Intensive Cultural Resources Survey of Proposed Improvements to Farm-to-Market Road 16 from 4.0 Miles West of Farm-to-Market Road 849, East to United States Highway 69, Smith County, Texas

CSJ: 0522-04-032

Texas Antiquities Permit No. 7926
SWCA Cultural Resources Report No. 17-116

December 2017

SUBMITTED TO:

Arredondo, Zepeda, & Brunz, LLC
and
Texas Department of Transportation
Tyler District

SUBMITTED BY:

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REDACTED

INTENSIVE CULTURAL RESOURCES SURVEY OF PROPOSED IMPROVEMENTS TO FARM-TO-MARKET ROAD 16 FROM 4.0 MILES WEST OF FARM-TO-MARKET ROAD 849, EAST TO UNITED STATES HIGHWAY 69, SMITH COUNTY, TEXAS
CSJ: 0522-04-032

Prepared for

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SWCA Project Number 27183-AUS

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December 5, 2017

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ABSTRACT

At the request of Arredondo, Zepeda, & Brunz, LLC (ABZ), and on behalf of the Texas Department of Transportation (TxDOT) Tyler District, SWCA Environmental Consultants (SWCA) conducted an intensive cultural resources survey of proposed improvements (i.e., widening the existing two-lane road) to approximately 23,232.08 linear feet (4.4 miles) of Farm-to-Market Road (FM) 16 from 4.0 miles west of FM 849 east to U.S. Highway 69 (US 69) in Lindale, Smith County, Texas (CSJ: 0522-04-032). The project would consist of widening FM 16 within existing and proposed right-of-way (ROW). The proposed project includes approximately 39.1 acres of existing FM 16 ROW, which ranges from 70 to 100 feet wide. Proposed ROW for the project would encompass approximately 68.1 acres and have a variable width of 145 to 315 feet within rural sections; in urban sections, the proposed ROW would be a minimum of 80 feet wide to a maximum of 370 feet wide. In summary, the overall area of potential effects (APE) is approximately 23,232.08 feet (4.4 miles) long, 70 to 370 feet wide, and will extend 4 to 6 feet below ground surface for roadway improvements, up to 10 feet below ground for cross drainage culverts, and 20 to 30 feet below ground for bridge support columns. Utility relocations are anticipated, but the exact locales of such relocations are currently unknown.

Archaeological investigations were performed to comply with the Antiquities Code of Texas, due to the involvement of public lands controlled by TxDOT, a political subdivision of the State of Texas. Additionally, the project may receive funding from the Federal Highway Administration or require a federal permit from the U.S. Army Corps of Engineers and, as such, is subject to Section 106 of the National Historic Preservation Act. The goal of the work was to identify cultural resources within the proposed project area, establish vertical and horizontal site boundaries as appropriate, and evaluate the significance and eligibility of all discovered cultural resources for the National Register of Historic Places (NRHP) or for designation as a State Antiquities Landmark (SAL).

SWCA conducted field investigations from February 21 through February 25. Archaeologists attempted to excavate 225 shovel tests during the survey, but due to standing water, existing subsurface utilities, and eroded areas, only 215 shovel tests were excavated in support of the project, which exceeds the Texas Historical Commission's recommended survey standards for a project of this size. Investigations resulted in the discovery of two archaeological sites (41SM483 and 41SM484) consisting of an early- to mid-twentieth-century single crib barn (41SM483) and a low-density scatter of non-diagnostic prehistoric lithic artifacts (41SM484). Investigations also discovered one isolated find (IF1), a single presumably Early Caddo (ca. A.D. 900–1200) ceramic sherd recovered from a single shovel test. Due to the paucity of cultural material, a lack of diagnostic artifacts, or cultural features, and extensive disturbances, both sites are recommended as not eligible for the NRHP or for designation as SALs.

In accordance with the Antiquities Code of Texas and 36 Code of Federal Regulations (CFR) 800.4, SWCA made a reasonable and good faith effort to identify cultural resources within the APE. As no properties were identified that may meet the criteria for listing on the NRHP, according to 36 CFR 60.4, or for designation as an SAL, as per 13 TAC 26.12, SWCA recommends that no further cultural resources investigations are warranted within the *surveyed* portions of the APE and that a determination of *No Historic Properties Affected* be granted for the those areas. However, as SWCA lacked right-of-entry (ROE) to 30 parcels encompassing 27.76 acres of proposed ROW, investigations in those areas were not possible. To complete the assessment of the APE, SWCA recommends that an intensive cultural resources survey of the proposed ROW in these 30 parcels should be undertaken once ROE becomes available.

ACKNOWLEDGEMENTS

Brandon S. Young served as Principal Investigator for the duration of the project, ably overseeing field and reporting efforts. Mr. Young also served as Project Manager and was responsible for overall logistics and project organization, as well as managing reporting and agency consultation. Dan Rodriguez acted as Project Archaeologist/Field Director, performing the investigations with the assistance of Field Supervisor Mary Rodriguez and Field Archaeologists Jessica Ulmer and Tatiana Martinez. Christian Hartnett and Carole Carpenter expertly produced all field and report maps for the project.

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INTRODUCTION

At the request of Arredondo, Zepeda, & Brunz, LLC (ABZ), and on behalf of the Texas Department of Transportation (TxDOT) Tyler District, SWCA Environmental Consultants (SWCA) conducted an intensive cultural resources survey of proposed improvements (i.e., widening the existing two-lane road) to approximately 23,232.08 linear feet (4.4 miles) of Farm-to-Market Road (FM) 16 from 4.0 miles west of FM 849, east to U.S. Highway 69 (US 69) in Lindale, Smith County, Texas (CSJ: 0522-04-032) (Figure 1). The proposed project would encompass approximately 107.2 acres and involve existing and proposed right-of-way (ROW).

Archaeological investigations were performed to comply with the Antiquities Code of Texas (ACT), due to the involvement of public lands controlled by TxDOT, a political subdivision of the State of Texas. Additionally, the project may receive funding from the Federal Highway Administration or require a federal permit from the U.S. Army Corps of Engineers and, as such, is subject to Section 106 of the National Historic Preservation Act (NHPA). The goal of the work was to identify cultural resources within the proposed project area, establish vertical and horizontal site boundaries as appropriate, and evaluate the significance and eligibility of all discovered cultural resources for the National Register of Historic Places (NRHP) or for designation as a State Antiquities Landmark (SAL).

PROJECT DESCRIPTION

The proposed project would encompass approximately 107.2 acres and involve existing and proposed ROW (Figures 2a–2c); this includes approximately 39.1 acres of existing ROW and 68.1 acres of proposed ROW. The existing FM 16 ROW ranges from 70 to 100 feet wide. Rural sections of proposed ROW would have a variable width of 145 to 315 feet (Figure 3). In urban sections, the proposed ROW would be a minimum of 80 feet wide to a maximum of 370 feet wide (Figure 4). In summary, the overall area of potential effects (APE) is approximately 23,232.08 linear feet (4.4 miles) in length (see Figure 1); and 70 to 370 feet wide (see Figures 3 and 4). Impacts will extend 4 to 6 feet below ground surface for roadway improvements, up to 10 feet below surface for cross drainage culverts, and 20 to 30 feet below surface for bridge support columns. Utility relocations are anticipated, but the exact locales of such relocations are currently unknown.

Several drainages are crossed by FM 16 within the project boundaries; however, only three sizable drainages are represented. From west to east, they include Luckeible Branch, Hubbard Branch, and the confluence of Hubbard and Davis Branches, west of the proposed Toll 49 corridor, which is west of Lindale. Throughout the project limits the vertical and horizontal alignment would be modified to eliminate substandard curves and improve site distance. The most notable of these modifications would be the re-alignment of FM 16 between Springcrest Lane and Lindale Cemetery Road. The realignment would require the construction of a new bridge spanning an impounded area west of Lindale Cemetery Road. The new bridge would consist of two 12-foot-wide travel lanes in each direction separated by a 14-foot-wide two-way left turn lane. A 10-foot-wide sidewalk would be provided on each side and would be separated from the travel lanes with a concrete barrier. Although FM 16 would be re-aligned in this area, a portion of the existing roadway would remain in place and would continue to provide access to adjacent properties. Three other new bridges are proposed, all in the five-lane rural section. One bridge would cross the main channel of Hubbard Creek, while a second would be a relief structure in the western overbank (floodplain) area. The third bridge would cross Luckeible Branch, a tributary of Hubbard Creek. These bridges would replace the existing bridge and bridge-class culvert for those crossings and would be designed to accommodate a 50-year storm event. Although new bridge structures would be necessary to accommodate the new road design, bridge plans are not available as they currently are under design.

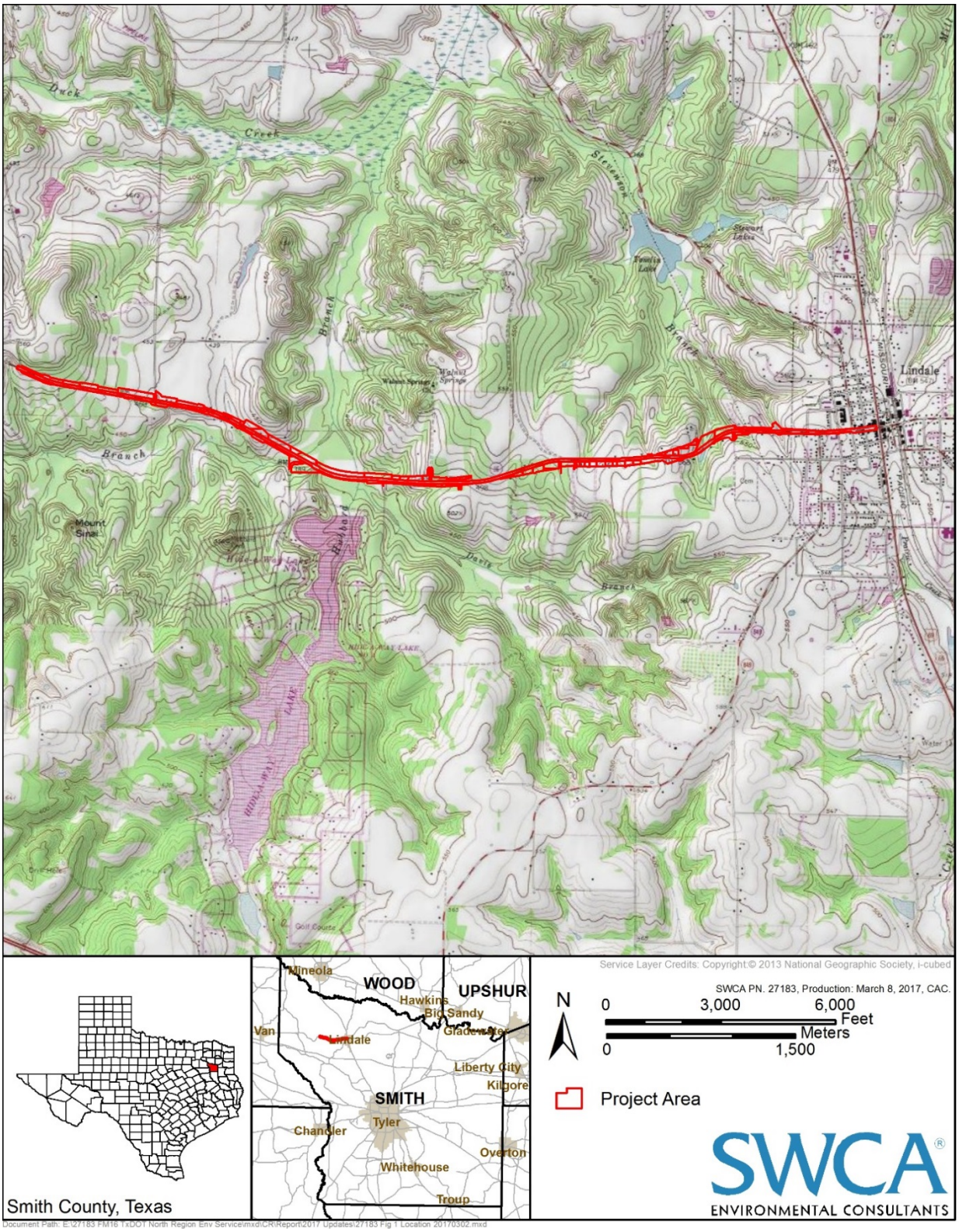

Figure 1. Project location.

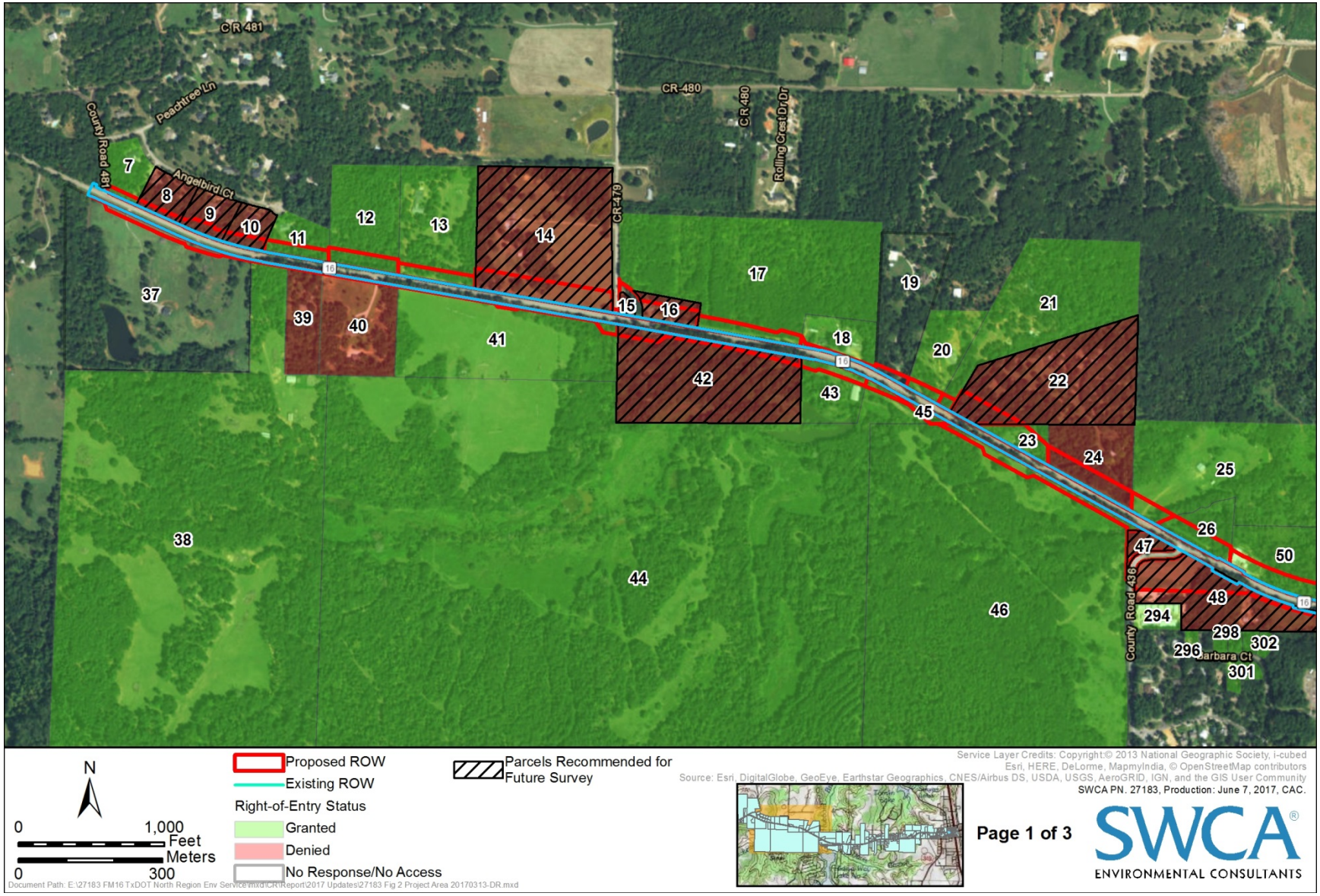

Figure 2a. Western project area.

