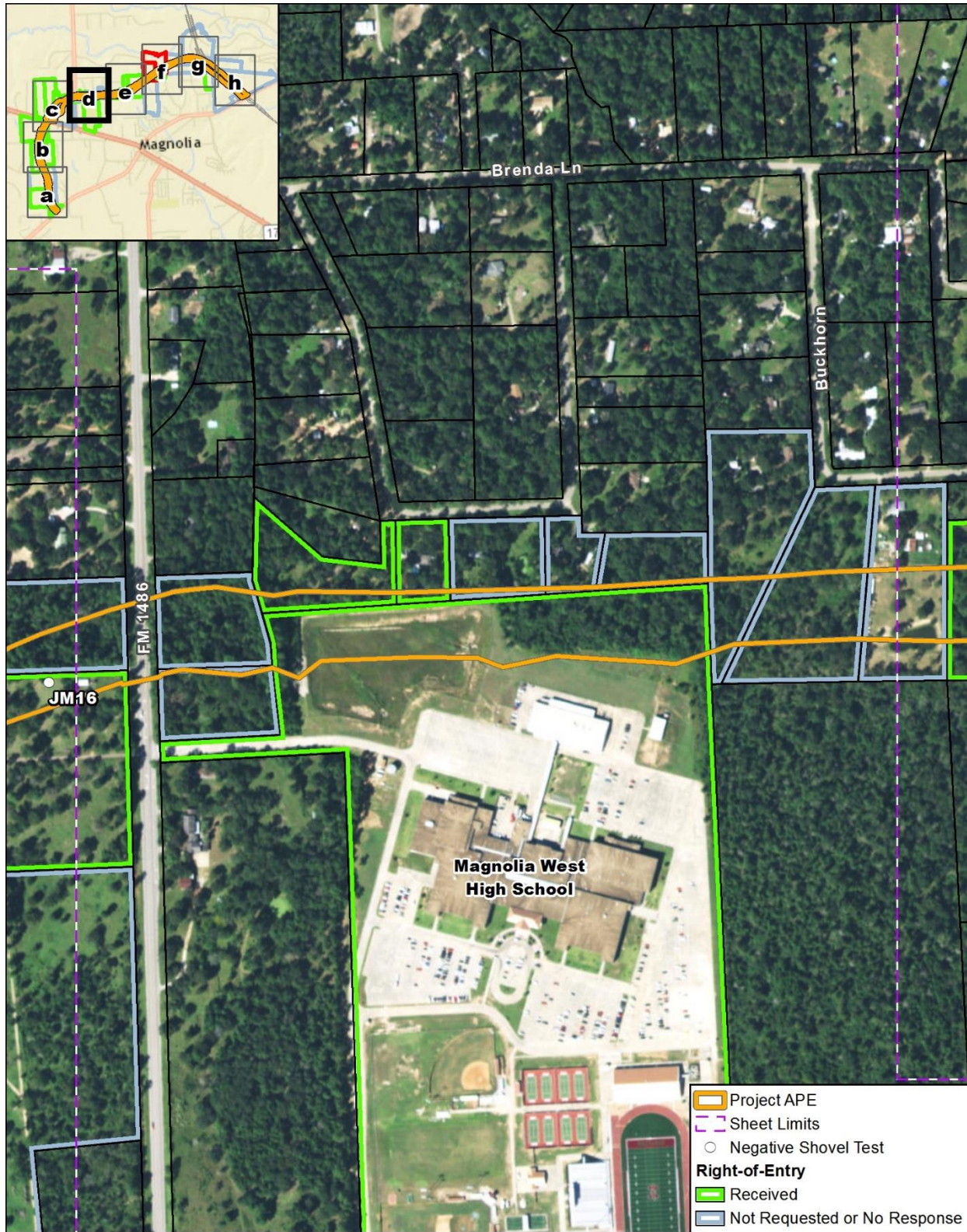
**Figure 4c**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

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	0	150 Meters
Prepared for: TxDOT	1 in = 500 feet	
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000	
	Date: 6/6/2017	

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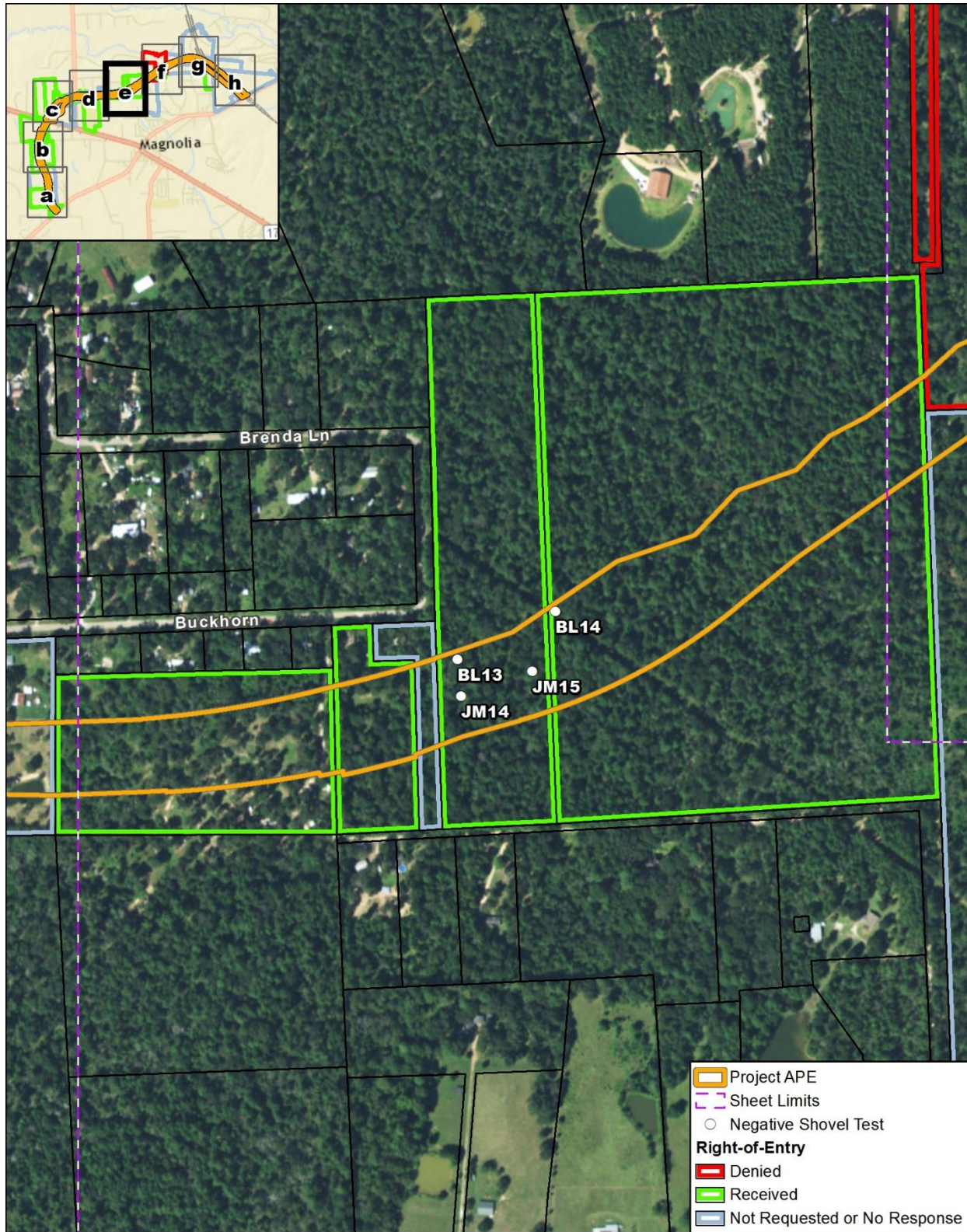
**Figure 4d**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

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	0	150 Meters
Prepared for: TxDOT	1 in = 500 feet	
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000	
	Date: 6/6/2017	

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**Figure 4e**  
**Survey Results**

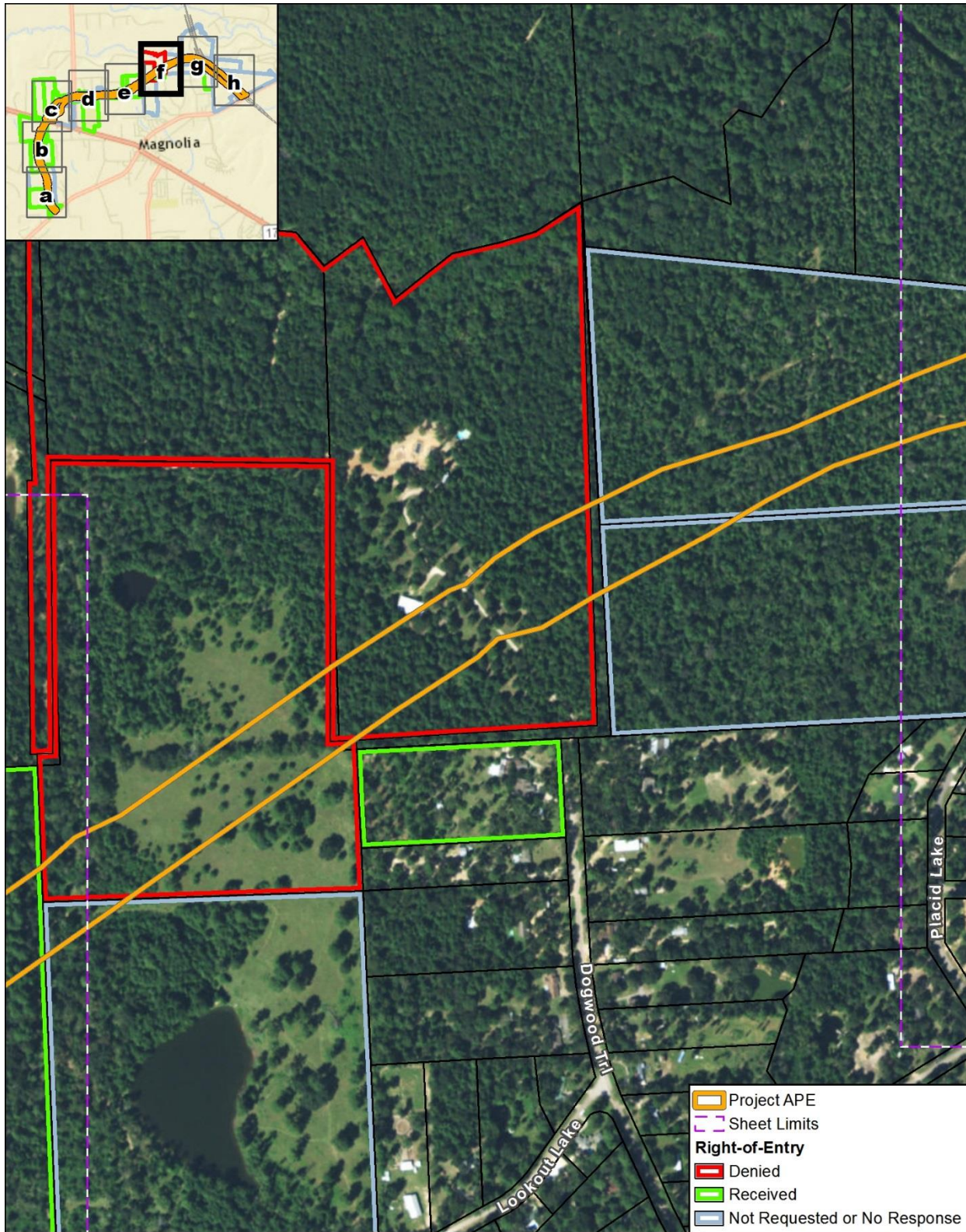
FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