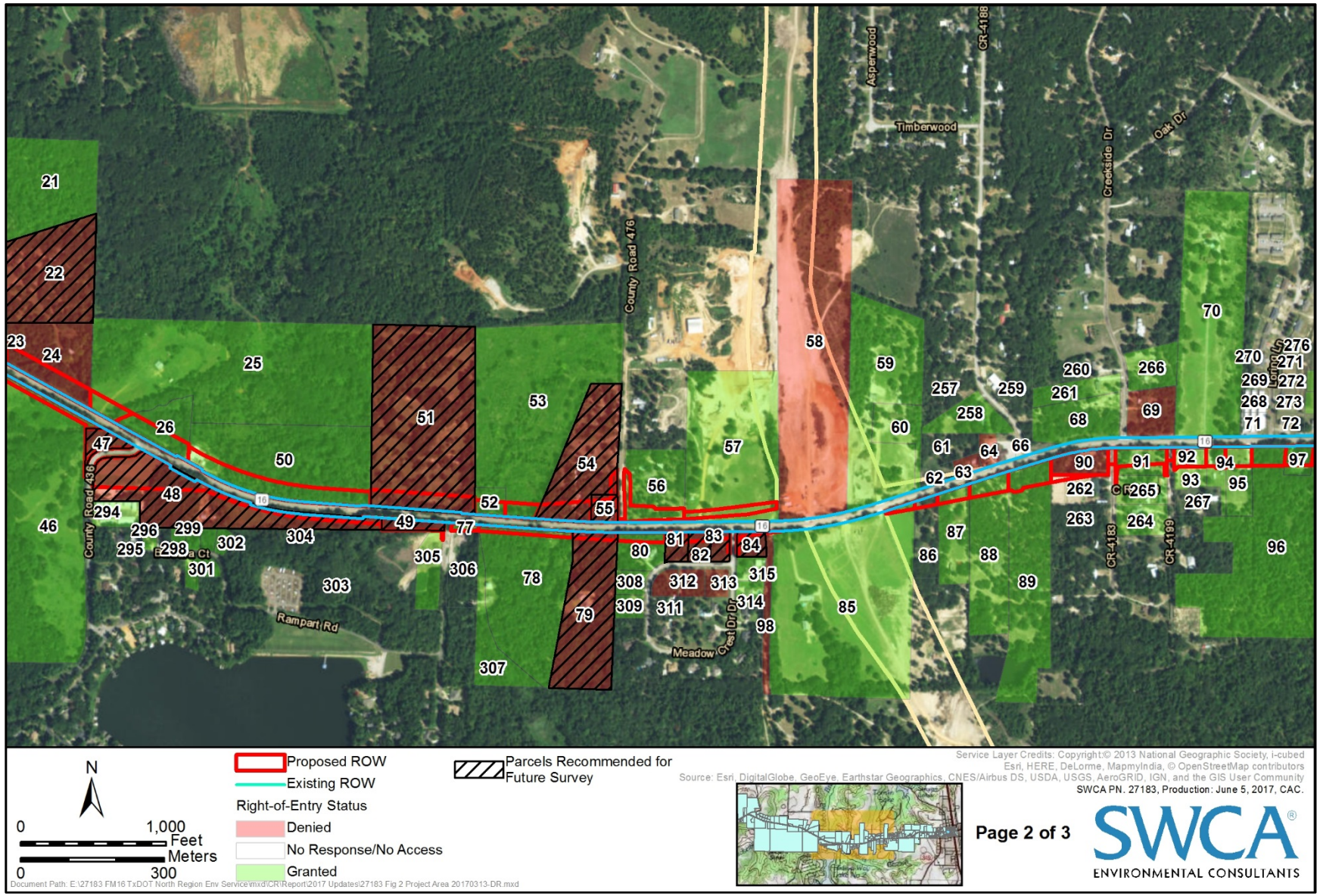

Figure 2b. Central project area.

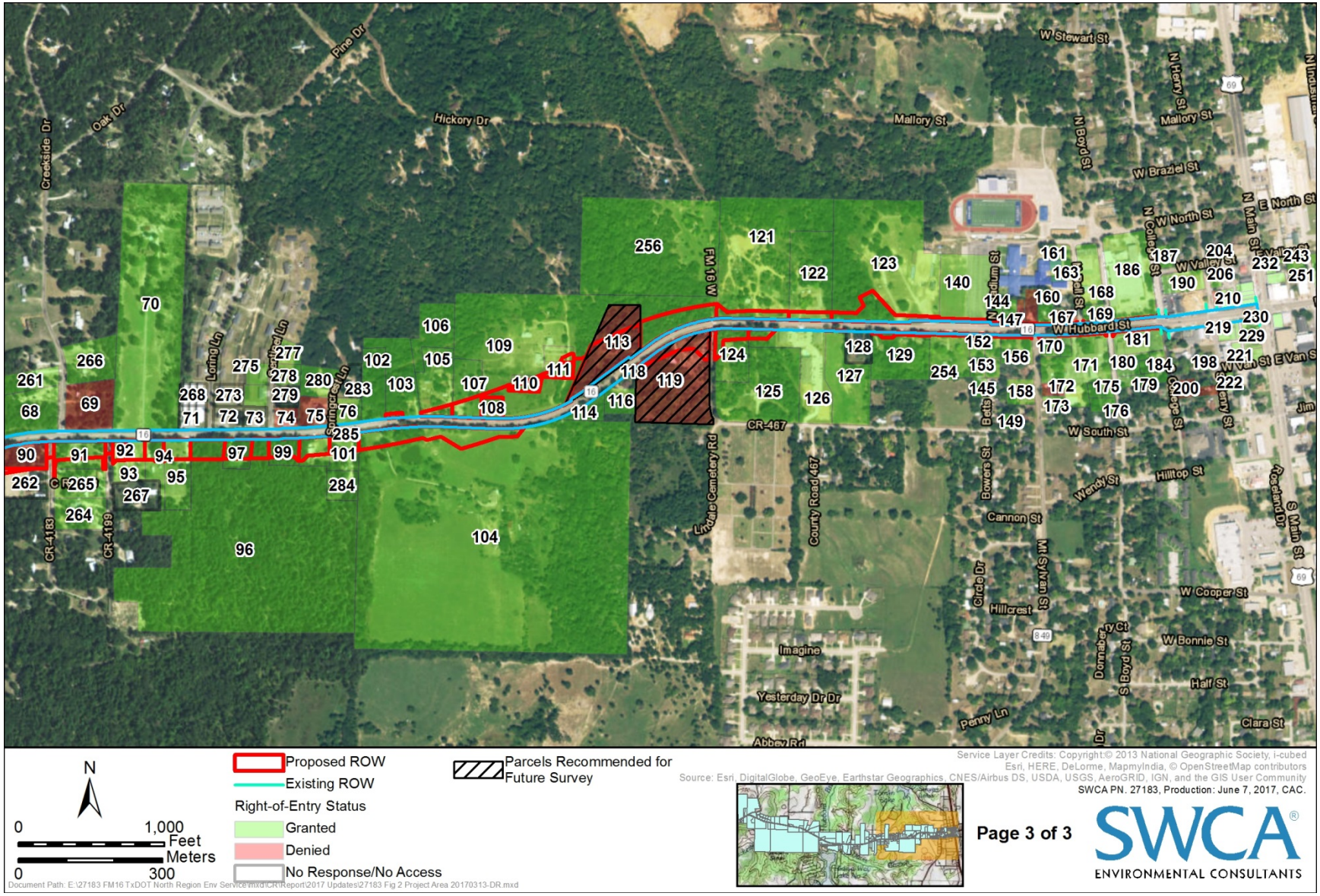

Figure 2c. Eastern project area.

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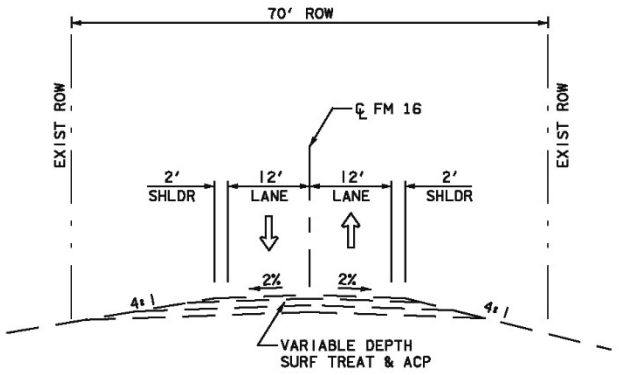
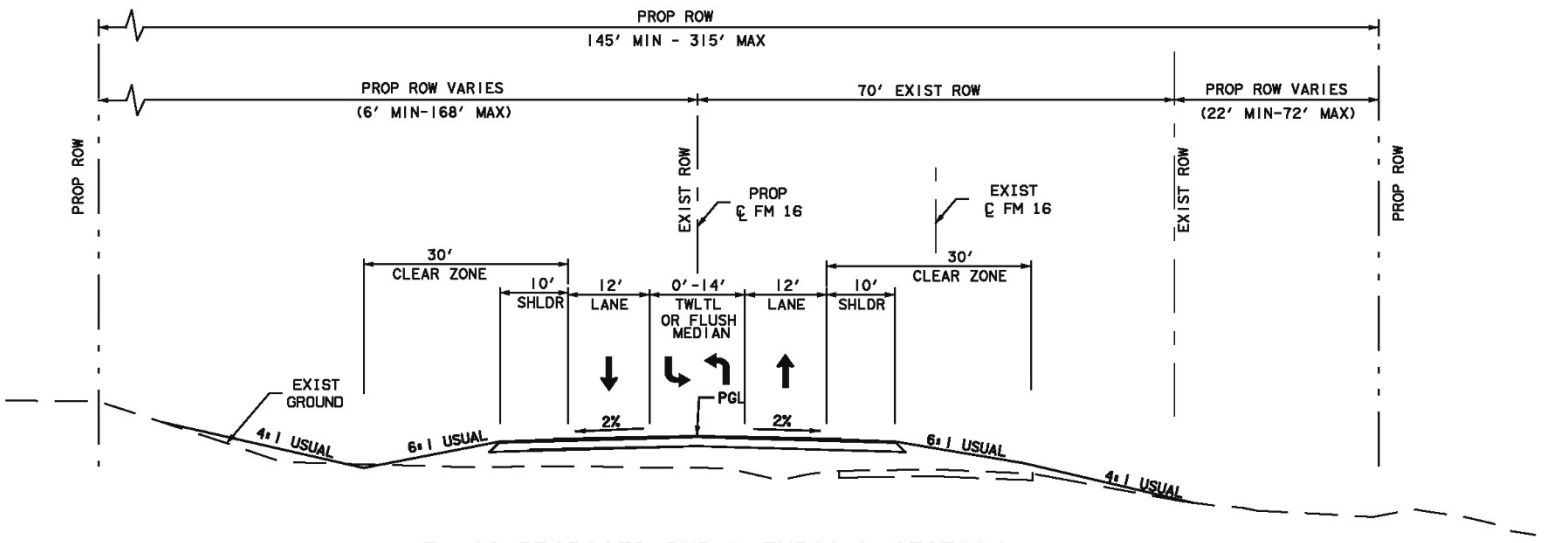


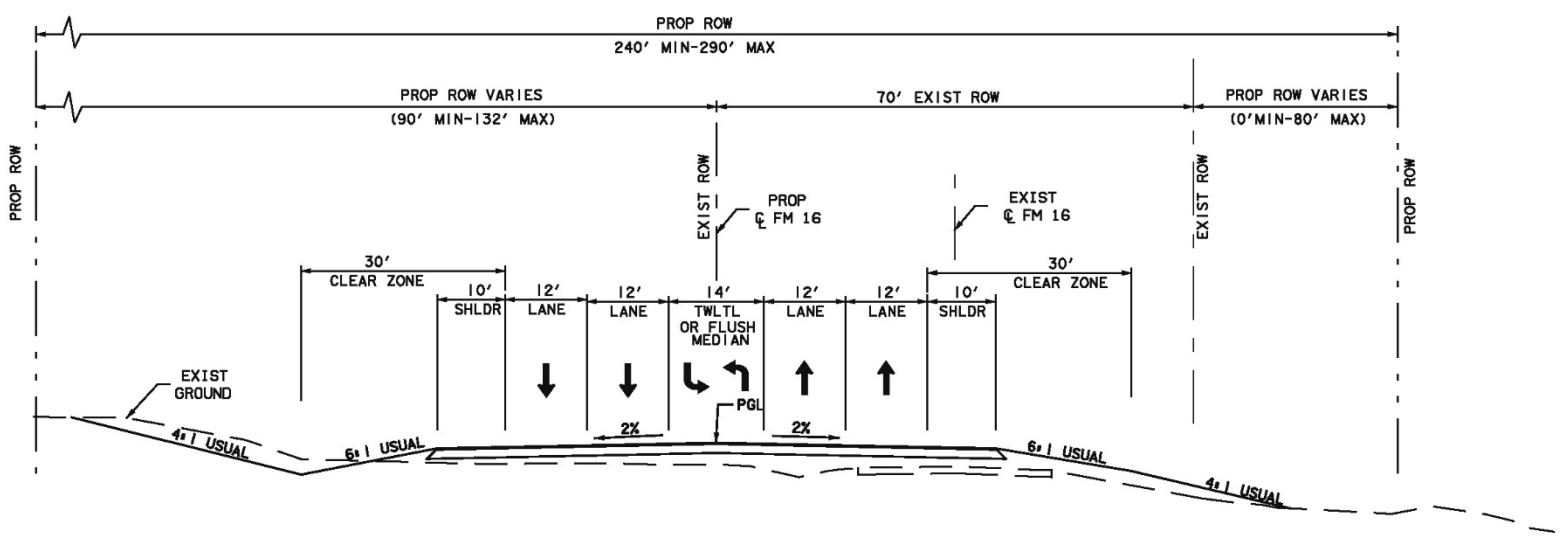
FM 16 EXISTING RURAL TYPICAL SECTION

STA 237+68 TO STA 444+00



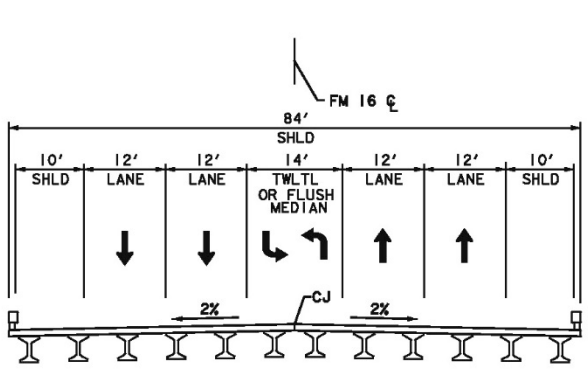
FM 16 PROPOSED RURAL TYPICAL SECTION

STA 237+68 TO STA 312+00



FM 16 PROPOSED RURAL TYPICAL SECTION

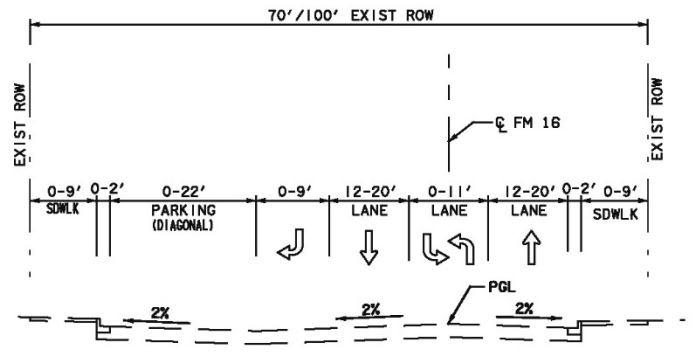
STA 312+00 TO STA 434+12



FM 16 PROPOSED BRIDGE TYPICAL SECTION

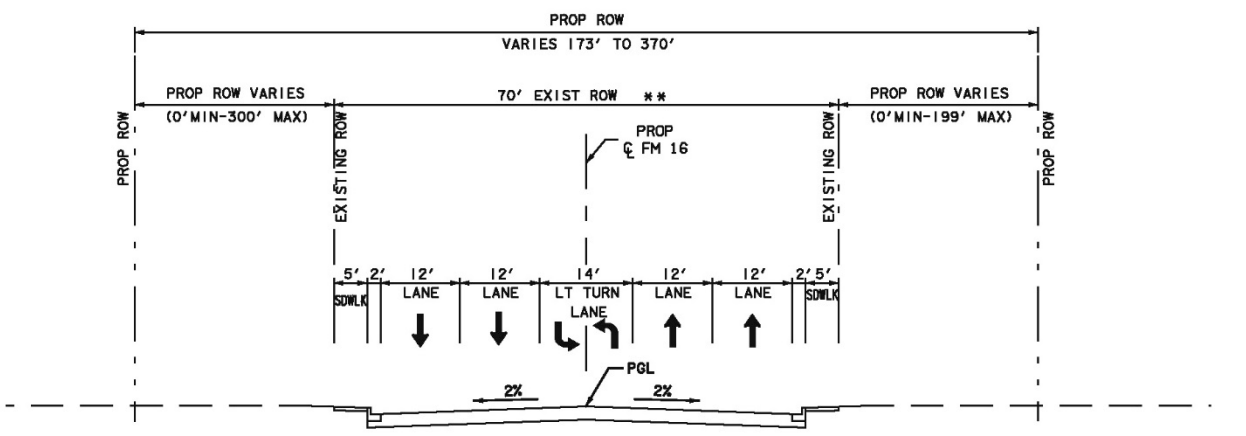
BRIDGE NO. 1: STA 313+30 TO STA 314+70
BRIDGE NO. 2: STA 324+40 TO STA 325+60
BRIDGE NO. 3: STA 330+80 TO STA 332+20

Figure 3. Existing and proposed rural typical sections.



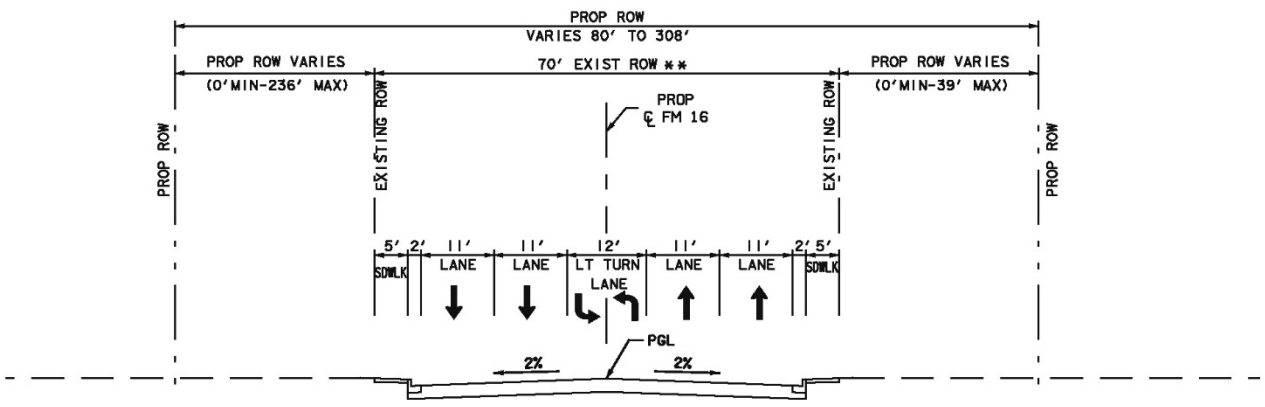
FM 16 EXISTING URBAN TYPICAL SECTION

STA 444+00 TO STA 465+50



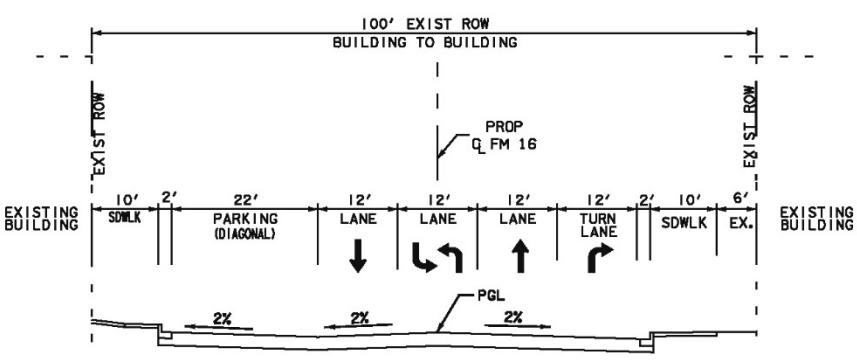
FM 16 PROPOSED URBAN TYPICAL SECTION

STA 367+60 TO STA 434+10



FM 16 PROPOSED URBAN TYPICAL SECTION

STA 435+65 TO STA 465+10
** STA 462+10 TO STA 465+50 (EXIST ROW=100')



FM 16 PROPOSED URBAN TYPICAL SECTION AT US 69

STA 465+50 TO STA 468+32

Figure 4. Existing and proposed urban typical sections.

A review of aerial photography determined that the APE has been disturbed to varying degrees by the construction of the existing road, drainage facilities, overhead and buried utility installations, and driveways for commercial and residential properties. Given these disturbances, the existing ROW has only a limited potential to contain intact surface or subsurface cultural deposits; however, the proposed ROW on adjacent properties appears relatively intact and was thought to have a better potential for containing intact buried cultural deposits.

ENVIRONMENTAL SETTING

GEOLOGY

The underlying geology of the FM 16 APE, in order of predominance, consists of Tertiary-age Queen City Sand (approximately 60 percent of the APE), Weches Formation (approximately 20 percent of the APE), and Sparta Sand (approximately 19 percent of APE), as well as small areas of recent Holocene-age alluvium (approximately 1 percent of the APE) (Barnes 1974) (Figure 5). Queen City Sand deposits consist of light gray to brownish gray quartz sand and clay with ironstone concretions (Barnes 1974). Deposits of the Weches Formation consist of glauconite and quartz sand that is grayish green to grayish olive-green with interbedded clay (Barnes 1974). Sparta Sand is medium to fine grain quartz sand that is somewhat cohesive with a silt and clay matrix. Ferruginous sandstone is found throughout the deposits (Barnes 1974).

The Holocene-age alluvium consists of floodplain and low terrace deposits along streams composed of gravel, sand, silt, silty clay, and organic matter (Fisher 1974). Such deposits are mapped on the north side of FM 16 along Hubbard Branch that bisects the approximate central portion of the APE. Although none of the other drainages crossed by FM 16 in the APE are mapped as containing Holocene alluvium, given the scale of the geologic map (1:250,000) and sampling during field work for the geologic mapping, there is a potential for additional deposits of Holocene alluvium along those drainages. Given the age and nature of recent alluvium, which regionally has consistently been shown to have a good potential to contain buried cultural resources, it has the potential to contain buried potentially significant cultural deposits.

SOILS

The APE traverses six different soils from three general soil mapping units (Figure 6). The APE contains the Wolfpen-Pickton and the Redsprings-Cuthbert-Elrose general map units east of Hubbard Branch; west of Hubbard Branch is the Redsprings-Cuthbert-Elrose mapping unit; and along Hubbard Branch are soils of the Mantachie general soil map unit (Hatherly 1993).

Soils of the Wolfpen-Pickton map unit are gently sloping to steep soils that formed in place on uplands under hardwood and pine forests. Major constituent soils include Wolfpen (approximately 35 percent of the mapping unit) and Pickton (approximately 32 percent of the mapping unit), with other soils of minor extent comprising the remaining 33 percent of the mapping unit (Hatherly 1993).

The soils of the Redsprings-Cuthbert-Elrose general map unit consist of gently sloping to steep fine loamy soils that are often are gravelly to very gravelly. Redsprings soils developed in place in sediments consisting of glauconitic materials interbedded with shale and sandy materials under a mixed hardwood and pine forest. The A horizon (0–5 inches below ground surface) is typically gravelly to very gravelly sandy loam that overlies red clay, brown clay, and glauconitic materials (Hatherly 1993).

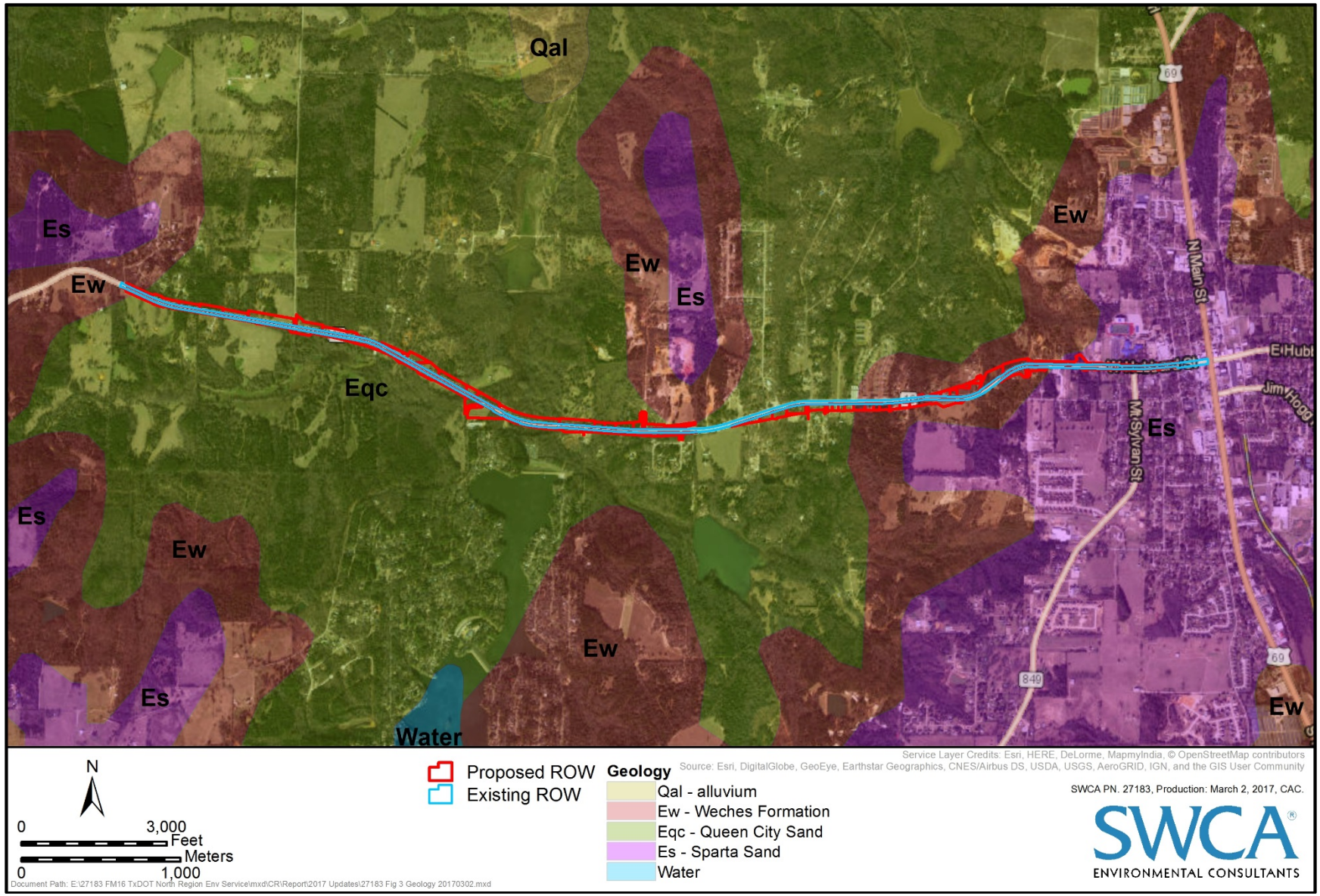


Figure 5. Project area geology.