	0	500 Feet
	0	150 Meters
Prepared for: TxDOT	1 in = 500 feet	
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000	
	Date: 6/6/2017	

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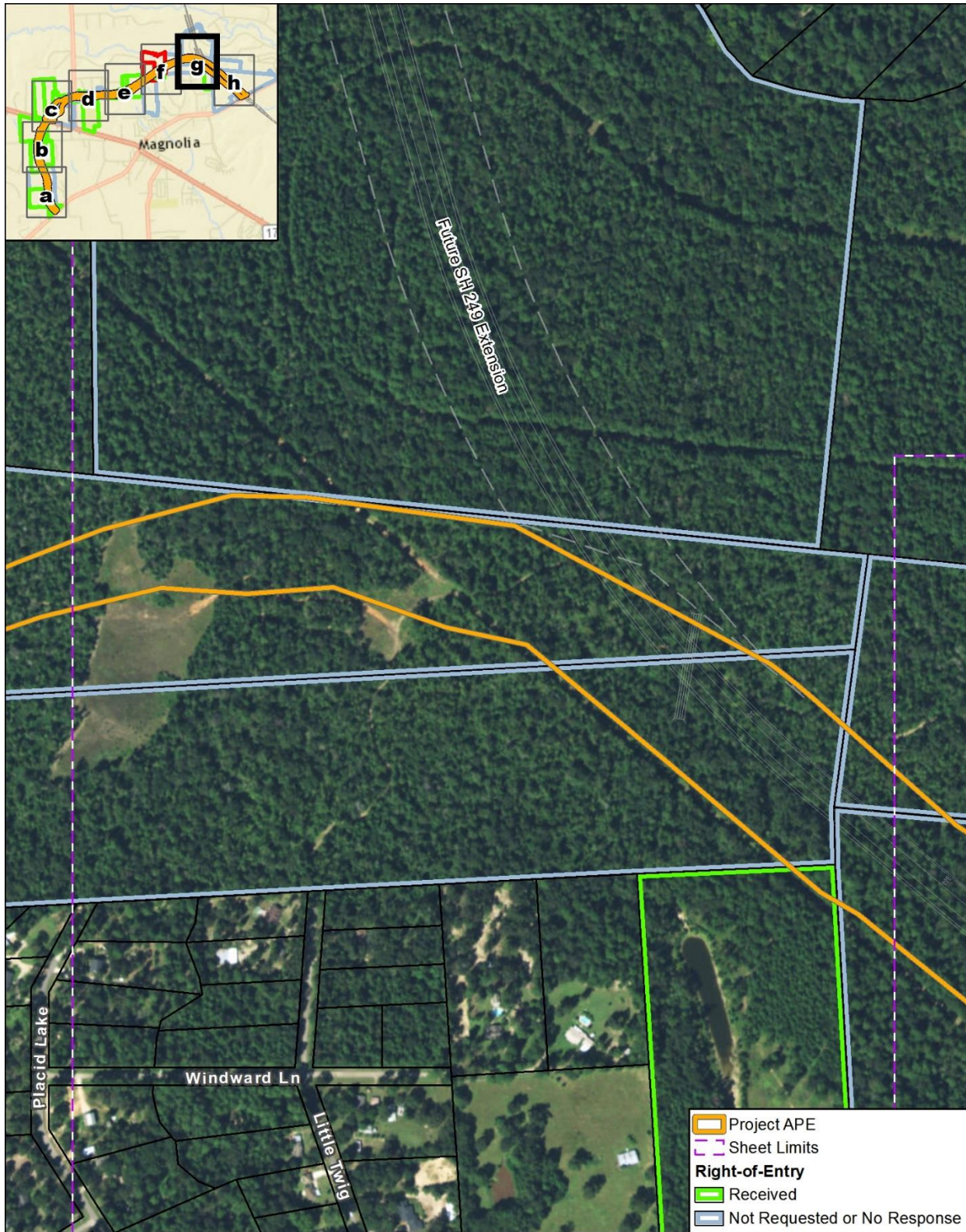
**Figure 4f**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

	0	500 Feet
	0	150 Meters
Prepared for: TxDOT	1 in = 500 feet	
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000	
	Date: 6/6/2017	

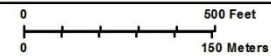
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**Figure 4g**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)



Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 0523-09-018, 0523-08-013	Date: 6/6/2017

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**Figure 4h**  
**Survey Results**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Data Sources:  
 CMEC (2017), THC (2016),  
 TARL (2016), NHD (2014)  
 Aerial Source:  
 NAIP (2016)

	0	500 Feet
	0	150 Meters
Prepared for: TxDOT	1 in = 500 feet	
CSJ: 0523-09-018, 0523-08-013	Scale: 1:6,000	
	Date: 6/2/2017	

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Figure 5. Sand mining yard at the western end of the APE; view to the northwest.



Figure 6. Fence line marking the no access area to the east by the sand mining operation, view to the north.

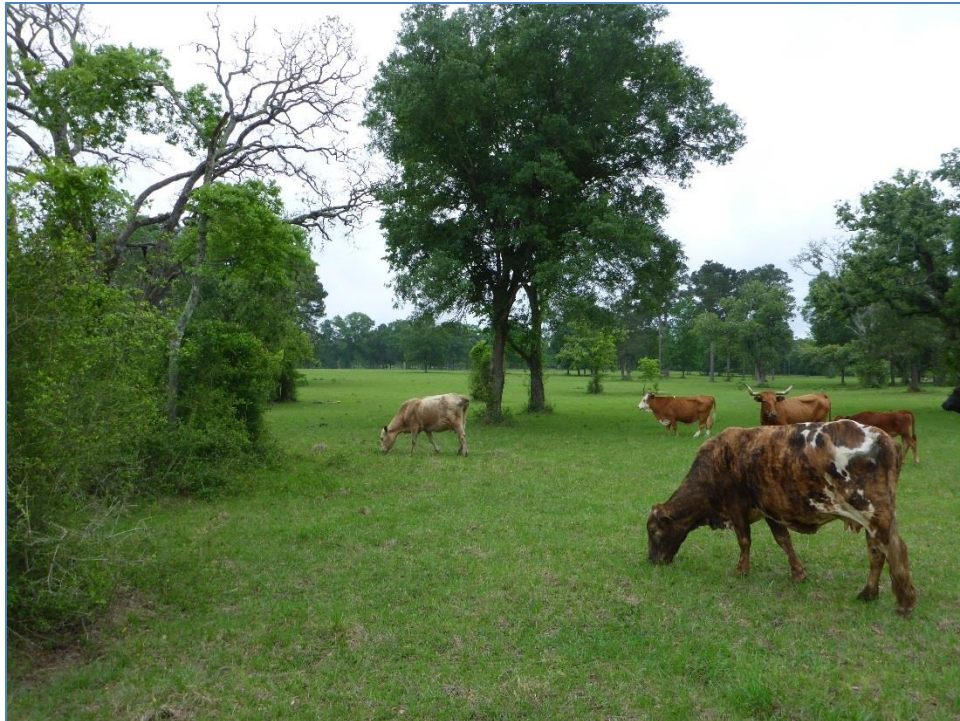


Figure 7. Property south of Old Hempstead Road; view to the south.



Figure 8. Small hilltop by shovel test JM01 south of Old Hempstead Road; view to the north.



Figure 9. Cleared field/front yard north of Old Hempstead Road; view to the northeast.



Figure 10. Abandoned, burned modern house north of Old Hempstead Road; view to the north.



Figure 11. Dense wooded area north of FM 1774; view to the north.



Figure 12. Terrain from shovel test JM07 on a hilltop; view to the south.



Figure 13. Property west of FM 1486 with horse and cow pasture; view to the southwest.



Figure 14. Small drainage in wooded area west of FM 1486; view to the west.





Figure 15. Large water runoff and wooded areas behind the high school; view to the west.



Figure 16. Young growth dense woods behind the high school; view to the east.



Figure 17. Cleared/disturbed area south of Buckhorn Lane; view to the east.



Figure 18. Trailer home east of the cleared/disturbed area; view to the east.

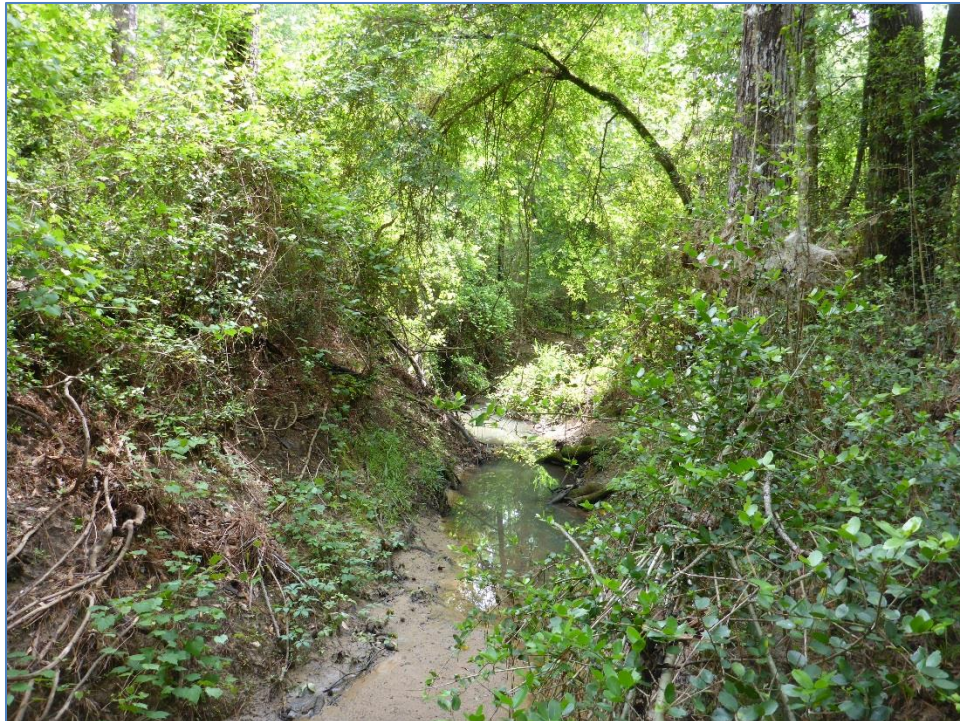


Figure 19. Small drainage in densely wooded area east of S Brenda Lane; view to the north.