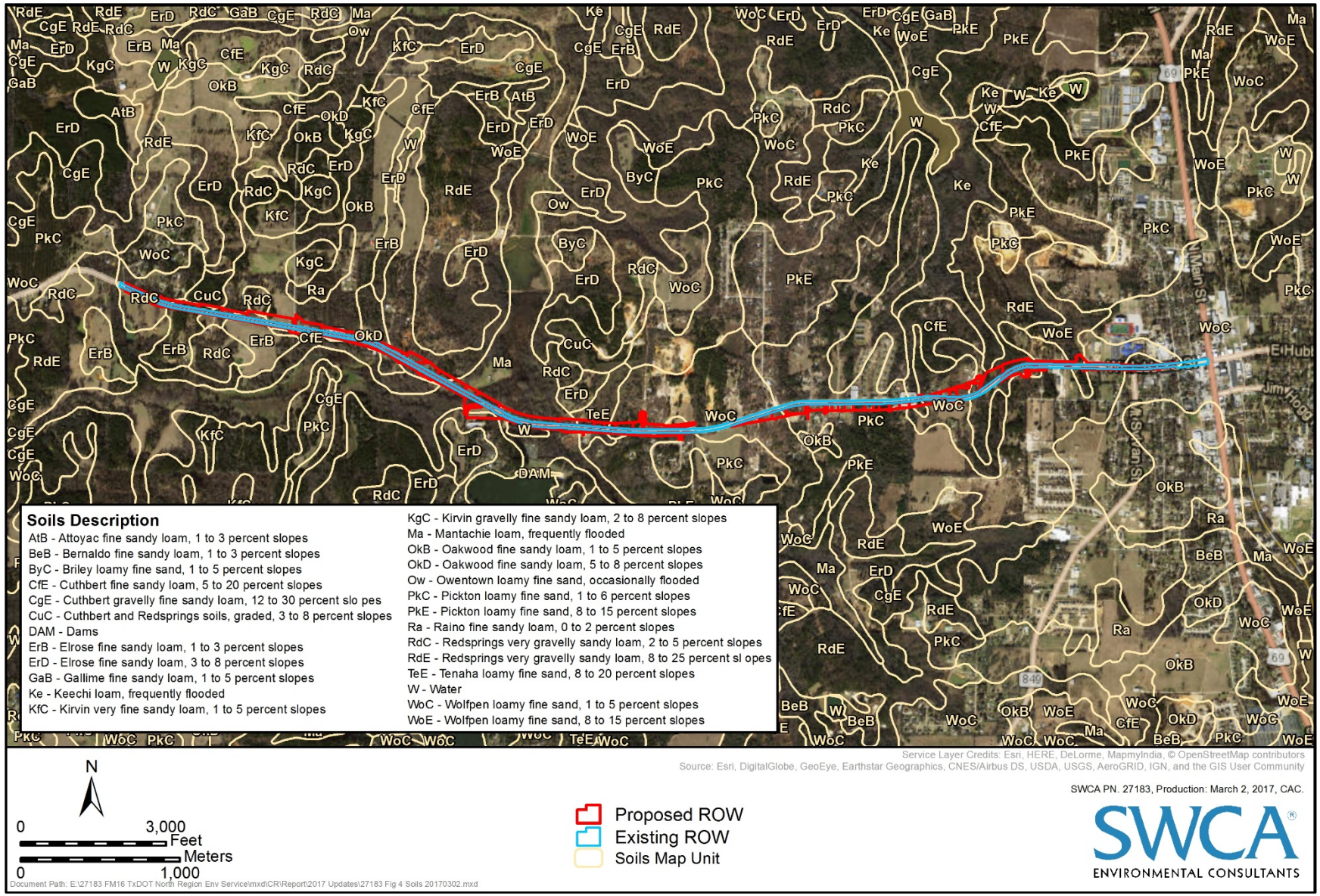


Figure 6. Project area soils.

Cuthbert soils are very deep loamy upland soils that formed in place from interbedded loamy, clayey, and sandy sediments under a cover of mixed pine and hardwood forest. A typical profile exhibits fine sandy loam from 0 to 9 inches below ground surface overlying a series of clay B and C horizons (Hatherly 1993).

Elrose soils are typically very deep sandy loams found on uplands; the soils formed in place from marine sediments under a mixed hardwood and pine forest. A typical profile exhibits fine sandy loam from 0 to 13 inches below ground surface overlying red loam to a depth of approximately 19 inches below ground surface; the loam in turn overlies a series of four red clay loam strata to a depth of 80 inches below ground surface (Hatherly 1993).

Manatchie soils are nearly level, poorly drained loamy soils found on floodplains of major streams throughout Smith County. These soils formed from loamy alluvial sediments. A typical profile exhibits loam extending from 0 to 50 inches below ground surface overlying clay loam from 50 to 60 inches (Hatherly 1993). Due to the alluvial context in which these soils are found, they have the potential to contain intact buried cultural deposits.

FLORA

In general, the vegetation communities encountered during the field investigations consist of upland and lowland settings. Regarding the upland settings, the overstory includes loblolly pine (*Pinus taeda*), sugar hackberry (*Celtis laevigata*), eastern red cedar (*Juniperus virginiana*), yaupon (*Ilex vomitoria*), and winged elm (*Ulmus alata*) (Tull and Miller 1999; Vines 1986). The understory is composed of Little bluestem (*Schizachyrium scoparium*), bushy bluestem (*Andropogon glomeratus*), tall goldenrod (*Solidago canadensis*), Bermuda grass (*Cynodon dactylon*), and common carpetgrass (*Axonopus affinis*) are the dominant herbaceous species, while southern dewberry (*Rubus trivialis*), greenbriar (*Smilax bona-nox*), and Japanese honeysuckle (*Lonicera japonica*) are the dominant vine species (Ajilvsgi 2003; Gould 2002; Tull and Miller 1999; Vines 1986).

In contrast, the commonly saturated lowland communities contain tree species such as Chinese tallow (*Sapium sebiferum*), Chinaberry (*Melia azedarach*), and rare Bald Cypress (*Taxodium distichum*) (Cox and Leslie 1999; Tull and Miller 1999; Vines 1986). The lowland understory includes occasional Dwarf palmettos (*Sabal minor*), soft rush (*Juncus effusus*), and bushy bluestem as well as vine species of Supplejack (*Berchemia scandens*), greenbriar, and Trifoliate Orange (*Poncirus trifoliata*) (Ajilvsgi 2003; Gould 2002; Loughmiller and Loughmiller 1992; Niering and Olmstead 1990; Tull and Miller 1999; Vines 1986).

FAUNA

The project area is located in the southern Austroriparian biotic province that includes the Gulf coastal plain, which extends from eastern Texas to the Atlantic Ocean (Blair 1950). The western border of the Austroriparian biotic province is largely based on the expansion of the pine and hardwood forest. As such, the expansion of this timber and the Austroriparian province fluctuates with the amount of rainfall (Blair 1950). The province has a high faunal diversity. Blair (1950) identified at least 47 species of mammals, 41 species of reptiles, and 35 species of amphibians native to the region. A variety of wildlife exists along the project area, as it lies along the boundary of two floral regions, the cross timbers and prairies and the post-oak savannah. Blair (1950) defines the following mammals as common within the Austroriparian province: white-tailed deer (*Odocoileus virginianus*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), eastern pipistrelle bat (*Pipistrellus subflavus*), red bat (*Lasiurus carolinensis*), fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), gopher (*Geomys breviceps*), fulvous harvest

mouse (*Reithrodontomys fulvescens)*, white-footed mouse (*Peromyscus leucopus*), marsh rice rat (*Oryzomys palustris*), cotton rat (*Sigmodon hispidus*), packrat (*Neotoma floridana*), eastern cottontail (*Sylvilagus floridanus*), and swamp rabbit (*Sylvilagus aquaticus*). Historically, red wolf, bison and black bear ranged into or near the project area (Burt and Grossenheider 1976; Kricher and Morrison 1998; Sutton and Sutton 1985).

Bison constituted one of the major game resources throughout prehistory; however, this resource was intermittently absent from the region (Dillehay 1974). Possibly more than any other resource except cultigens in later prehistory, bison played a profound role in nearly all aspects of prehistoric society, including technological organization, mobility, population size, and political organization.

Common land turtles include the eastern box turtle (*Terrapene Carolina*) and western box turtle (*Terrapene ornate*), while the snapping turtle (*Chelydra serpentina*), river cooter (*Chrysemys concinna*), and diamondback terrapin (*Malaclemys terrapin*) comprise common water turtles. Common lizards include the green anole (*Anolis carolinensis*), eastern fence lizard (*Sceloporus undulates*), broad-headed skink (*Eumeces laticeps*), six-lined racerunner (*Cnemidophorus sexlineatus*), and eastern grass lizard *(Ophisaurus ventralis*). Snakes, amphibians, and birds are also present in considerable numbers and diversity (Blair 1950).

The reptilian assemblage includes the racer (*Coluber constrictor*), rat snake (*Elaphe obsoleta*), timber rattlesnake (*Crotalus horridus*), common kingsnake (*Lampropeltis getulus*), woodhouse toad (*Bufo woodhousii*), bullfrog (*Rana catesbiana*), northern leopard frog (*Rana pipiens*), eastern box turtle (*Terrapene carolina*), and the Gulf Coast toad (*Bufo valliceps*) (Blair 1950; Brown 1985; Conant and Collins 1998; Sutton and Sutton 1985).

Breeding birds common to the wooded areas include black vulture (*Coragyps atratus*) and turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*), northern bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), scissor-tailed flycatcher (*Tyrannus forficatus*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), eastern bluebird (*Sialia sialis*), northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), painted bunting (*Passerina ciris*), and lark sparrow (*Chondestes grammacus*). Migratory species within wooded areas include yellow-bellied sapsucker (*Sphyrapicus varius*), northern flicker (*Colaptes auratus*), eastern phoebe (*Sayornis phoebe*), ruby-crowned kinglet (*Regulus calendula*), hermit thrush (*Catharus guttatus*), American robin (*Turdus migratorius*), and many sparrows (Bull and Farrand 1977; Brown 1985; Kricher and Morrison 1998; Sutton and Sutton 1985).

CULTURAL SETTING

The Project area is within the Deep East Texas archaeological region as defined by Perttula (2004). Prehistoric Native American settlement in Texas is generally divided into four broad chronological categories: the Paleoindian Period (ca. 12,000 to 6,000 B.C.), the Archaic Period (ca. 6,000 to 200 B.C.), the Early Ceramic/Woodland period (ca. 200 B.C. to A.D. 800), and the Caddo period (ca. A.D. 800 to 1600). However, as noted, the primary concern is with the Caddo period. Following these prehistoric chronological divisions, the Historic period, beginning circa A.D. 1600, is marked by the explorations and settlement of Europeans in what is now Texas following the early entradas of Spanish conquistadores and French settlement attempts during the sixteenth and seventeenth centuries.

PALEOINDIAN PERIOD

The Paleoindian period in Texas begins at the end of the Pleistocene. The best evidence for Paleoindian occupation in North and Northeast Texas dates from approximately 9500-7500 B.C. (Jurney et al. 1989:14).

During the Paleoindian period, populations were highly mobile, exploiting broad areas for hunting and gathering. Reliance on hunting large game decreased, and populations increasingly exploited small game as the climate became warmer and drier. Population levels increased in the eastern part of North Texas toward the end of the Paleoindian period (Jurney et al. 1989:15).

Diagnostic artifacts from this period generally have been recovered from the surface and include basally-ground, lanceolate-shaped points that are sometimes fluted, such as Clovis and Folsom. Only moderate numbers of Paleo-Indian points have been reported within the region, and as of 1988 no Clovis points had been reported from Fannin County (Jurney et al. 1989:15, Figure 14). Well-studied sites in and around this region include the Domebo Site in Caddo County, Oklahoma, Aubrey Site in North Central Texas, Big Pine Lake Site, and several sites in the Red River drainage, including Lewisville Lake, Murphey, and Quince (Jurney et al. 1989:15; Peter et al. 1991:6; Heartfield, Price and Greene, Inc. 1990:72).

ARCHAIC PERIOD

The Archaic period spans a large amount of time, beginning around 6000 B.C. and ending around 200 B.C. In general, the Archaic period is one of very strong cultural stability (Peter et al. 1991:6). During this period, a greater variety of tools and projectile points were developed (Heartfield, Price and Greene, Inc. 1990:74). Good examples of Archaic sites in Northeast Texas include the Jake Martin Site in Upshur County, the Yarbrough Site in Van Zandt County, the Manton Miller Site on the Upper Sulphur in Delta County, and the Finley Fan Site in Hopkins County (Heartfield, Price and Greene, Inc. 1990:75; Perttula 1995:335). The Archaic period is subdivided into Early, Middle and Late subperiods, each of which is discussed below.

The Early Archaic period lasts from 6000 to 4000 B.C. There is a lack of well-documented Early Archaic sites in North Central and East Texas, as Archaic sites in the region often are not single component or are not stratified (Jurney et al. 1989:16; Peter et al. 1991:6). The best excavated proto-Archaic and Early Archaic sites in the region are the Plainview occupation at Perry Ranch, the Boat Dock Site, the Summers Site and the Gore Pit Site (Jurney et al. 1989:17). During the Early Archaic period, populations lived in small groups, making seasonal nomadic rounds. The use of ground stone tools begins in this time period and may indicate a more intensive use of plant resources. In general, points developed from fluted, long lanceolate to non-fluted during the Paleoindian period and then changed to the shorter, corner-notched triangulate shapes seen in the Early Archaic (Jurney et al. 1989:16). Dalton, San Patrice, and Merserve are considered transitional point types and are sometimes included in Paleoindian period (Heartfield, Price and Greene, Inc. 1990:72; Jurney et al. 1989:16; Peter et al. 1991:6). Early Archaic point types in North Central Texas include Angostura, Axtell, Big Sandy, Hoxie, Hardin, and others (Jurney et al. 1989:17).

The Middle Archaic period is defined as spanning 4000 to 2000 B.C. Points increase in size from the Early to Middle Archaic periods and change from corner-notched to side-notched. Point bases transition from expanding stem types to parallel stemmed and finally to the contracting stemmed forms of the Middle and Late Archaic. Central and North Texas point types associated with the Middle Archaic include Pedernales, Bulverde, Travis, Nolan, Wells, Carrollton, and Morrill. Use of the basal notched group of points found in Central and North Texas may have started late in Early Archaic. Burned rock middens, common in central Texas during this time, have not been associated with Middle Archaic sites in North Central Texas. Signs of regionalization are first found at the end of Middle Archaic and continue during the Late Archaic (Jurney et al. 1989:18). The exchange of non-local materials, and finished tools may have been common in some parts of the region during the Middle Archaic period (Perttula 1995:335).

The Late Archaic begins around 2000 B.C. and lasts until 200 B.C. Compared to the Early and Middle Archaic, the Late Archaic has more sites that are single component or stratified. In addition, more investigations have been conducted at these sites (Heartfield, Price and Greene, Inc. 1990:74; Jurney et al. 1989:19). The increase in the number of sites in Northeast Texas is hypothesized to be the result of increased

population densities (Jurney et al. 1989:19-20; Nickels et al. 1999:21; Perttula 1995:335). However, western portions of northeast Texas may have been less populated than other parts of northeast Texas (Nickels et al. 1999:21). It is hypothesized that populations were neither sedentary nor occupied sites year round but moved within limited geographic areas (Jurney et al. 1989:20; Nickels et al. 1999:21; Perttula 1995:335). Further evidence of increased regionalization in this period comes from areas, such as the upper Trinity River drainages, that exhibit increased use of local quartzite to replace non-local chert (Jurney et al. 1989:19; Perttula 1995:335). Archaic tool types in North Texas are more varied than in South Texas, and North Texas may have had a wetter, more hospitable environment (Jurney et al. 1989:19). Late Archaic Material culture in Northeastern Texas is associated with the broadly defined LaHarpe Aspect (Espey, Huston and Associates, Inc. 1990:4-2; Jurney et al. 1989:19; Johnson 1962). This includes contracting based dart points of which the Gary type is the most common. Other types include Ellis, Elam, Ensor, Godley, Dallas, Lange, Marshall and the slightly earlier Yarbrough and Trinity types (Jurney et al. 1989:19; Kahl et al. 1999:9).

EARLY CERAMIC/WOODLAND PERIOD

The Early Ceramic/Woodland period, also referred to as the Transitional Archaic, is defined as 200 B.C. to A.D. 800. This period is characterized by increasing sedentism and social complexity as well as by possible increases in population (Story 1990). Technological innovations during this period include the use of ceramics, bow and arrow technology, and experimentation with plant domestication and horticulture.

In eastern Texas, the Ceramic period, or "Late Cultures" as defined by Story (1990) began roughly 2,000 years ago. The earlier manifestations of this period have been otherwise named "Woodland," as tribute to certain similarities held with eastern cultures. A pervasive characteristic of these cultures is the ubiquity of plain sandy-paste ceramics. Kent and Gary points are frequent in the early stages of this period and are eventually displaced by arrow points such as Alba and Catahoula, perhaps as early as A.D. 500 to 600. Subsistence strategies depended on hunting and gathering, with little if any evidence of horticulture.

CADDO PERIOD

In much of northeastern Texas, the Caddo culture has been relatively well defined and much studied, particularly compared to earlier periods. One of the few sedentary, complex prehistoric culture periods in Texas, the Caddo period, also known as the Late Ceramic period by some, extends from A.D. 800 to 1600. The Caddo culture in Texas has been viewed by many as the southwestern most expression of the Mississippian tradition, a larger culture area that spanned east Texas and parts of Arkansas, Louisiana, Missouri, and Oklahoma. Many, however, do not consider Caddo part of the Mississippian tradition. Regardless, the study of the Caddo has been aided by ethnohistorical contact period accounts by Europeans. After contact, the Caddo remained in northeast Texas, much reduced in numbers, until they either migrated or were removed (1854) to Oklahoma, where they reformed as a now federally recognized tribe. Like the Woodland period, the Caddoan period is hypothesized to have increasing levels of population, sedentism, and social complexity, including social ranking (Perttula 2004:379, 383, 393–396). Caddo culture history is divided here into three major subperiods following Thurmond's (1990:39–40) divisions for the western Cypress Basin: Early (800 to 1300 A.D.), Middle (1300 to 1400 A.D.), and Late (1400 to 1600/1650 A.D.). The Late Caddo period is further subdivided into Whelan and Titus phases

HISTORIC CADDO PERIOD (A.D. 1542–1835)

Spanish explorers first encountered the rural Caddo communities of northeastern Texas in 1542 when Luis de Moscoso led a group of men attempting to find central Mexico following the death of their leader Hernando De Soto (Glover 1935).

Smith County, as well as adjacent counties in the East Texas Region (including Rusk, Cherokee, Nacogdoches, and Angelina) was populated by Caddo groups during the first historical contacts. The Neches-Angelina River Basin was the southernmost major population center of the Caddo – the Red River Basin served as the northern Caddo center. This southern group, designated the Hasinais, or Asinais, typically comprised nine settlements or "tribes" according to the first historical accounts (Bolton 1987:30). The most prominent of these were the Hainais, Nabadachos, Neches, Nacogdoches, Nacachaus, Nacanos, and Nabitis, collectively forming a confederacy with a number of other allies that were referred to as "Tejas," "Techas," or other close variant of the current state name of Texas (Bolton 1987:53–58). Between roughly the 1680s and 1720s, there was a growing recognition of the "Kingdom of the Texas," and the colonial powers struggled to establish ties to the exclusion of others, in large part to stake territorial claims thorough settlement.

In the 1820s through the 1830s, the existing Native Americans were joined by displaced Caddo and Cherokee from U.S.-controlled Louisiana, particularly in Nacogdoches County. Settlement of the area by non-Native Americans created tension between American settlers and native peoples. These tensions prompted the Killough Massacre on October 5, 1838. Native Americans massacred members of the Isaac Killough family at their farm northwest of the site of present Jacksonville in Cherokee County. This incident sparked the Cherokee War of 1839, which resulted in the expulsion of all Native Americans from the Central East Texas Region (Ross 2017). Native American habitation was effectively ended in 1840, the year the last Caddo settlement in Nacogdoches County was abandoned (Long 2017).

THE TEXAS REVOLUTION AND THE CIVIL WAR (A.D. 1835–1865)

Smith County, like other counties in the Central East Texas Region, was void of any engagements during the Texas Revolution of 1835 to 1836. The region did contribute men and supplies for the Texas cause and provided a safe entry point for American volunteers seeking to fight for Texas independence (McDonald 1969, 1980). After the revolution was over, American farmers rapidly populated the counties that compose the Central East Texas Region. The Republic of Texas government contributed to trade in the region by improving the west-east Dallas-Shreveport Road through present Starrville. Slave labor was employed throughout the area, but the pine forests of the region did not allow large-scale plantation farming (Biesele 2017; Knapp and Biesele 2017; McCroskey 2017; Ross 2017).

The Civil War dramatically changed the Central East Texas region. The Confederacy established training and prisoner of war camps in Smith and Cherokee counties (McCroskey 2017; Ross 2017). Smith County was also the site of the largest Confederate ammunition factory west of the Mississippi River, a large prisoner of war stockade at Camp Ford, and one of the few Confederate medicinal chemical production plants (Ross 2017).

RECONSTRUCTION ERA (A.D. 1865–1900'S)

The end of the war and Reconstruction brought great economic devastation to the counties of Central East Texas. The emancipation of African-Americans seriously undercut the local economy. Some of these newly freed slaves left the area in search of a fresh start elsewhere but the vast majority became tenant farmers on the lands they formerly worked as slaves. Episodes of violence and racial intimidation did occur, with the worst of these happening in Smith County (Biesele 2017; Knapp and Biesele 2017; Long 2017; McCroskey 2017; Ross 2017).

The fortunes of the region began to revive with the construction of rail lines through the area from the 1870s through the turn of the century (Maxwell 1998; Reed 1941). The region remained largely agricultural after the Civil War, and the construction of a railroad network in the area not only provided markets for locally

produced goods, but also opened up formerly isolated areas to settlement (Biesele 2017; Knapp and Biesele 2017; Long 2017; McCroskey 2017; McKinney 1996, 2000; Ross 2017).

TIMBER INDUSTRY

Since the early nineteenth century, lumber production has been a substantial economic force in eastern Texas. While an important source of revenue in Smith County, the heart of the state's timber industry has generally been the areas around Cherokee, Angelina, and Nacogdoches counties, though the river system often served as the system of transport, feeding shipping ports and sawmills along the coastal bays.

Prior to the Civil War, the 1860 census listed 200 sawmills in Texas, but compared to other lumber exporting states the industry was relatively small (Maxwell 1983). The arrival of the railroad allowed the commercial exploitation of local stands of timber, predominately the area's large tracts of virgin pine forests (Maxwell 1983; McKinney 1996, 2000). Large sawmills and their associated tram railroads sprang up, chiefly in Rusk, Nacogdoches, and Angelina counties, but smaller sawmills appeared all over the region. The production of lumber remains a cornerstone of the area's economy in the modern era (Biesele 2017; Knapp and Biesele 2017; Long 2017; McCroskey 2017; McKinney 2000; Ross 2017).

OIL

Oil was also discovered in these counties beginning with Lyne T. Barret's 1865 construction of the first producing well in Texas, in Nacogdoches County. Previous to Barret's well, oil had been discovered in 1790 at Oil Springs, Nacogdoches County, but was not commercially exploited (Long 2017; McKinney 1996). The discovery of the East Texas Field in Rusk County by C.M. "Dad" Joiner helped to spark the East Texas Oil Boom in the 1930s (Haley 1980; Knapp and Biesele 2017). While no major strikes have been made in recent years, petroleum and natural gas production remains a strong factor in the region's economy (Biesele 2017; Knapp and Biesele 2017; Long 2017; McCroskey 2017; Ross 2017).

WORLD WAR II

The era of World War II brought about many changes in the Central East Texas Region. The United States Army established Camp Fannin, an infantry-training center, in Smith County in 1943. The camp employed 2,500 civilians, and held German prisoners of war (McCroskey 2017).

While cities such as Tyler have grown in the decades following World War II, the counties of the Central East Texas Region have remained predominately rural. Agricultural production remains a staple of the local economy, but hydrocarbon and timber production, as well as manufacturing, have supplemented this economic sector (Biesele 2017; Long 2017; Ross 2017; Knapp and Biesele 2017; McCroskey 2017).

METHODS

BACKGROUND REVIEW

SWCA performed a cultural resources records review to determine if the proposed APE has been previously surveyed for cultural resources or if any archaeological sites have been recorded within or adjacent to the two fiber optic segments. To conduct this review, an SWCA archaeologist reviewed the *Lindale, Texas* (3295-422) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps on the Texas Archeological Sites Atlas (Atlas) online database for any previously recorded surveys and historic or prehistoric archaeological sites located in or near the project area. In addition to identifying recorded archaeological sites, the review included information on NRHP properties, SALs, Official Texas Historical

Markers, Registered Texas Historic Landmarks, cemeteries, and local neighborhood surveys. The archaeologist also examined the following sources: the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2017) and the *Geologic Atlas of Texas-Tyler Sheet* (Barnes 1974). As a part of the review, an SWCA archaeologist reviewed the TxDOT Historic Overlay Maps, a mapping/geographic information system (GIS) database with historic maps and resource information covering most portions of the state (Foster et al. 2006). Using this information, areas within the APE were assessed for their potential to contain archaeological and/or historical materials.

FIELD METHODS

Investigations were of sufficient intensity to determine the nature, extent, and, if possible, potential significance of cultural resources located within the proposed project area. For linear projects, the Texas Historical Commission's (THC's) minimum survey standards require 16 shovel tests per mile, per 100 feet of corridor width, or providing thorough documentation of any exceptions (e.g., disturbances, slope, or impervious surfaces). However, as per TxDOT, survey efforts west of the Toll 49 corridor, SWCA utilized 30-meter (m) transect intervals and excavated shovel tests every 30 m along transects spaced approximately 30 m apart west of the Toll 49 corridor. East of the Toll 49 corridor, TxDOT agreed that the standard 100-m interval for shovel testing using 30-m transect spacing intervals was adequate.

Portions of the project (proposed ROW on parcels 25, 26, and 50) encompass topographic settings (i.e., Luckeible Branch, Hubbard Branch, and the confluence of Hubbard and Davis Branches) that have the potential for deeply buried archaeological sites. The primary method for quickly and efficiently exploring these areas is with backhoe trenching. During field investigations, it became apparent that the proposed trenching areas were inundated, due to the flow of the creeks being blocked by several beaver dams. Discussions with the property owners indicated that the beaver dams had been there for some time. Due to these conditions, backhoe trenching was not possible within the FM 16 APE. Had trenching been possible, trench locations would have been chosen at the discretion of the project archaeologist and focused on areas with the least disturbance within the APE, as well as areas with alluvial deposits and the potential for deeply buried cultural materials. Archaeologists would have thoroughly documented and photographed the entire excavation process. Additionally, archaeologists would have recorded BHT locations on a handheld sub-meter accurate GPS receiver. Upon completion of the individual trenches, all BHTs would have been backfilled, levelled, and returned as much as possible to their original state. SWCA would have performed all work in accordance with Occupational Safety and Health Administration regulations (29 Code of Federal Regulations [CFR] 1926).

The field survey consisted of a team of two SWCA archaeologists systematically walking the APE examining the ground surface and erosional profiles for cultural resources. The utilization of subsurface exploration (i.e., shovel testing) was keyed to the level of disturbance and the nature of the soils, geology, and topography. To assess potential buried cultural components that may be subject to the proposed subsurface impacts for the project, all subsurface explorations were excavated to a depth of up to 1 m, or until an argillic soil horizon was encountered. As previously mentioned, due to inundation, backhoe trenching within targeted locations within the FM 16 APE was not possible.

Shovel tests measured approximately 30 centimeters (cm) in diameter and were excavated in arbitrary 20-cm levels to a depth of 100 cm below ground surface (cmbs), unless clay subsoils, bedrock, or soil conditions precluded reaching that depth. The matrix from each shovel test was screened through ¼-inch mesh, and the location of each excavation was plotted using a hand-held Global Positioning Systems (GPS) receiver. Each shovel test was recorded on a standardized form to document the excavations.

If an archaeological site was encountered in the proposed project area during investigations, it was explored as much as possible with consideration to land access constraints. Discovered cultural resources were

assessed for their potential significance so that recommendations can be made for proper management (i.e., avoidance, non-avoidance, or further work). Additional shovel tests were conducted per THC standards at discovered sites to further define horizontal and vertical boundaries. Appropriate State of Texas Archaeological Site Data Forms were completed for each site discovered during the investigations. A detailed plan map of each site was produced and locations were mapped with a Trimble GPS unit and plotted on USGS 7.5-minute topographic maps and relevant project maps. SWCA conducted a non-collection survey. When discovered, artifacts were documented in the field and replaced where they were observed.

RESULTS

BACKGROUND REVIEW

The background review determined that the APE has not been previously surveyed for cultural resources and no previously recorded sites are within or immediately adjacent to the APE (THC 2017). In contrast, there are two previously recorded archaeological sites, two previously investigated cultural resources survey areas, and one cemetery within a 1-kilometer (km) radius of the APE (THC 2017) (Figure 7).