Figure 20. Pipeline corridor in densely wooded area east of S Brenda Lane; view to the south.



Figure 21. Young growth trees in dense woods east of S Brenda Lane; view to the northeast.

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**APPENDIX A**  
**Shovel Test Results**

Appendix A: Shovel Test Results			
Shovel Test #	Depth*	Description	Artifacts
BL01	0-10 10-25 25-100	Dark brown (7.5YR3/3) sandy loam Strong brown (7.5YR4/6) sand Light brown (7.5YR6/4) sand	None
BL02	0-25 25-80 80-90	Brown (7.5YR4/3) sand/sandy loam Light brown (7.5YR6/4) sand Brown (7.5YR5/3) sand with 25% Yellowish brown (10YR5/8) clay and 15% Strong brown (7.5YR4/6) sandy clay	None
BL03	0-25 25-45	Brown (7.5YR4/3) sandy loam Brown (7.5YR5/3) sandy clay with 20% Strong brown (7.5YR4/6) clay	None
BL04	0-20 20-55 55-60 60+	Brown (7.5YR4/2) sandy loam Brown (7.5YR5/2) wet sand Brown (7.5YR5/2) wet sand with 20% Strong brown (7.5YR4/6) wet clay Water table	None
BL05	0-10 10-55 55-60 60+	Brown (7.5YR4/2) sandy loam Brown (7.5YR5/2) wet sand Brown (7.5YR5/2) wet sand with 20% Strong brown (7.5YR4/6) wet clay Water table	None
BL06	0-20 20-80	Brown (7.5YR4/2) sand/sandy loam Brown (7.5YR5/4) sand	None
BL07	0-10 10-100	Brown (7.5YR4/2) sand/sandy loam Brown (7.5YR5/4) sand	None
BL08	0-35 35-60	Brown (7.5YR4/3) sandy loam Brown (7.5YR4/2) sandy clay with 20% Dark brown (7.5YR3/2) clay	None
BL09	0-40 40-50	Brown (7.5YR4/3) sandy loam Dark brown (7.5YR3/2) clay with 25% strong brown (7.5YR4/6) clay	None
BL10	0-35 35-50	Brown (10YR4/3) sandy loam Brown (7.5YR5/3) sandy clay with 25% Yellowish red (5YR5/8) clay	None
BL11	0-10 10-30 30-40	Dark brown (7.5YR3/2) sandy loam Brown (7.5YR4/3) sandy loam with 25% pea-sized gravels Brown (7.5YR5/3) sandy clay with 25% Red (2.5YR4/8) clay	None
BL12	0-10 10-35 35-50 50-60	Dark brown (7.5YR3/2) sandy loam Brown (7.5YR4/3) sand Brown (7.5YR5/3) sand and 10% pea-sized gravels Brown (7.5YR4/2) sandy loam with 30% Red (2.5YR4/8) clay	None
BL13	0-10 10-60 60-80	Dark brown (7.5YR3/2) sandy loam Light brown (7.5YR6/4) sand Light brown (7.5YR6/4) sand with 15% Strong brown sand	None
BL14	0-15 15-40 40+	Dark brown (7.5YR3/2) sandy loam Light brown (7.5YR6/4) sand Root bound	None
BL15	0-40 40+	Brown (7.5YR4/3) sandy loam Root bound	None
BL16	0-10 10-50 50-65	Dark brown (7.5YR3/2) sandy loam Light yellowish brown (10YR6/4) sand Light yellowish brown (10YR6/4) sandy clay with 20% Strong brown (7.5YR4/6) clay	None
BL17	0-10 10-20 20-40	Dark brown (7.5YR3/2) sandy loam Light yellowish brown (10YR6/4) sand Light yellowish brown (10YR6/4) sandy clay with 20% Strong brown (7.5YR4/6) clay	None
BL18	0-10 10-50 50-60	Brown (7.5YR4/3) sandy loam Brown (7.5YR5/4) sand Brown (7.5YR5/4) sandy clay with 20% Brown (7.5YR4/6) clay	None



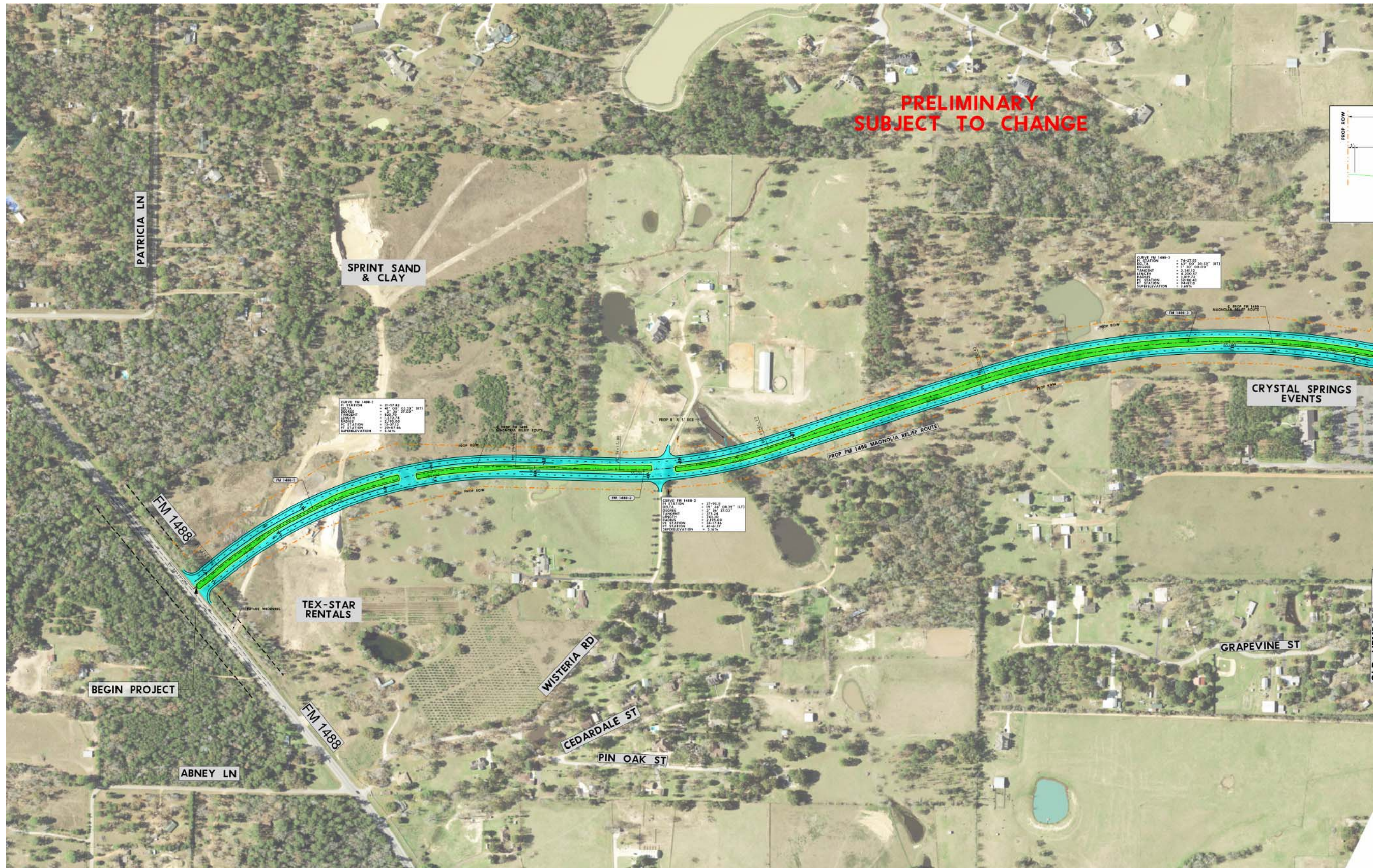
Appendix A: Shovel Test Results			
Shovel Test #	Depth*	Description	Artifacts
BL19	0-10 10-17 17-30	Dark brown (7.5YR3/2) sandy loam Light brown (7.5YR6/4) sand with 20% Strong brown (7.5YR4/6) sand Light brown (7.5YR6/4) clay with 30% Red (2.5YR4/8) clay	None
JM01	0-15 15-40 40-55	Dark yellowish brown (10YR3/4) sand Yellowish brown (7.5YR5/4) loamy sand Brownish yellow (7.5YR6/6) loamy sand	None
JM02	0-20 20-45	Reddish brown (5YR4/4) loamy sand Reddish brown (5YR5/4) sandy clay with Dark red (2.5YR3/6) sandy clay and Yellow (10YR7/6) sandy clay	None
JM03	0-5 5-20 20-35	Brown (10YR5/3) loamy sand Light yellowish brown (10YR6/4) sandy clay with gray (10YR6/1) sandy clay Light yellowish brown (10YR6/4) sandy clay with Dark red (2.5YR3/6) sandy clay	None
JM04	0-20 20-60 60-75	Brown (10YR5/3) loamy sand Yellow (10YR7/6) sand Light red (2.5YR6/6) sandy clay with Gray (10YR6/1) sandy clay	None
JM05	0-70 70+	Very pale brown (10YR7/4) sand Water table	None
JM06	0-15 15-55 55+	Brown (10YR5/3) sandy loam Very pale brown (10YR7/4) sand Water table	None
JM07	0-20 20-90	Brown (10YR5/3) sandy loam Very pale brown (10YR7/4) sand	None
JM08	0-10 10-60 60+	Brown (10YR5/3) sandy loam Very pale brown (10YR7/4) sand Water table	None
JM09	0-10 10-40 40-60 60+	Dark grayish brown (10YR4/2) sandy loam Light yellowish brown (10YR6/4) sandy loam Gray (10YR5/1) sandy loam with Yellowish red (10YR5/6) sandy loam Water table	None
JM10	0-10 10-50 50+	Dark grayish brown (10YR4/2) sandy loam Gray (10YR5/1) sandy loam with Yellowish brown (10YR5/6) sandy loam Water table	None
JM11	0-10 10-30 30-40	Dark grayish brown (10YR4/2) sandy loam Yellowish brown (10YR5/4) sandy loam Yellow (10YR7/8) clay	None
JM12	0-10 10-40 40-90	Dark grayish brown (10YR4/2) sandy loam Yellowish brown (10YR5/4) sandy loam Gray (10YR5/1) clay with Yellowish red (10YR5/6) sandy loam	None
JM13	0-20 20-50 50-60	Dark grayish brown (10YR4/2) sandy loam Yellowish brown (10YR5/4) sandy loam Dark yellowish brown (10YR4/6) clay with Light red (2.5YR6/8) clay	None
JM14	0-10 10-20 20-60 60+	Dark yellowish brown (10YR4/2) sandy loam Very pale brown (10YR7/3) sandy loam Very pale brown (10YR7/3) sandy loam with Yellowish brown (10YR5/4) sandy loam Water table	None
JM15	0-5 5-40	Dark grayish brown (10YR4/2) sandy loam Very pale brown (10YR7/3) sand	None
JM16	0-15 15-90	Dark grayish brown (10YR4/2) sandy loam Very pale brown (10YR8/4) sand with pebbles	None
JM17	0-15 15-75 75-85	Dark grayish brown (10YR4/2) sandy loam Very pale brown (10YR8/4) sand Gray (10YR5/1) sand	None

Appendix A: Shovel Test Results			
Shovel Test #	Depth*	Description	Artifacts
JM18	0-10	Dark grayish brown (10YR4/2) sandy loam	None
	10-60	Very pale brown (10YR8/4) sand	
	60-70	Very pale brown (10YR8/4) sand with Brownish yellow (10YR6/6) sand	
JM19	0-10	Dark grayish brown (10YR4/2) sandy loam	None
	10-50	Very pale brown (10YR8/4) sand	
	50-65	Very pale brown (10YR8/4) sand with Brownish yellow (10YR6/6) sand and pebbles and charcoal at 60 cmbs	
JM20	0-10	Dark grayish brown (10YR6/4) sandy loam	None
	10-40	Very pale brown (10YR8/4) sand	
	40-50	Brownish yellow (10YR6/6) clay with Light yellowish brown (10YR6/4) clay	

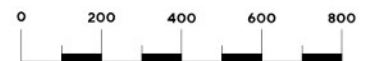
\*centimeters below surface

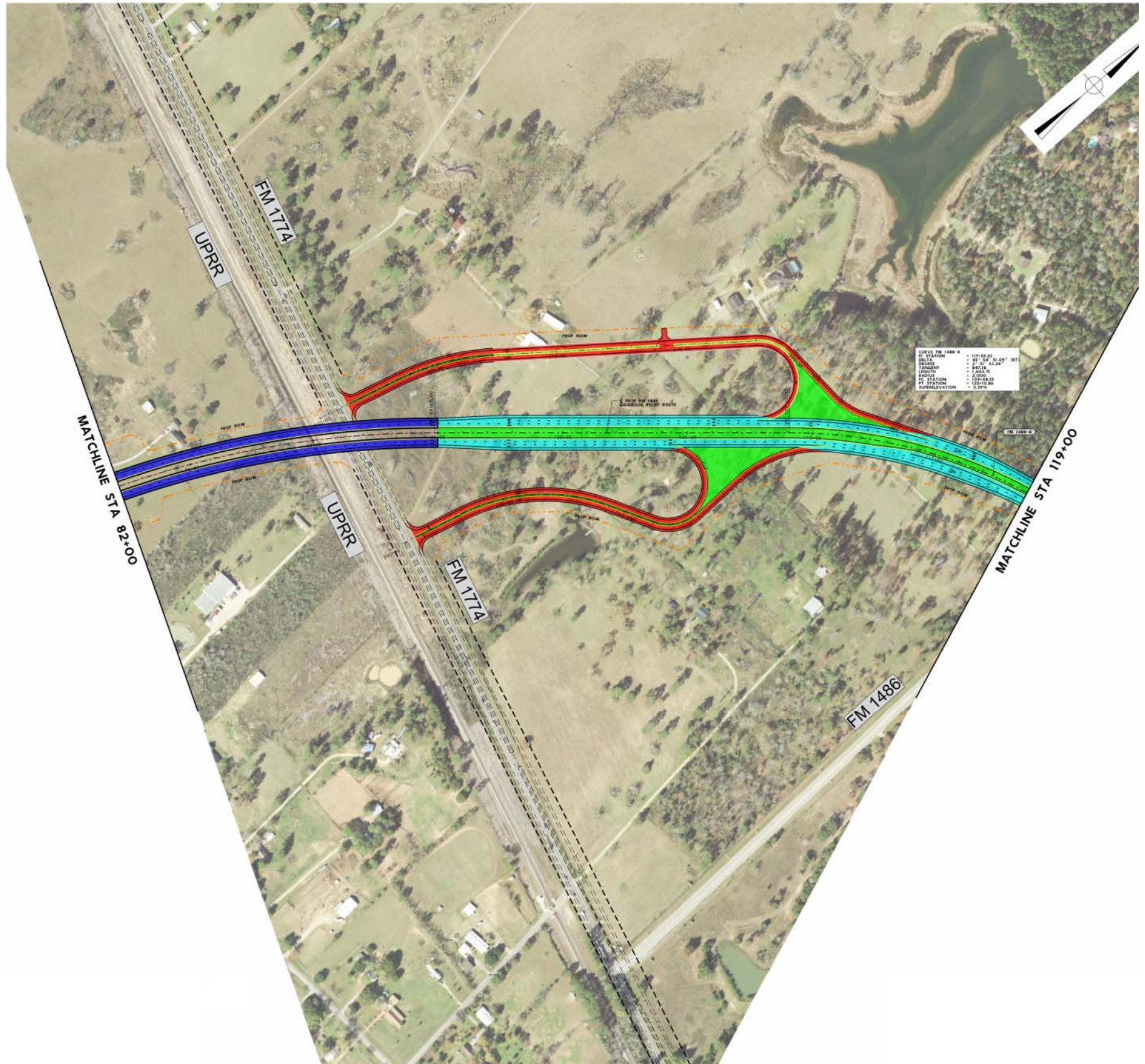
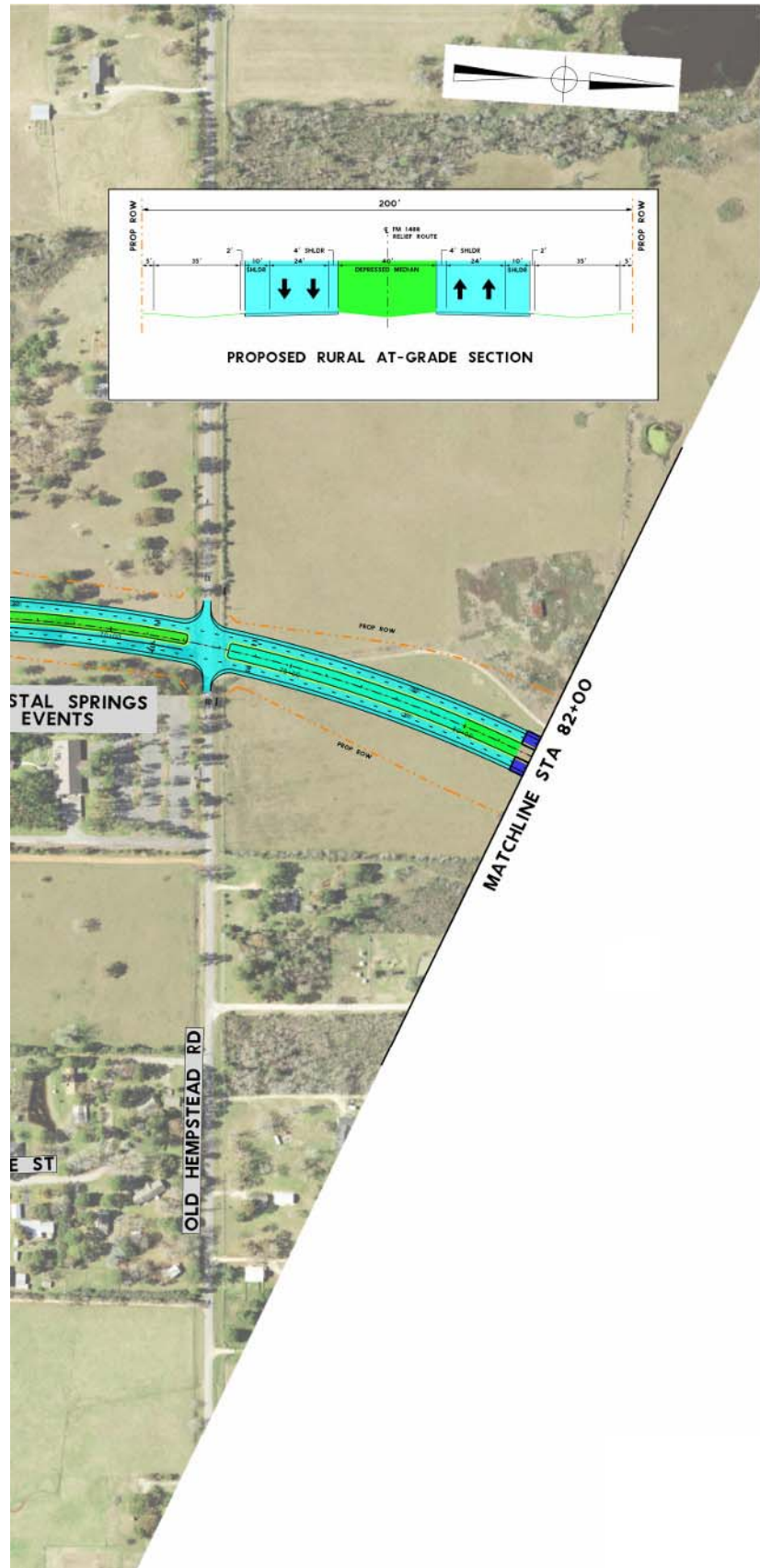
## **APPENDIX B**

### **Project Schematics**



FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249  
 Project Layout  
 CSJ: 0523-09-018, 0523-08-013  
 Sheet 1 of 5