Approximately 3.1 km west of the FM 16/US 69 intersection is a previously surveyed, north/south trending corridor for the US 69/Loop 49 North Lindale Relief Route project (THC 2017). The proposed approximately 10-mile-long US 69/Loop 49 corridor was surveyed in 2008 and resulted in the discovery of nine new archaeological sites and a revisit to previously recorded site 41SM201 (Campbell et al. 2010). Of the nine newly recorded sites, one (41SM388) is slightly more than 1 km south of FM 16 and consists of an Early to Middle Caddo site with potential for inclusion in the NRHP or for designation as an SAL based on the results of shovel testing, backhoe trenching, and the excavation of several 1×1-m test units (Campbell et al. 2010).

The second site within a 1-km radius of the APE is 41SM7, which is approximately 1.7 km west of the US 69/Loop 49 corridor described above and is 230 m north of FM 16 (THC 2017). Unfortunately, virtually no data is available on Atlas for this site except a note that the site contained a prehistoric mound feature that was partially excavated by unknown parties (THC 2017).

The second previously surveyed project area within a 1-km radius of the APE is approximately 375 m northeast of the FM 16/US 69 intersection in Lindale. The survey was conducted on behalf of the City of Lindale for a community park; investigations identified no cultural resources (THC 2017).

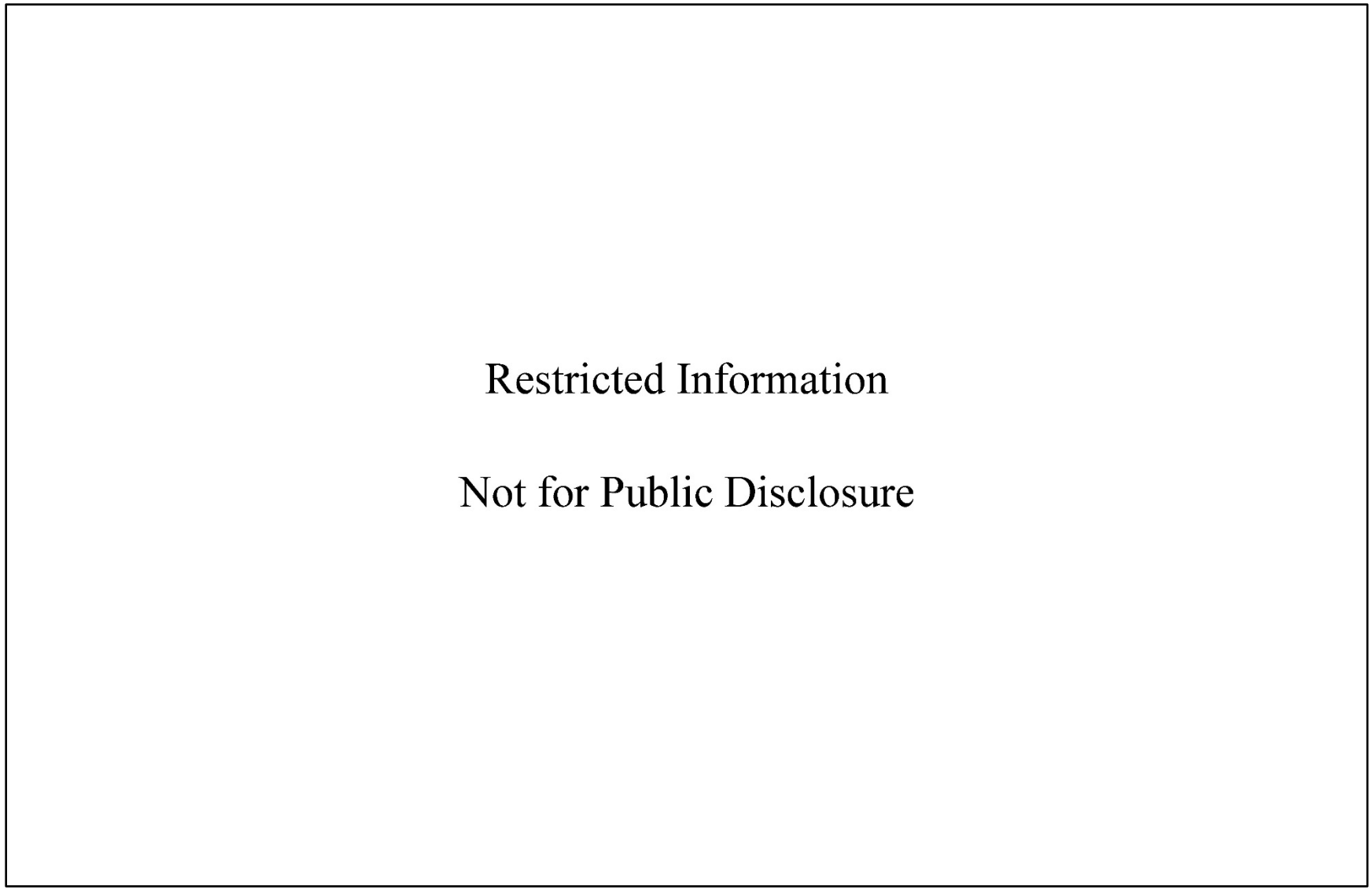


Figure 7. Previous recorded sites near APE.

The Lindale City Cemetery is approximately 552 m west of the FM 16/FM 849 intersection and 225 m south of FM 16 (THC 2017). The cemetery is listed on Atlas as cemetery number SM-C300. No other information is available on Atlas; however, according to www.findagrave.com there are approximately 2,052 interments within the cemetery.

HISTORIC MAP REVIEW

A review of the TxDOT Historic Overlay maps (Foster et al. 2006) dating from 1869 to 1904 determined that numerous historic-age resources are located north and south of FM 16 in proximity to the APE. More recent aerial imagery indicates that the structures either still stand or more recent structures have been built in their place. None of the historic maps indicated that any structures stood within the currently proposed APE. Given the presence of numerous structures on the various historic maps, there was a good potential for identifying historical archaeological sites associated with the structures (extant and previously standing) within the proposed ROW for this project.

FIELD SURVEY

SWCA conducted fieldwork on February 21–25, 2017, on all accessible properties within the project area (Figure 8a–8e). All accessible parcels accounted for approximately 40.37 acres of the total 68.1 acres of proposed new ROW (59.3 percent; Appendix A). This involved shovel testing in settings with the potential to contain buried cultural materials that were dependent upon variables such as previous disturbances and the presence of deep soils. The existing TxDOT ROW throughout the APE was heavily graded and modified and contained numerous buried cable and fiber optic lines, which rendered the existing ROW unsuitable for subsurface testing and shifted the focus of the archaeological survey to the proposed ROW. Overall, the proposed ROW was largely disturbed by the construction of FM 16, numerous buried utilities and maintenance, deeply incised drainages, and agricultural and residential modifications. SWCA archaeologists attempted to excavate 225 shovel tests during the survey but due to standing water, existing subsurface utilities, and eroded areas, only 215 shovel tests could actually be excavated in support of the project, which exceeds the THC's recommended survey standards for a project of this size (Appendix B). Six shovel tests were positive for buried cultural material on site 41SM484 and Isolated Find 1 (IF1), all other excavations were negative.

The general setting of the proposed road expansion and associated infrastructure varies between eroding sandy uplands to the west, an inundated valley in the middle, and a deep sandy upland to the east. The western portion of the project area is characterized by upland ridges populated by mixed piney woods or medium grass pastures in residential or agricultural use. The soils are a mix of pre-Holocene bed clays at surface to a thin loamy sand above the pre-Holocene clays or sandstone bedrock at approximately 30–60 cmbs. The western portion, like the entire project, contained numerous buried fiber optic and water utilities within the existing FM 16 ROW, as well as the proposed ROW (Figure 9). Starting on the western terminus, the buried water line and cleared corridor paralleled the road on the north side (Figure 10), with numerous perpendicular branches to supply residential structures on both sides of the road, until parcel 20 when it traveled under the road and continued paralleling FM 16 along the south side for the remainder of the project area. Additionally, on the west side, SWCA identified a sink hole or eroded well on parcel 12, just north of the proposed ROW (Figure 11).

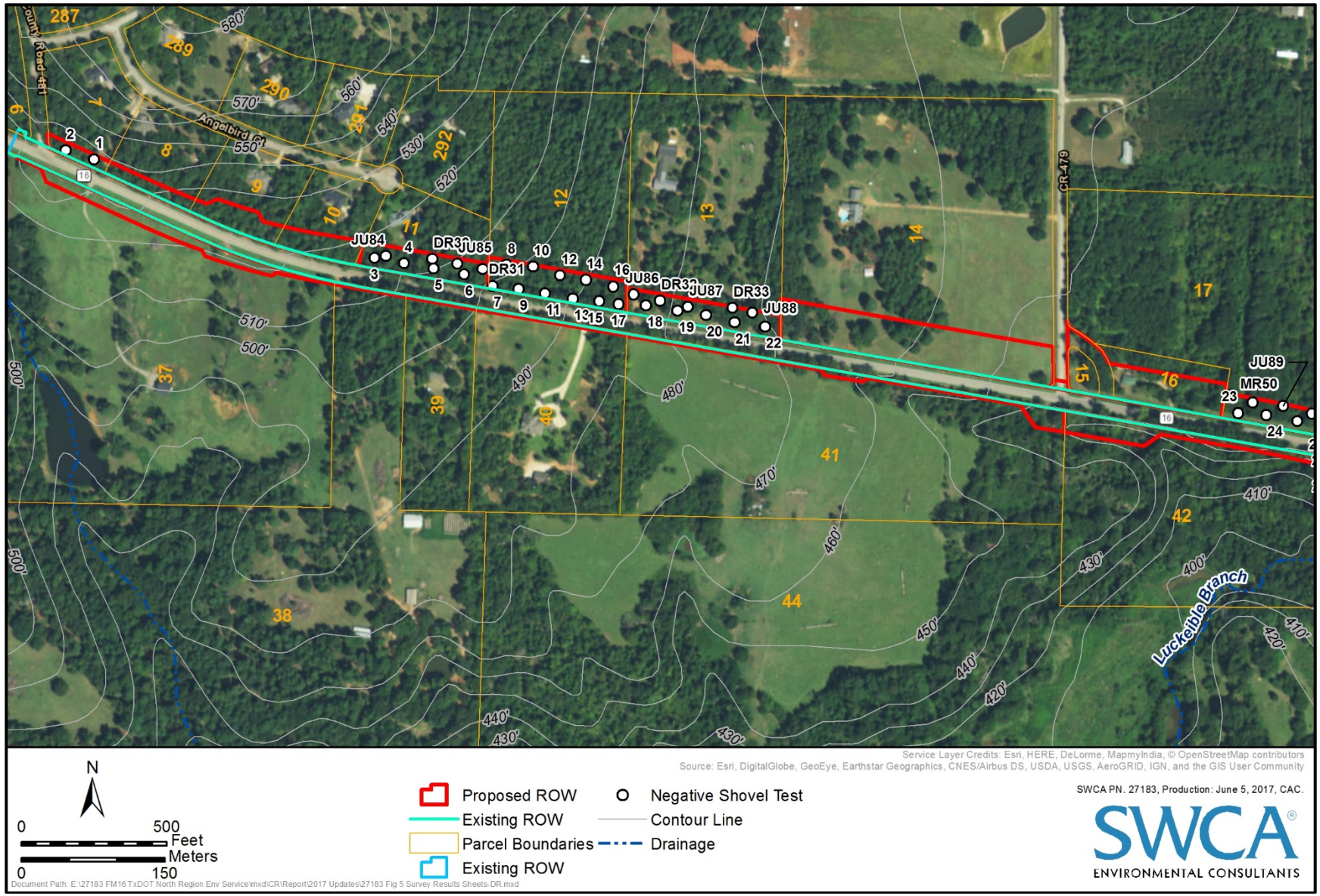


Figure 8a. Results map.

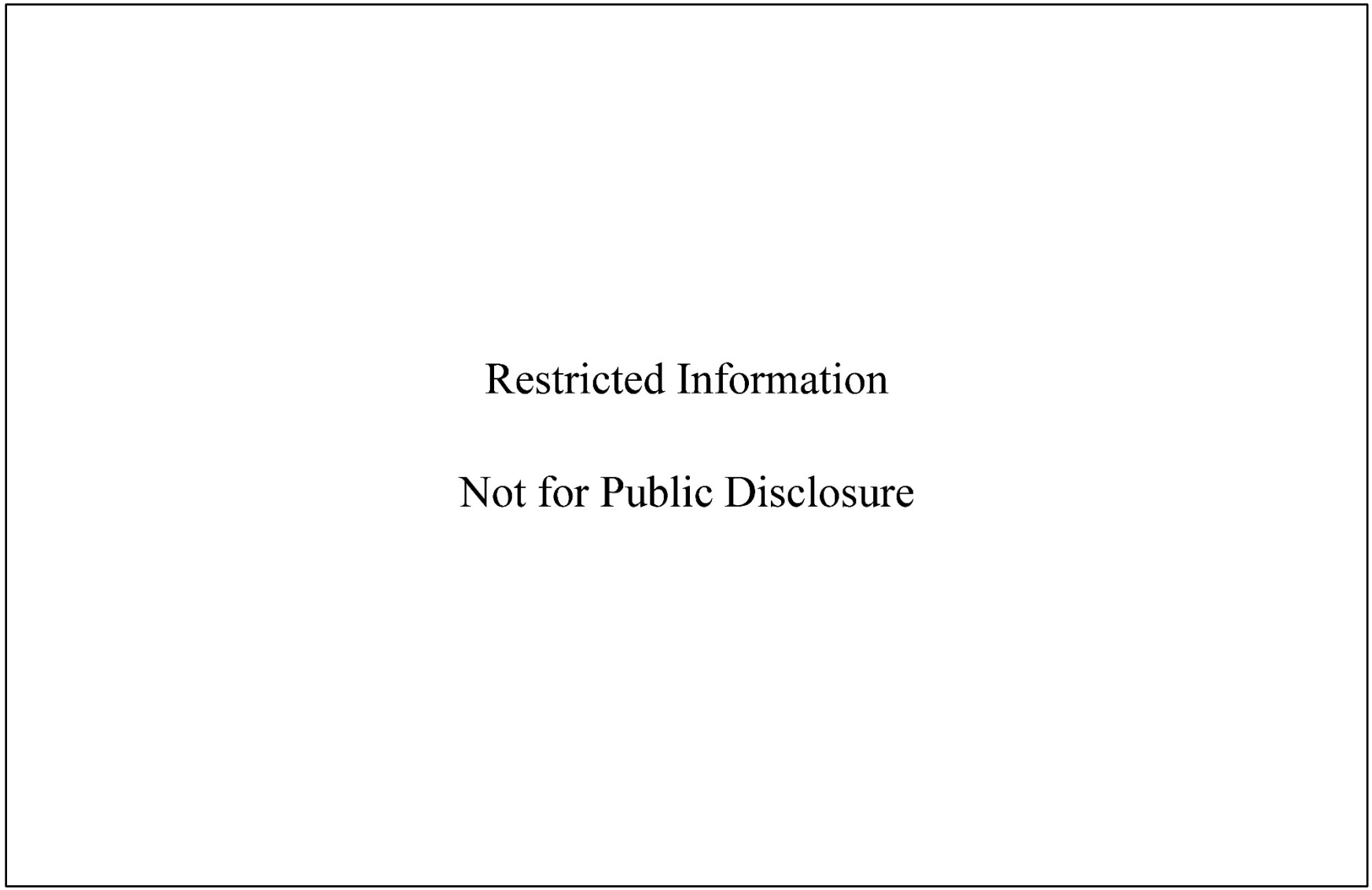


Figure 8b. Results map.