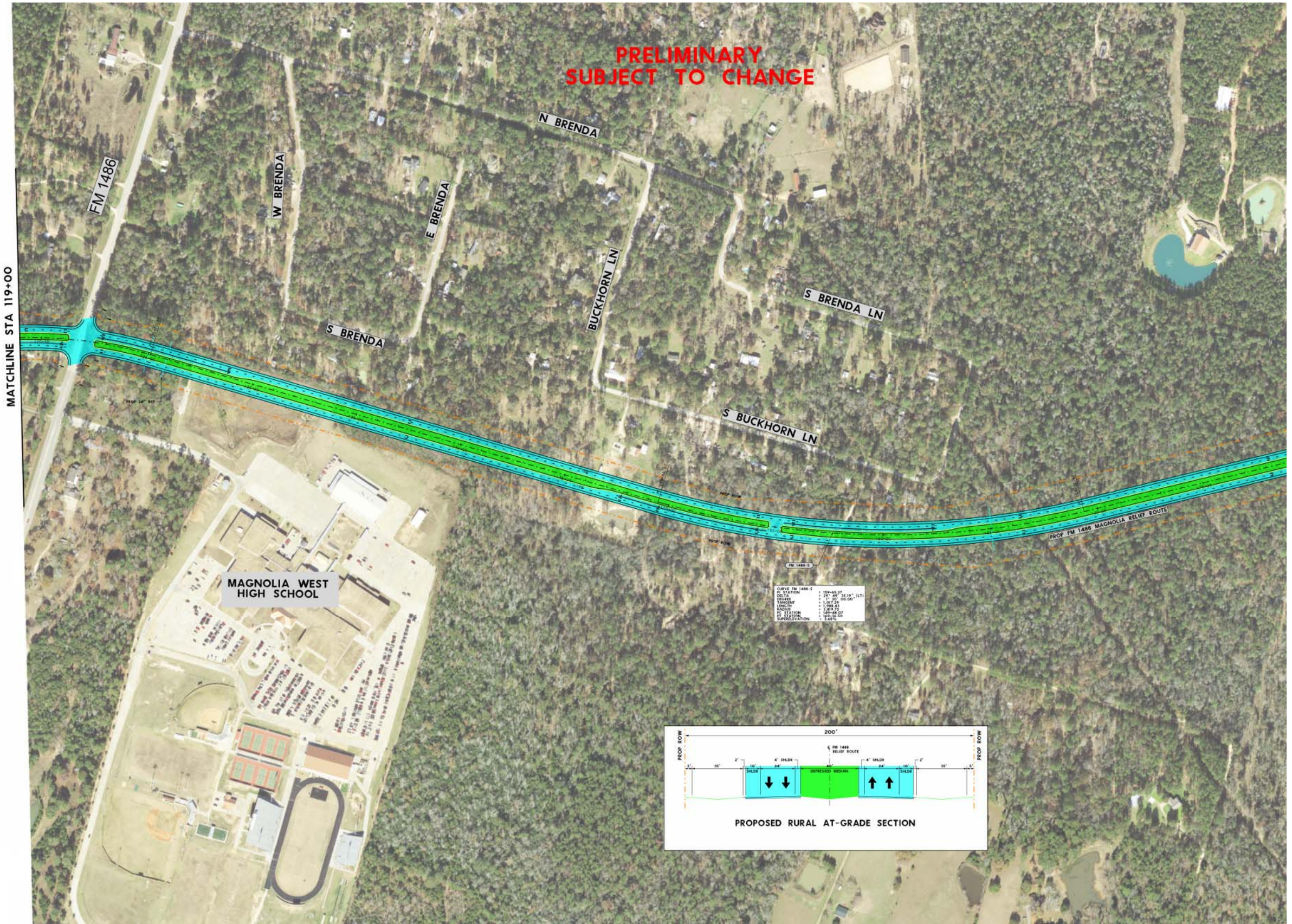




FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249  
 Project Layout  
 CSJ: 0523-09-018, 0523-08-013  
 Sheet 2 of 5

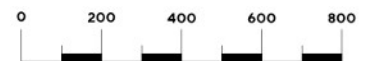
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|----------------------------|--|-------------------------|--|
| EXIST TRAFFIC DIRECTION    |  | PROPOSED RETAINING WALL |  |
| PROPOSED TRAFFIC DIRECTION |  | PROPOSED PAVEMENT       |  |
| PROPOSED ROW               |  | PROPOSED GRADE MEDIAN   |  |
| PROPOSED STRIPING          |  | PROP LOCAL ACCESS ROAD  |  |
| PROPERTY LINES             |  | PROPOSED BRIDGES        |  |
| PROPOSED CULVERTS          |  | CURVE NUMBER            |  |

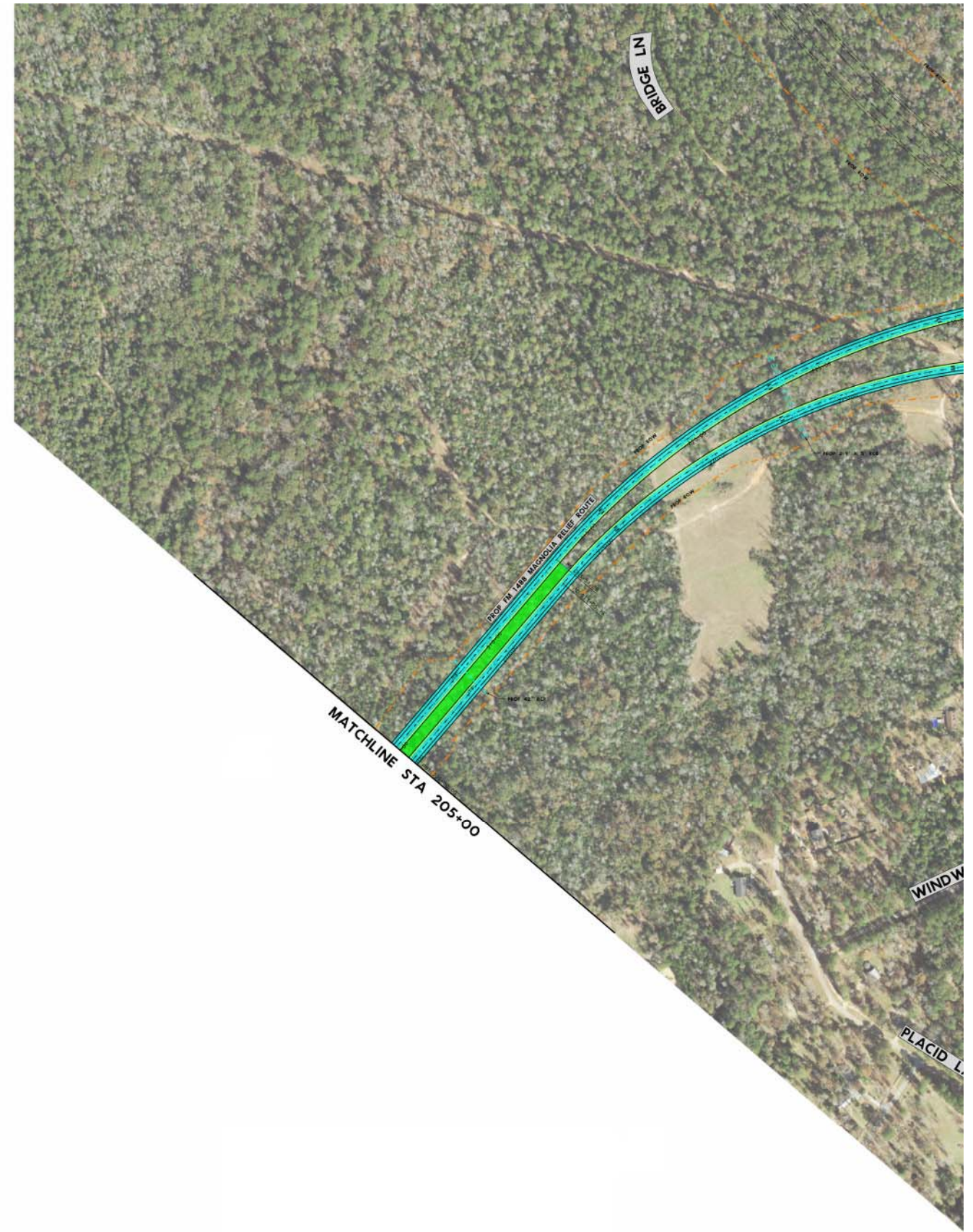
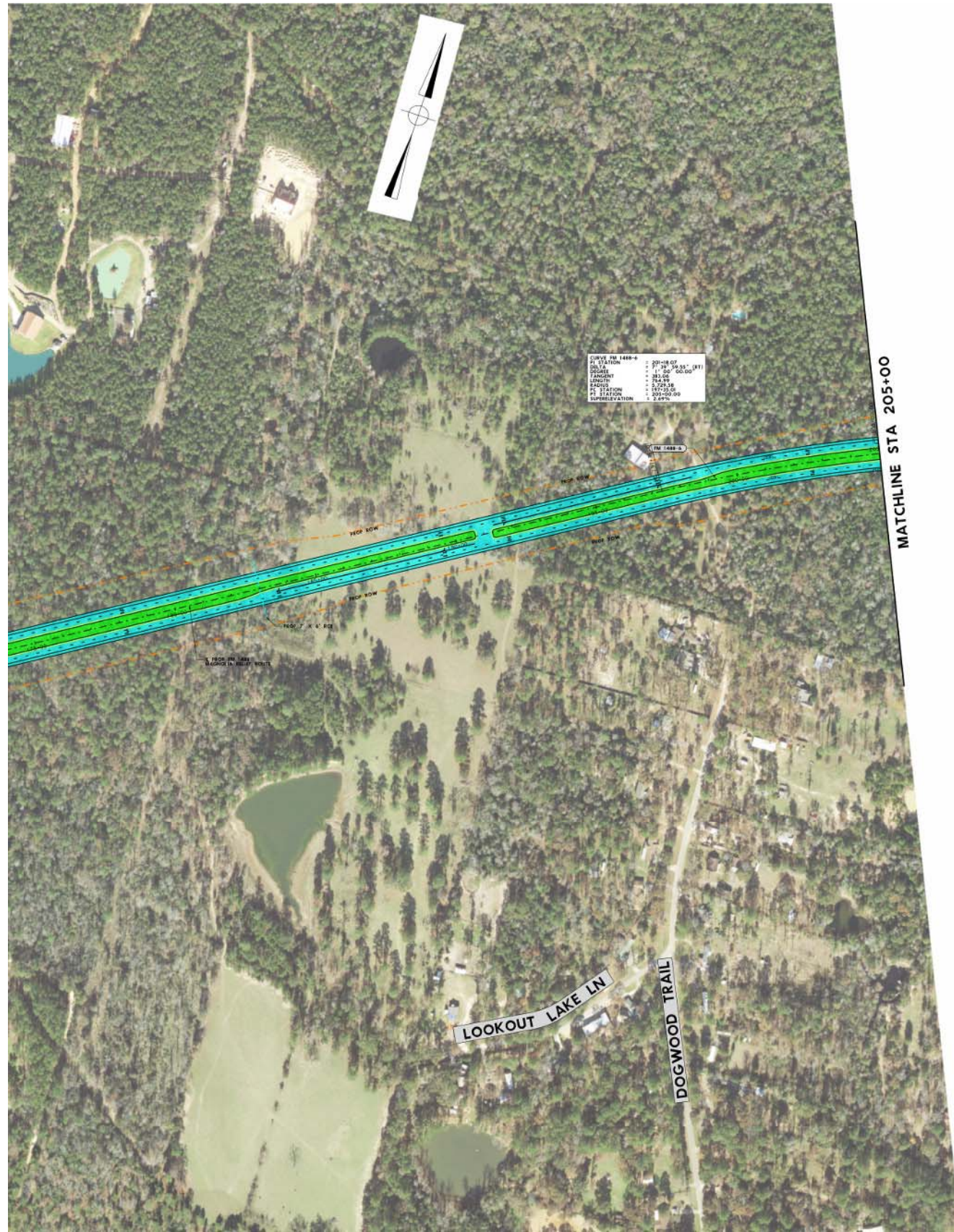




FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249  
 Project Layout  
 CSJ: 0523-09-018, 0523-08-013  
 Sheet 3 of 5

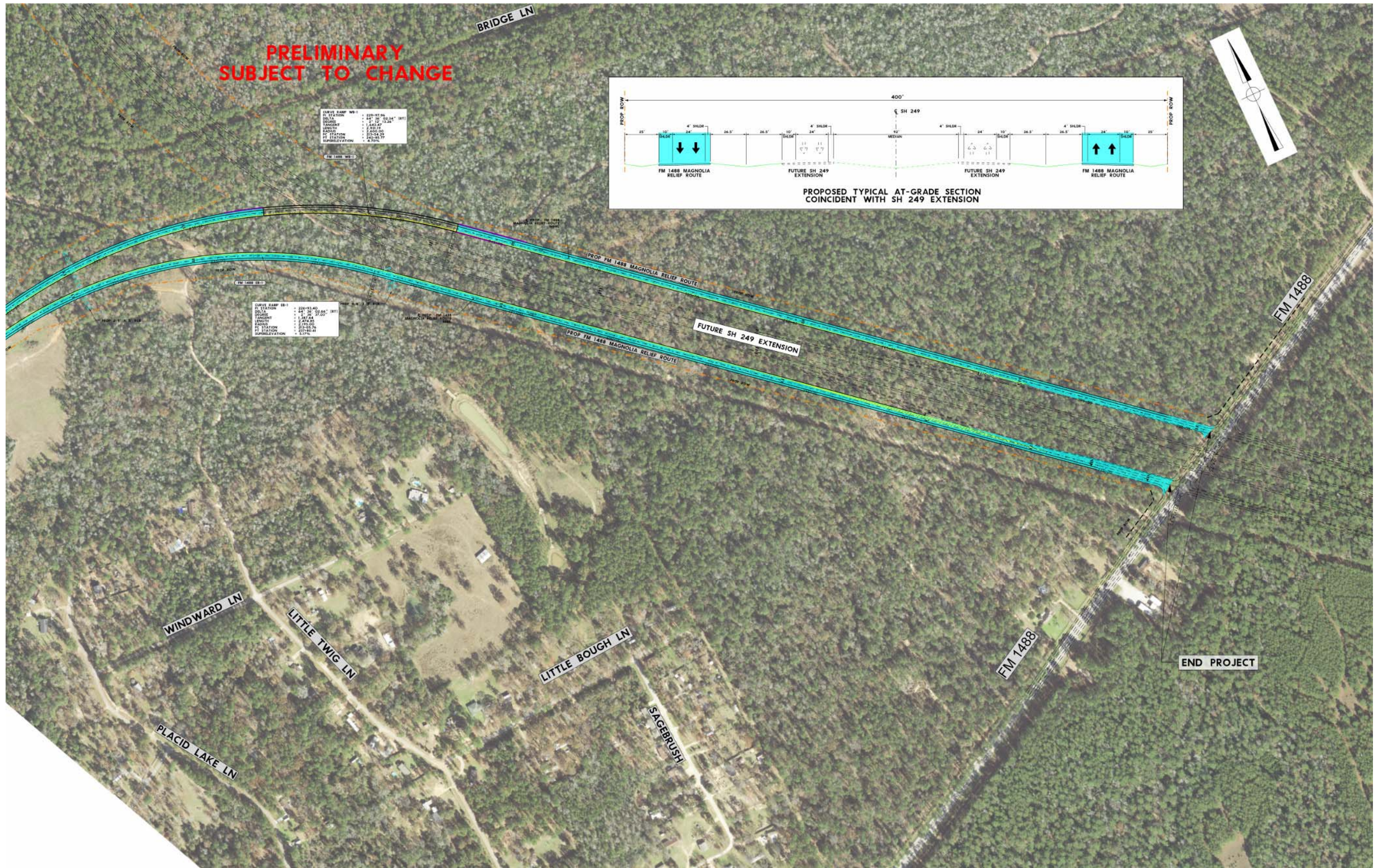
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|----------------------------|--|-------------------------|--|
| EXIST TRAFFIC DIRECTION    |  | PROPOSED RETAINING WALL |  |
| PROPOSED TRAFFIC DIRECTION |  | PROPOSED PAVEMENT       |  |
| PROPOSED ROW               |  | PROPOSED GRADE MEDIAN   |  |
| PROPOSED STRIPING          |  | PROP LOCAL ACCESS ROAD  |  |
| PROPERTY LINES             |  | PROPOSED BRIDGES        |  |
| PROPOSED CULVERTS          |  | CURVE NUMBER            |  |





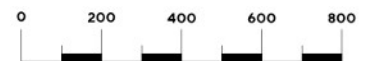
FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249  
 Project Layout  
 CSJ: 0523-09-018, 0523-08-013  
 Sheet 4 of 5



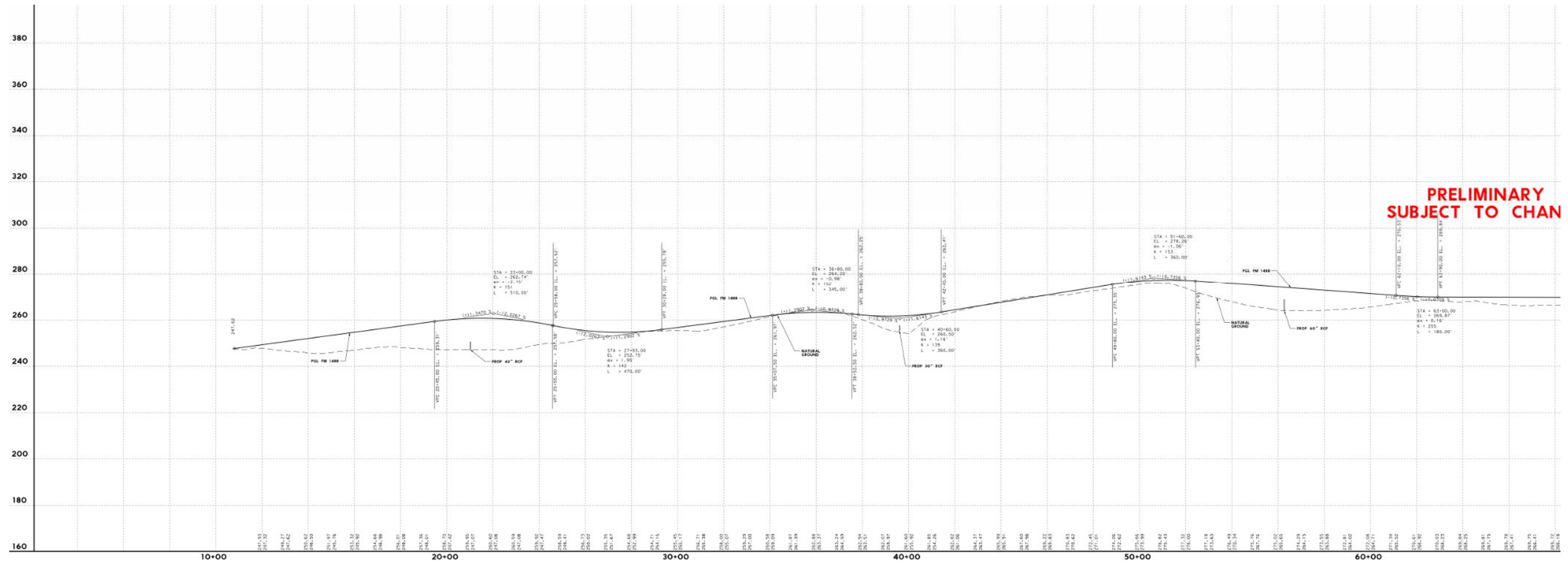


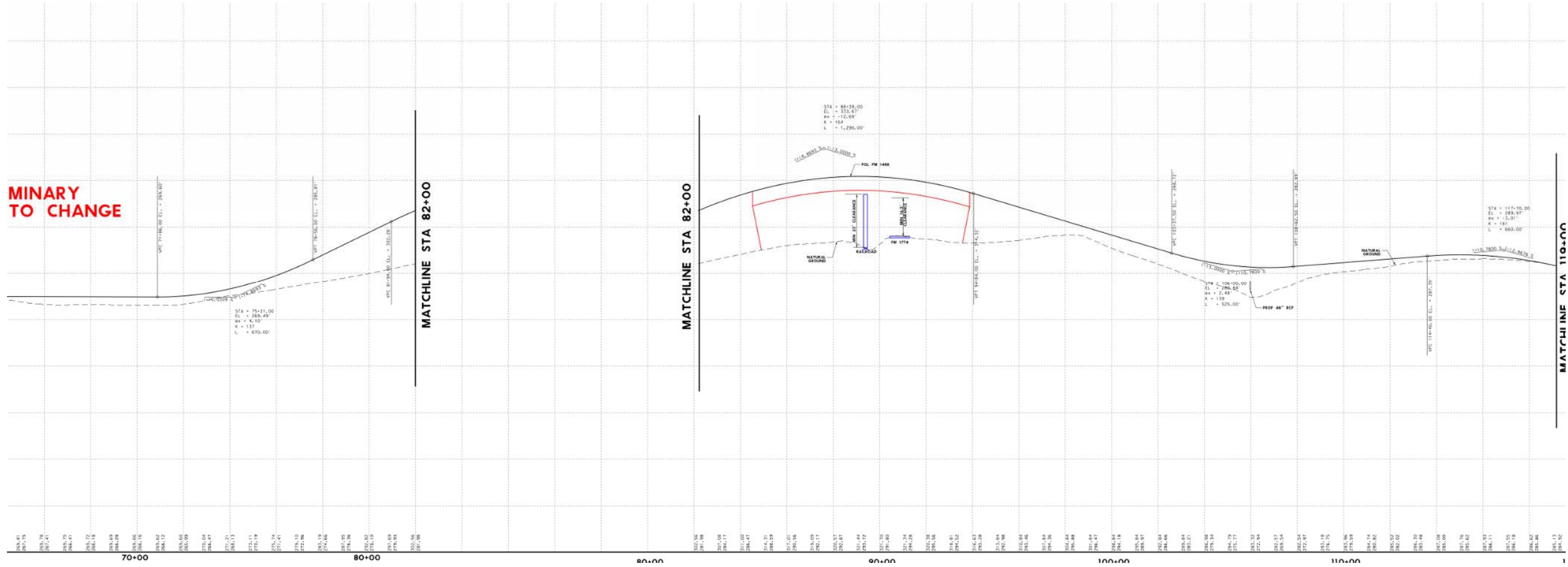
FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249  
 Project Layout  
 CSJ: 0523-09-018, 0523-08-013  
 Sheet 5 of 5