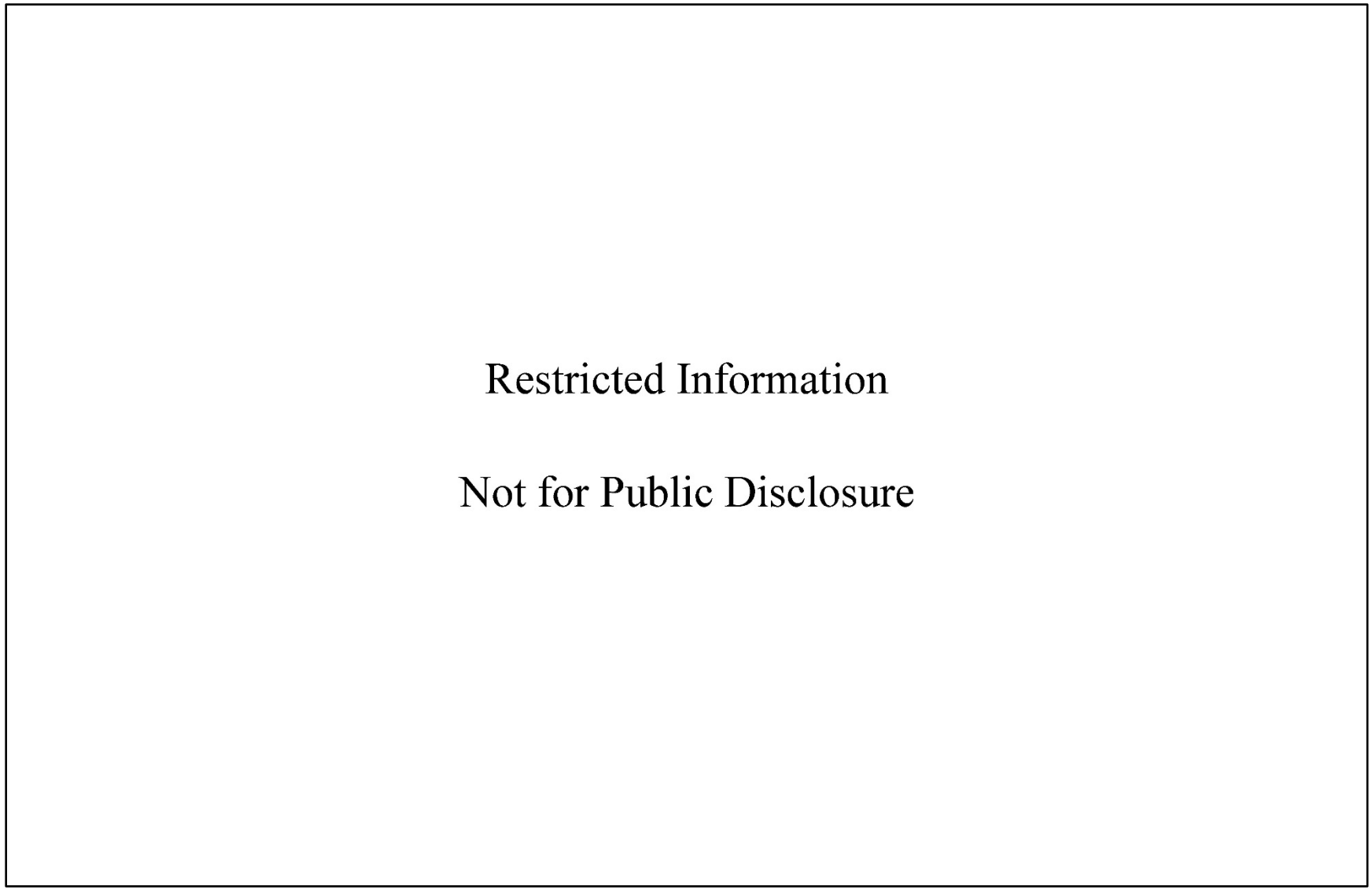


Figure 8c. Results map.

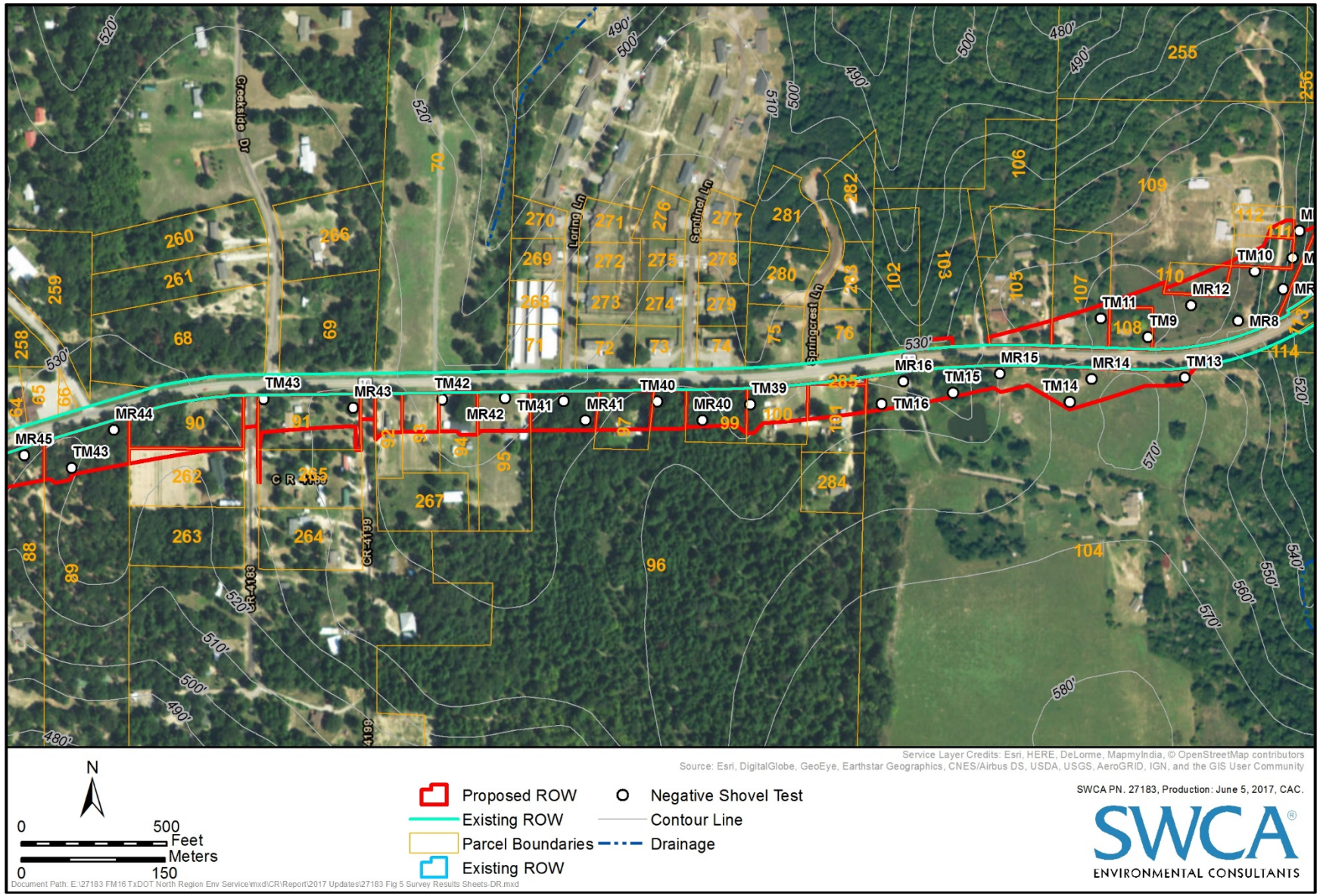


Figure 8d. Results map.

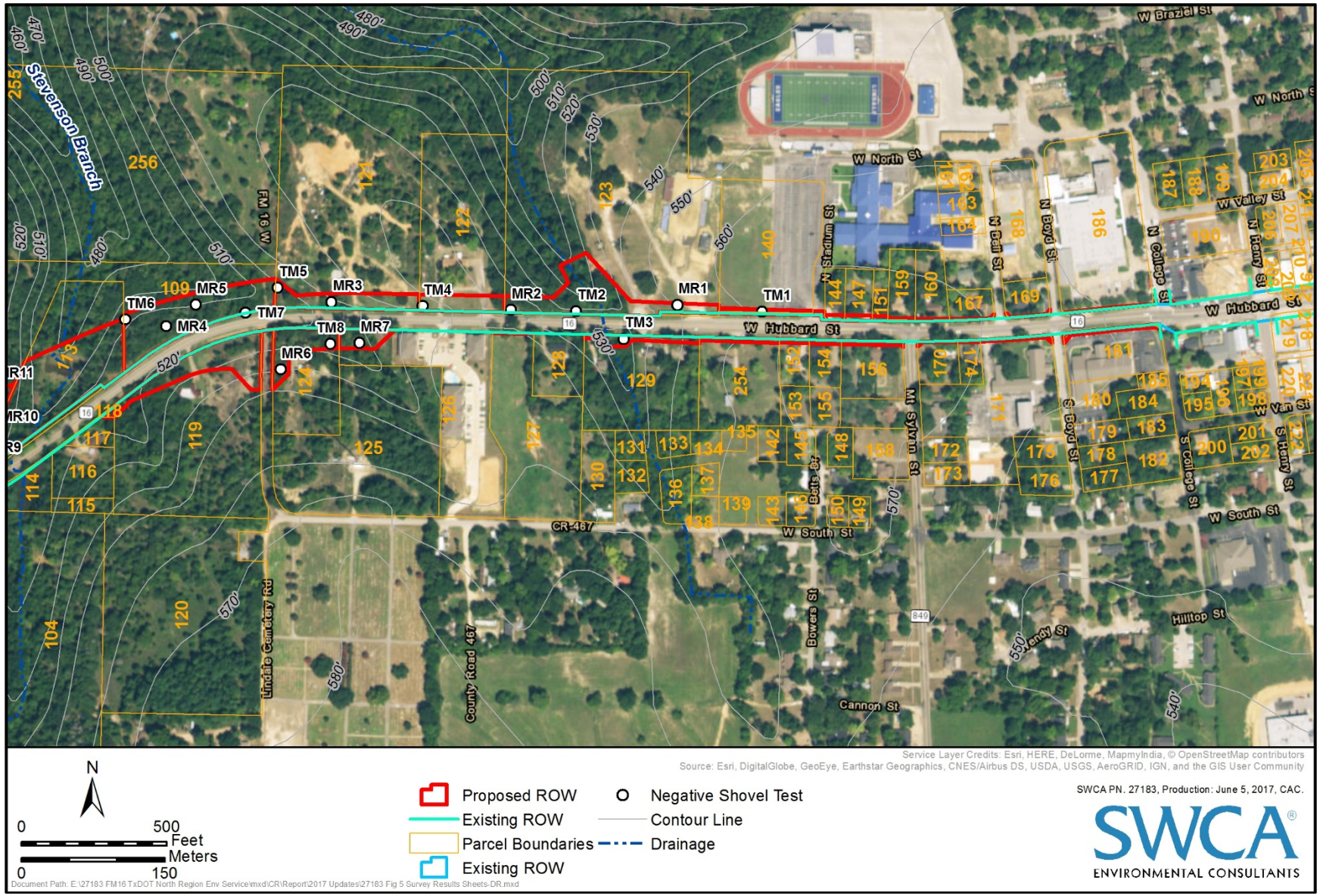


Figure 8e. Results map.

Figure 9. Numerous buried and marked utilities on edge of existing TxDOT ROW, facing northwest.

Figure 10. Parcel 11 with young and old pine wood and cleared water pipeline easement (blue flags). Note FM 16 in left background, facing northwest.

Figure 11. Sinkhole or eroded well located just outside the proposed ROW on parcel 12, facing northeast.

Within parcels 25, 26, and 50, the proposed ROW is situated in a small valley with an alluvial floodplain where the western Luckeible Branch meets Hubbard Creek on the flow northward to the Sabine River. The area is a mixed wooded creek bottom with numerous areas of standing water and *Rhubus* sp. (Figure 12). The western portion of this floodplain (parcel 25) is partially cleared and heavily modified for a horse pasture and residence, with cleared land, constructed barns, pens, and an approximately 30-cm thick layer of imported soil on the surface within the ROW. Parcel 26 is a wooded floodplain with minimal disturbance from an overhead powerline ROW but was heavily inundated with standing water on the surface. A mechanics shop, on the west side of parcel 50, is situated in the middle of the two creeks on the north side of FM 16 (Figure 13). The mechanics shop appears to be on a terrace containing disturbed fill above the floodplain, as well as broken concrete pipes and discarded tires (Figure 14). The area east of the mechanics shop on parcel 50 appears to be more of a true floodplain with patches of grasses, *Rhubus* sp., and mixed woods (including sweet gum) (Figure 15). Broad swaths of stagnant water occurred all along the east side until close to Hubbard Creek where there is a slight terrace (Figure 16). The terrace is located adjacent to Hubbard Creek and the bridge of FM 16 may have at one point been smaller natural terraces; however, it now appears to have been heavily mechanically modified and expanded, like the terrace of the mechanics shop. Shovel tests within the terrace of Hubbard Creek found a mix of small and large sandstone gravels (1–15 cm in diameter) as well as small fragments of asphalt to a depth of 60 cmbs. Soils along the floodplain were a silty loam with redoximorphic mottling from iron and manganese concretions and water table encountered between 30 cmbs to surface. The project area mirrored the western terminus landforms, disturbances, and soils just east of parcel 50 until approximately parcel 56 on the west side of the current Highway Toll 49 construction (parcel 58).

Figure 12. Saturated ground within wooded floodplain on parcel 26, facing east.

Figure 13. Mechanics shop on parcel 50, north side of FM 16 with flagged buried fiber optic cables, facing east.