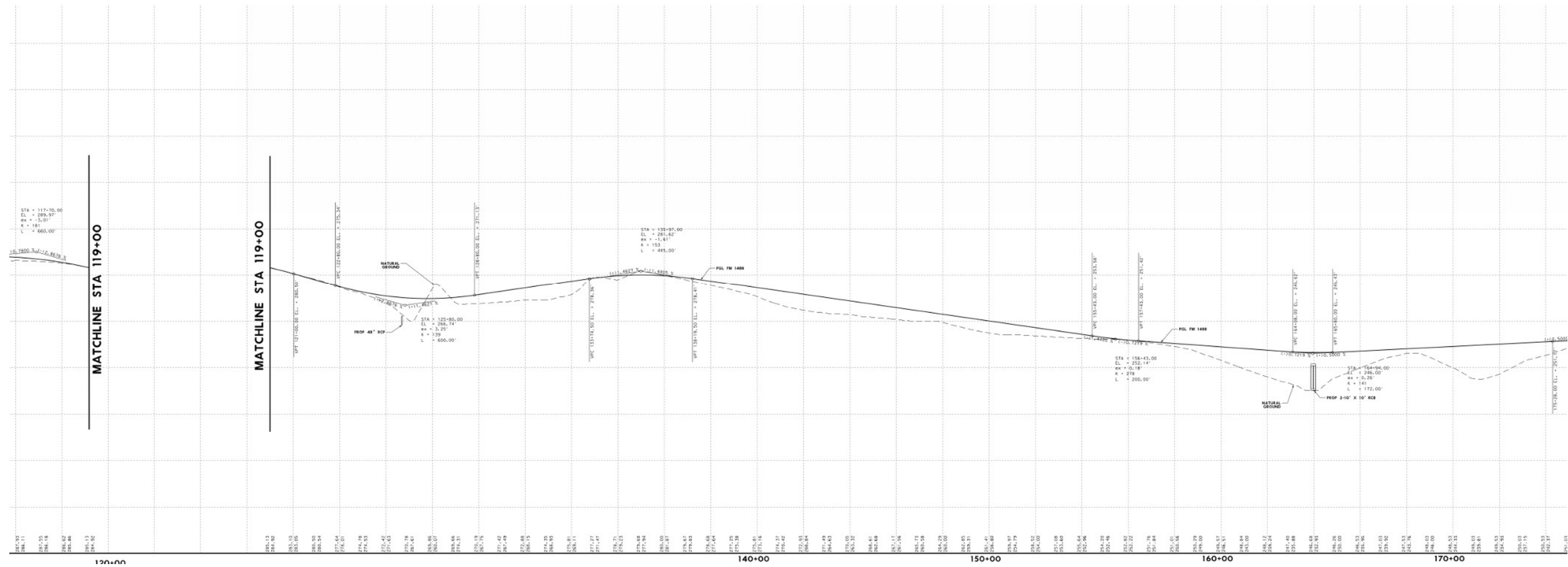
- |                            |  |                         |  |
|----------------------------|--|-------------------------|--|
| EXIST TRAFFIC DIRECTION    |  | PROPOSED RETAINING WALL |  |
| PROPOSED TRAFFIC DIRECTION |  | PROPOSED PAVEMENT       |  |
| PROPOSED ROW               |  | PROPOSED GRADE MEDIAN   |  |
| PROPOSED STRIPING          |  | PROP LOCAL ACCESS ROAD  |  |
| PROPERTY LINES             |  | PROPOSED BRIDGES        |  |
| PROPOSED CULVERTS          |  | CURVE NUMBER            |  |









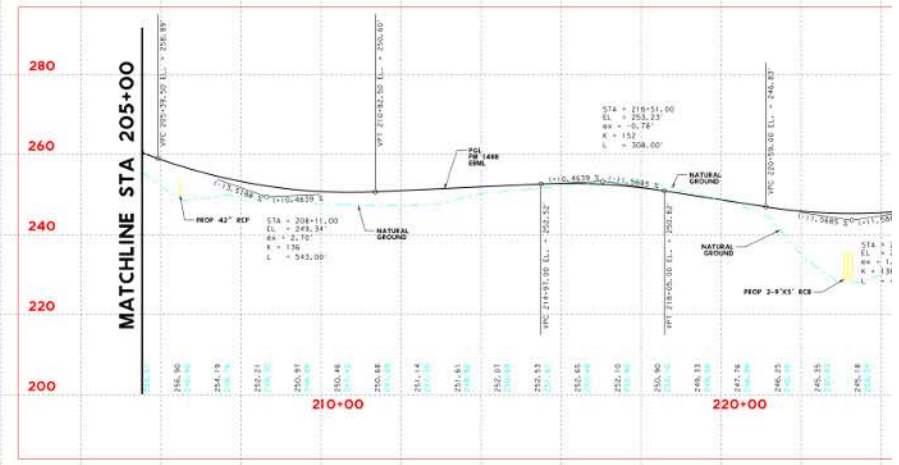
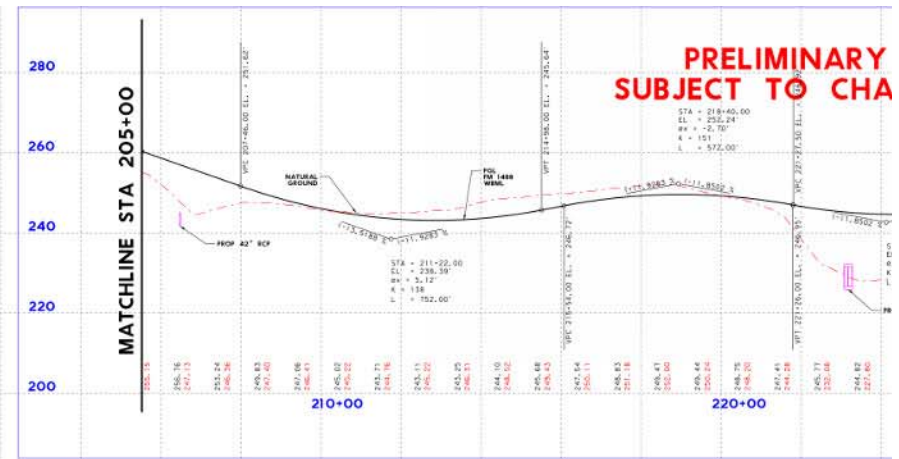
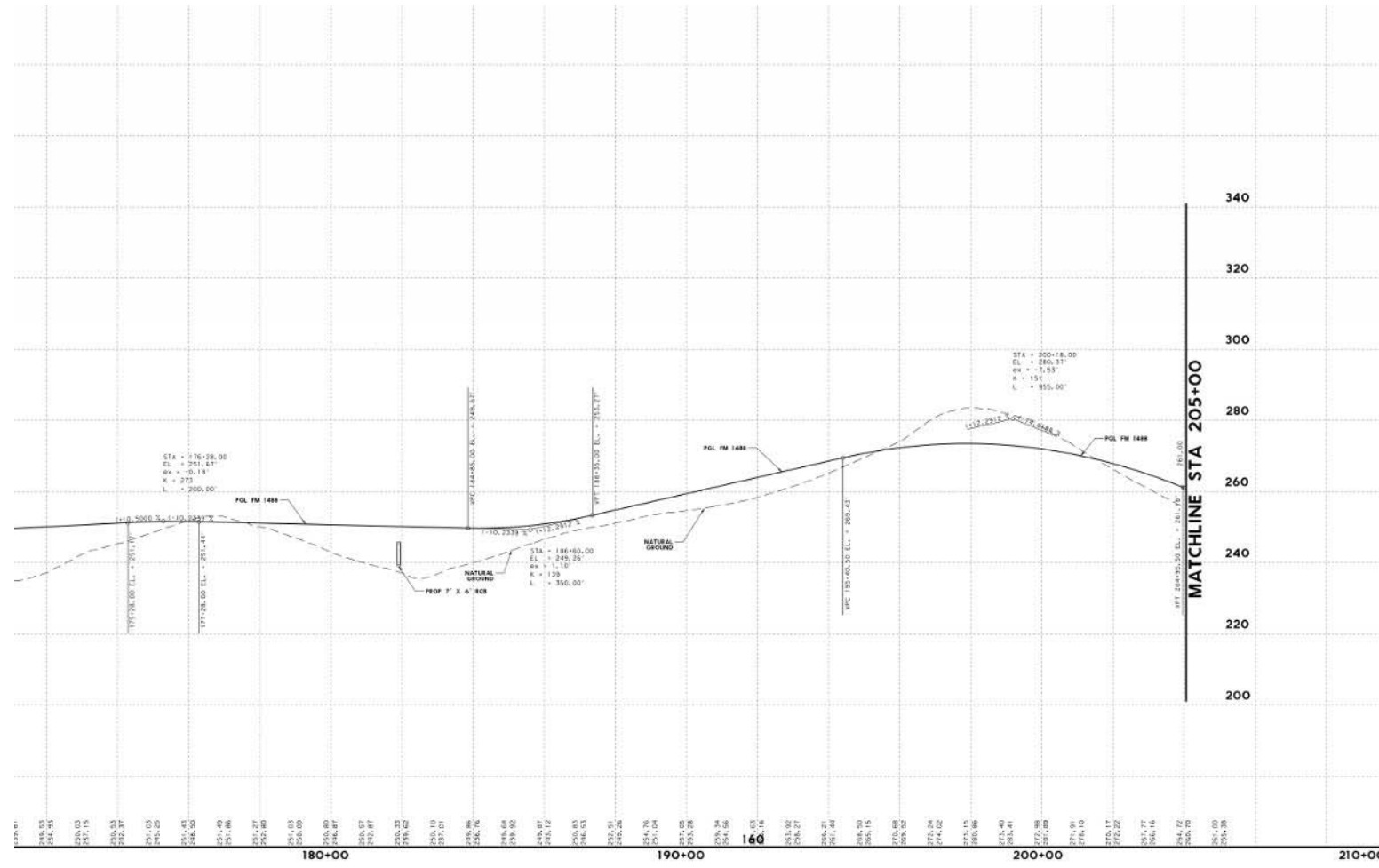


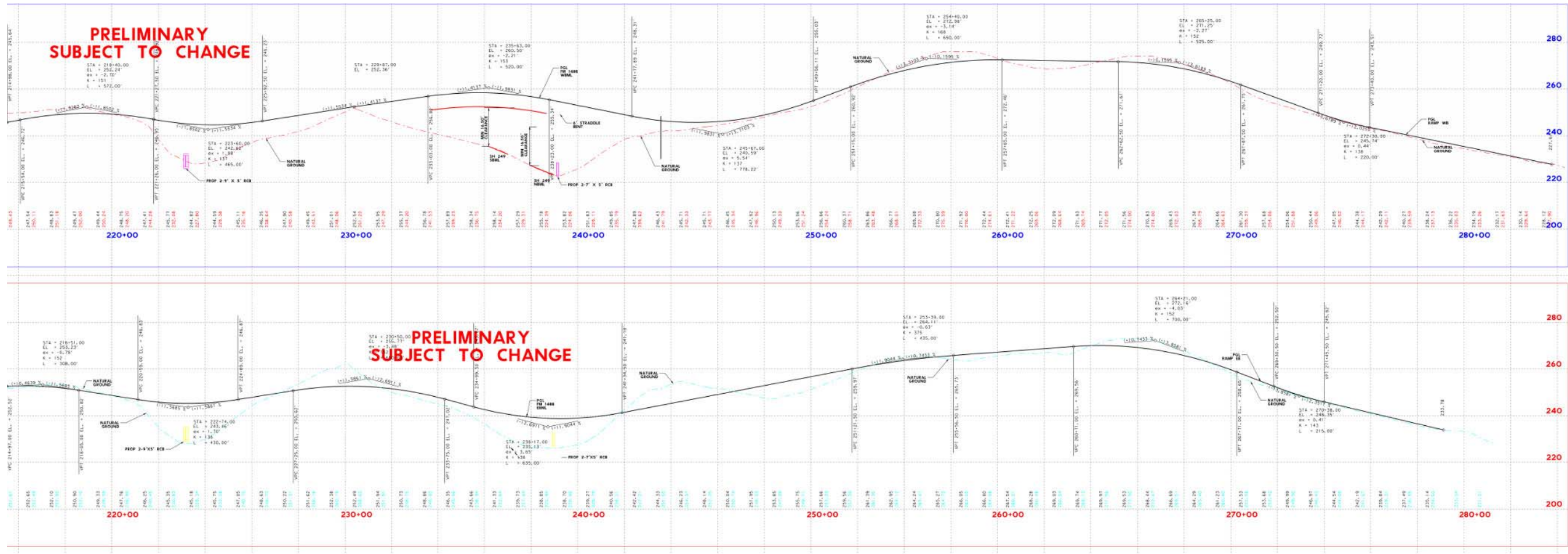
FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

Profile

CSJ: 0523-09-18, 0523-08-013

Sheet 3 of 5



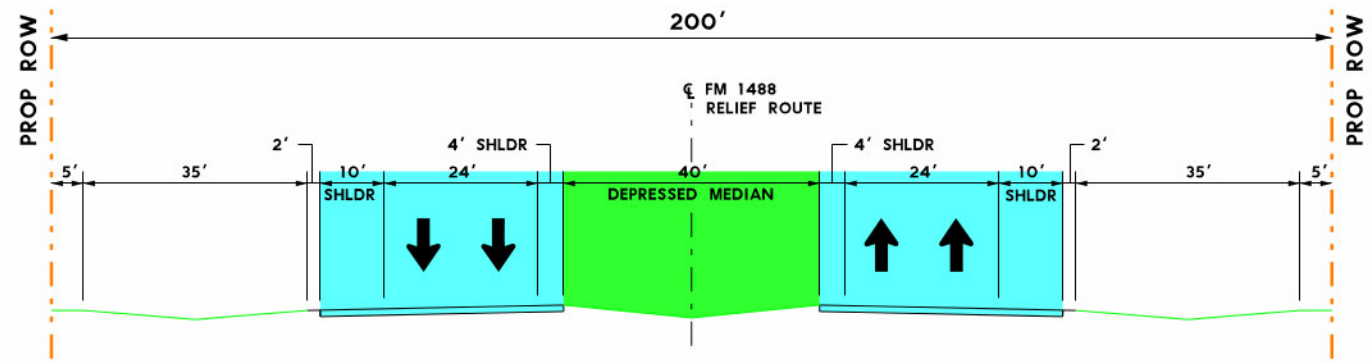


FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

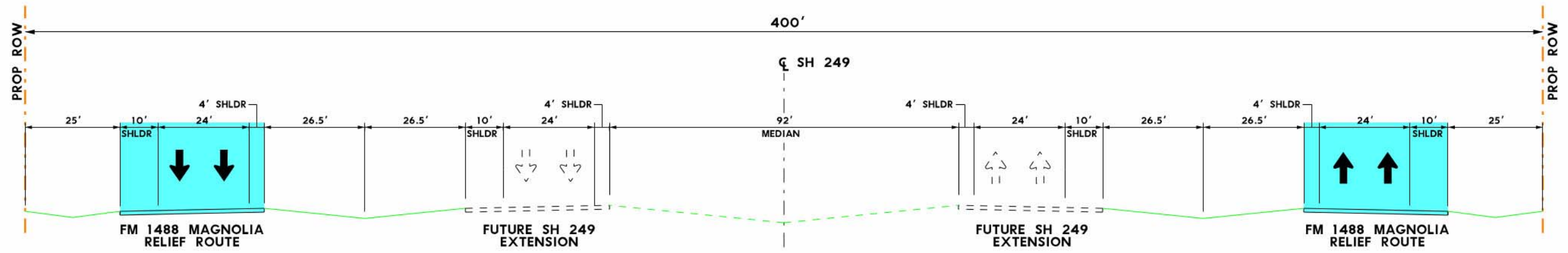
Profile

CSJ: 0523-09-18, 0523-08-013

Sheet 5 of 5



**PROPOSED RURAL AT-GRADE SECTION**



**PROPOSED TYPICAL AT-GRADE SECTION  
COINCIDENT WITH SH 249 EXTENSION**

FM 1488 from Existing FM 1488 west of Magnolia to Proposed SH 249

**APPENDIX C**  
**Regulatory Correspondence**



125 EAST 11TH STREET, AUSTIN, TEXAS 78701-2483 | 512.463.8588 | WWW.TXDOT.GOV

August 29, 2017

Section 106/Antiquities Code of Texas: Coordination, Review and Comments (Permit #7914)  
Intensive Survey Draft Report: FM 1488 Magnolia Bypass Project  
Houston District; Montgomery County (CSJ: **0523-09-018**)

Ms. Patricia A. Mercado-Allinger  
Division Director/State Archeologist  
Archeology Division  
Texas Historical Commission  
PO Box 12276  
Austin, TX 78711-2276

Dear Ms. Mercado-Allinger:

The proposed project will be undertaken with Federal funding. In accordance with Section 106 (and the First Amended Programmatic Agreement among the Texas Department of Transportation [TxDOT], the Texas State Historical Preservation Officer [TSHPO], the Federal Highway Administration [FHWA], and the Advisory Council on Historic Preservation) and the Antiquities Code of Texas (and the Memorandum of Understanding between the Texas Historical Commission [THC] and TxDOT), this letter initiates formal Section 106 consultation for the proposed undertaking.

The 5.4 mile long proposed project would construct a bypass around the City of Magnolia consisting of four lanes, two in each direction, separated by a median. This project would include grade separated overpasses at FM 1774 and Union Pacific Railroad (UPRR) and at the proposed State Highway (SH) 249 extension. The project width is a proposed corridor of 200 to 350 feet in width. This project would be built on new location. The project limits would be from existing FM 1488 west of Magnolia to proposed SH 249 east of Magnolia. The area of potential effect (APE) consists of the project length, the project width, and the depth of construction impacts (approximately three to ten feet below the ground surface). The project and archeological APE total 199.88 acres, 155.0 of which are new right-of-way (ROW), 41.5 acres that overlap with the proposed SH 249 project ROW, and 3.38 acres of existing ROW.

Archeologists from Cox/McLain Environmental Consulting, Inc. (Cox/McLain), on behalf of the TxDOT Houston District, conducted an intensive survey of the above proposed project in April of 2017. The archeological investigation consisted of a 100 percent pedestrian survey and the excavation of 39 shovel-test units throughout the APE where access was available. Access was restricted to the western half of the APE. Right-of-entry (ROE) was denied throughout most of the eastern half of the APE. Cox/McLain archeologists observed that a majority of the shovel tests revealed sandy loam or sand deposits to a depth of 25 to 60 centimeters below surface (cmbs) underlain with clay or sandy clay. Nine of the shovel tests extended to 80 to 100 cmbs in sandy loam or sand deposits and did not encounter clay. Shovel tests were only excavated in areas where previous agricultural impacts were not apparent, ground visibility was less than 30 percent, and the HoustonPALM map units suggested the likely presence of intact soils that could contain prehistoric archeological deposits. Based on the results of this survey, no additional archeological investigations within the proposed APE where ROE was granted is warranted. Approximately 111.68

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OUR MISSION: *Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.*

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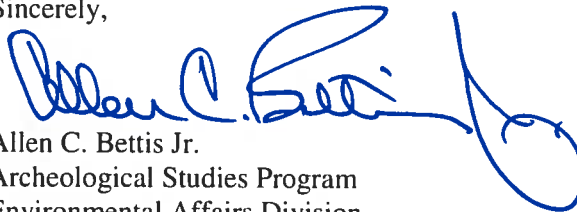


acres of the APE in the eastern half of the project area remain to be surveyed once access to these parcels has been acquired. TxDOT archeologists agree with this recommendation.

The attached draft survey report from Cox/McLain, *Intensive Archeological Survey of FM 1488 from Existing FM 1488 West of Magnolia to Proposed SH 249 Montgomery County, Texas*, is submitted to your office for your review and comments. TxDOT recommends that the archeological inventory thus far is satisfactory and complete and would have no effect on any archeological historic properties (36 CFR 800.16(l)) or State Antiquities Landmarks (13 TAC 26.8); no further investigations are warranted within the portion of the APE surveyed. TxDOT further requests your permission to defer the remainder of the archeological inventory until access to the parcels denied ROE is acquired. Once access is acquired, TxDOT understands that it is obligated to complete the inventory and all coordination with office before commencing with construction on these parcels. TxDOT is seeking your formal concurrence on the above recommendation for Section 106 coordination. If you have no comments to make or objections to the above recommendations made, please sign below to indicate your concurrence.

Thank you for your consideration in this matter. If you have any questions or further need of assistance, please contact Allen Bettis of the TxDOT Archeological Studies Program at (512) 416-2747.

Sincerely,

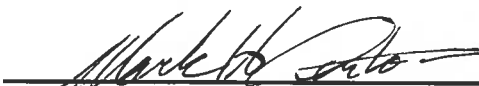


Allen C. Bettis Jr.  
Archeological Studies Program  
Environmental Affairs Division

Attachment

cc w/o attachments:

Andrew Leske, Houston District Office  
Chris Dayton, Cox/McLain - Austin  
ACB ECOS



9-1-17

Concurrence:  
for Mark S. Wolfe, State Historic Preservation Officer

Date:

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 of FM 1488 from Existing  
FM 1488 West of Magnolia to Proposed SH 249  
Montgomery County, Texas  
(CSJs: 0523-09-018 and 0523-08-013)

Prepared by:  
Brett Lang (Project Archeologist)  
Cox | McLain Environmental Consulting, Inc.  
8401 Shoal Creek Blvd, Suite 100  
Austin, TX 78757

For  
Klotz Associates, Inc.

Reviewed by  
Texas Department of Transportation Environmental Affairs Division  
118 East Riverside  
Austin, TX 78704


Under  
Texas Antiquities Permit 7914  
Melissa M. Green (Principal Investigator)

Cox | McLain Environmental Consulting Inc. Archeological Report 150  
(CMEC-AR-150)



COX | McLAIN  
Environmental Consulting

July 7, 2017

<b>DRAFT REPORT ACCEPTABLE</b>	
by	
for	Mark Wolfe
	Executive Director, THC
Date	7-1-17
Track#	

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.