Figure 14. Large concrete boulders and asphalt push piles on southeastern edge of modified terrace of the mechanic's shop on parcel 50, facing west. Note the uneven terrace step (and riser) in the background depicting piles of added fill being pushed down the slope.

Figure 15. Standing water in forested wetland on parcel 50. In the right background of the frame is the start of the terrace near bridge over Hubbard Creek, facing southeast.

Figure 16. Terrace on parcel 50 and west bank of Hubbard Creek, facing north.

The eastern portion of the project, east of Hubbard Branch, is characterized by deep, sandy uplands and deeply incised drainages. The majority of the proposed ROW is composed of manicured lawns, modern residential structures, and commercial buildings within the center of Lindale. These developed areas contained private utilities that were unmarked including sprinkler systems, gas lines, and phone utilities as well as the fiber optic and water utilities that extend throughout the entire project area (Figures 17–19). Portions of the proposed ROW contains cleared pastureland and densely wooded hardwood forests. The soils consist of a deep, light brown sandy loam. No cultural materials were identified within the eastern portion of the project area.

Access to the proposed ROW was limited in many cases with survey permission granted for approximately 59.3 percent (40.37 acres) of the total 68.13 acres of proposed new ROW. Additionally, many parcels contained proposed ROW 10 feet wide or less with nearby buried utilities, which precluded shovel testing. In other instances, deeply incised drainages, which were provided a greater APE width for the construction of additional road infrastructure, provided no locations on which to place a shovel test, either due to the steep erosional slopes, flagged utilities, or safety concerns.

SWCA recorded a total of two new sites (41SM483 and 41SM484) and one isolated find (IF1) during the survey. Site 41SM483 is a historic barn that likely dates to the early to mid-twentieth century. Site 41SM484 is a diffuse prehistoric lithic scatter located on an eroding upland landform. Both sites are recommended as not eligible for the NRHP or for designation as SALs. The single isolated find, IF1, is a prehistoric ceramic sherd located between two artificial berms.

Figure 17. Raised telephone lines and buried fiber optic lines within the existing FM 16 ROW near Lindale, facing west.

Figure 18. Buried water main and heavily modified residential property typical of the proposed ROW on the eastern portion of the project area, facing southeast on parcel 151.

Figure 19. Heavily graded and disturbed proposed ROW with numerous marked fiber optic and water utilities typical of parcels near the Toll 49 construction area, facing southeast on parcel 57. Note that columns for Toll 49 can be seen in background.

ARCHAEOLOGICAL SITES

SITE 41SM483

Site 41SM483 is a historic-age single crib barn consisting of a central enclosed structure and two open bays on either side located on parcel 43 (Figure 20). The site is along the south fence line of FM 16 ROW on parcel 43 (Figure 21). The structure is situated on a finger ridge of the uplands overlooking a southern slope to Luckeible Branch. The vegetation includes a tall grass pasture providing no ground surface visibility with a wooded fence line and mixed pine-elm-oak woods to south by the creek. The site is also near to two non-historic barns identified to the southeast, outside the proposed ROW.

The barn measures 34 feet east/west by 14 feet north/south. The central section has a corrugated metal, front gable roof. The open bays on the northwest elevation has collapsed, but was likely a shed style roof. The southeast bay has a side gable roof and was likely a later addition. The barn has a pier-and-beam foundation with board-and-batten wood siding on all four sides of the central room and a corrugated metal siding on three sides of the southeast bay. Wire nails were observed throughout the structure, which suggests a twentieth century construction date. There are no window openings. There is evidence of a hinged door, but it is no longer in place. Inside the central room are a number of modern agricultural and mechanical debris, such as galvanized pipes, central air vents and fans, and tires. There is moderate to dense vegetation overgrowth around the structure, causing damage to the walls and roof (Figure 22). It is possible that the structure was moved sometime after 1960. The *Lindale, TX* 1960 USGS topographic 7.5-minute quadrangle map depicts an ancillary structure approximately 230 feet southeast of where the barn at site 41SM483 now sits (Foster 2006). This structure is in the location of one of the non-historic barns. The original structure likely represents the historic barn's original location.

Archaeologists excavated six shovel tests at site 41SM483 within the proposed ROW in a partial cruciform. Soils were found to be shallow with light reddish brown sandy loam above red clay at approximately 30 cm below surface. All shovel tests were negative for subsurface cultural materials. As previously mentioned, due to existing subsurface utilities and previous roadway construction, the existing ROW adjacent to the site did not warrant shovel testing, as it has little to no potential to contain buried intact cultural materials eligible for the NRHP or warranting SAL designation.

Figure 20. Site 41SM483 overgrown barn with collapsed shed additions, facing northeast on parcel 43.

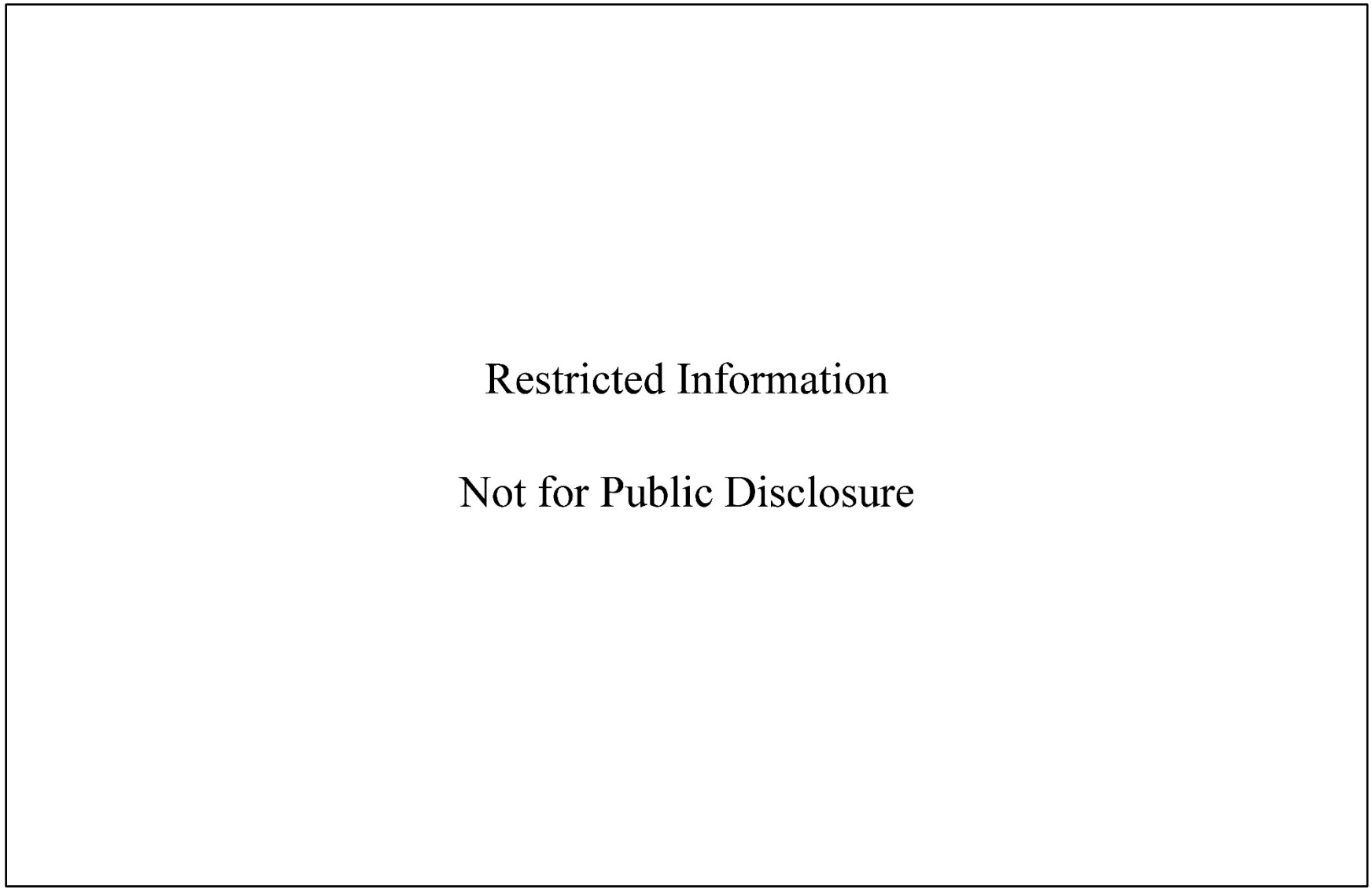


Figure 21. Site 41SM483 within proposed ROW on parcel 43.

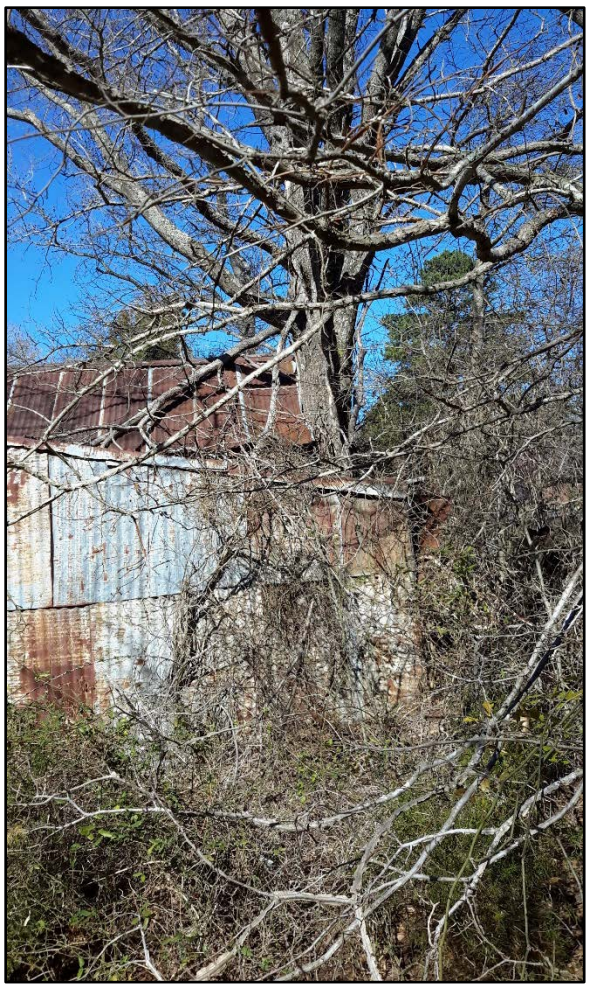


Figure 22. Site 41SM483 on parcel 43 with American elm tree partially growing around the edge of the barn roof, facing northwest.

SUMMARY

Based on building materials (including wire nails) and historical map reviews, the single crib barn likely dates between early and mid-twentieth century with a later, historic age addition of the side gable section. Historic maps suggest that the barn was moved sometime after 1960. The structure is in poor condition due to vegetation overgrowth. Due to the current condition of the structure, in addition to evidence of being moved, SWCA recommends the portion of the site within the current APE as not eligible for the NRHP or for designation as an SAL. No further work or avoidance is recommended unless the proposed roadway design changes and shifts to a previously uninvestigated area adjacent to the structure.

SITE 41SM484

Site 41SM484 is a prehistoric lithic scatter located on an upland finger ridge overlooking Luckeible Branch on parcel 46 (Figure 23). The site is bounded by FM 16 to the north, as well as a water pipeline along the south side of the fence line to FM 16 (Figure 24). Vegetation at the site consists of short grasses with an old oak tree and mixed wooded fence line and drainage to south (Figure 25). Ground surface visibility at the site is approximately 20 percent, with some areas of eroding bare soils along the slopes. Soils at the site

are light brown sandy loam above a brownish yellow sandy clay or sandstone bedrock at approximately 30 to 60 cm below surface.

The site measures 46 m northwest/southeast by 18 m northeast/southwest and was defined by both the presence of artifacts on surface, as well as cultural materials in shovel tests. SWCA conducted 13 shovel tests at the site, five of which were positive for cultural material. Archaeologists observed a total of six tertiary flakes between 20 to 50 cmbs, with an additional tertiary flake and a modified flake tool observed on the ground surface (Figure 26), for a total of seven tertiary flakes and one flake tool at the site. Chert material observed include white, dark brown, gray, and gray with red speckles. A number of the tertiary flakes (n=4) appeared to be bifacial thinning flakes. Due to existing subsurface utilities and previous roadway construction, the existing ROW adjacent to the site did not warrant shovel testing, as it has little to no potential to contain buried intact cultural materials eligible for the NRHP or warranting SAL designation.

SUMMARY

Site 41SM484 is a diffuse lithic scatter of unknown age located on a deflating upland landform overlooking Luckeible Branch. The site has been heavily impacted by erosion as well as the construction of FM 16, to the north, and buried water pipe along the north side of the proposed ROW. Cultural materials observed include tertiary flakes and a possible exhausted modified flake tool. The site likely represents short-term use with evidence for lithic tool refreshment and exhausted tool discard. Given the high degree of disturbance of the site, erosion, as well as the ephemeral nature of the cultural materials, SWCA recommends that the portion of site 41SM484 within the current APE as not eligible for the NRHP or for designation as an SAL. No further work or avoidance is recommended.

ISOLATED FINDS

During the survey, SWCA investigators recorded a single isolated find (IF). As the designation implies, isolated finds are isolated artifacts that did not contain sufficient data to warrant designation as an archaeological site.

IF1

IF1 consists of one Caddo ceramic sherd discovered on parcel 52 (Figure 27; see Figure 8c). The sherd was produced using the coiling method, which was made evident by the unsmoothed coils on the inside of the vessel. The body sherd is decorated with parallel and intersecting engraved lines and has a grog temper and a fine reddish brown paste. Discussions with Tim Perttula (Archeological & Environmental Consultants, L.L.C.) suggest that, given the visible coils on the interior surface of the sherd, it may be part of a bottleneck, as it was impossible to get one's hand into the narrow neck of a bottle to completely smooth the interior surface (Tim Perttula personal communication, 2017). Perttula (personal communication, 2017) estimated the sherd is likely from an Early Caddo (ca. A.D. 900–1200) engraved bottle. IF1 is located in parcel 52, which is heavily modified due to the construction of artificial berms (see Figure 8c). The soil in the area consists of a deep, yellowish brown loamy sand. The ceramic sherd was found at 50 cmbs. SWCA excavated five additional shovel tests to prospect for additional artifacts; adjacent shovel test excavations did not discover any additional artifacts. Although no additional artifacts were found in association with the sherd, the positive shovel test (DR26) and the adjacent negative radials are near the northern boundary of the proposed ROW (see Figure 8c), therefore, it is possible that there is a previously unidentified prehistoric site north of the APE in an adjacent parcel. As such, should the proposed APE change and shift northward into the adjacent parcel, additional survey there would be necessary prior to construction.

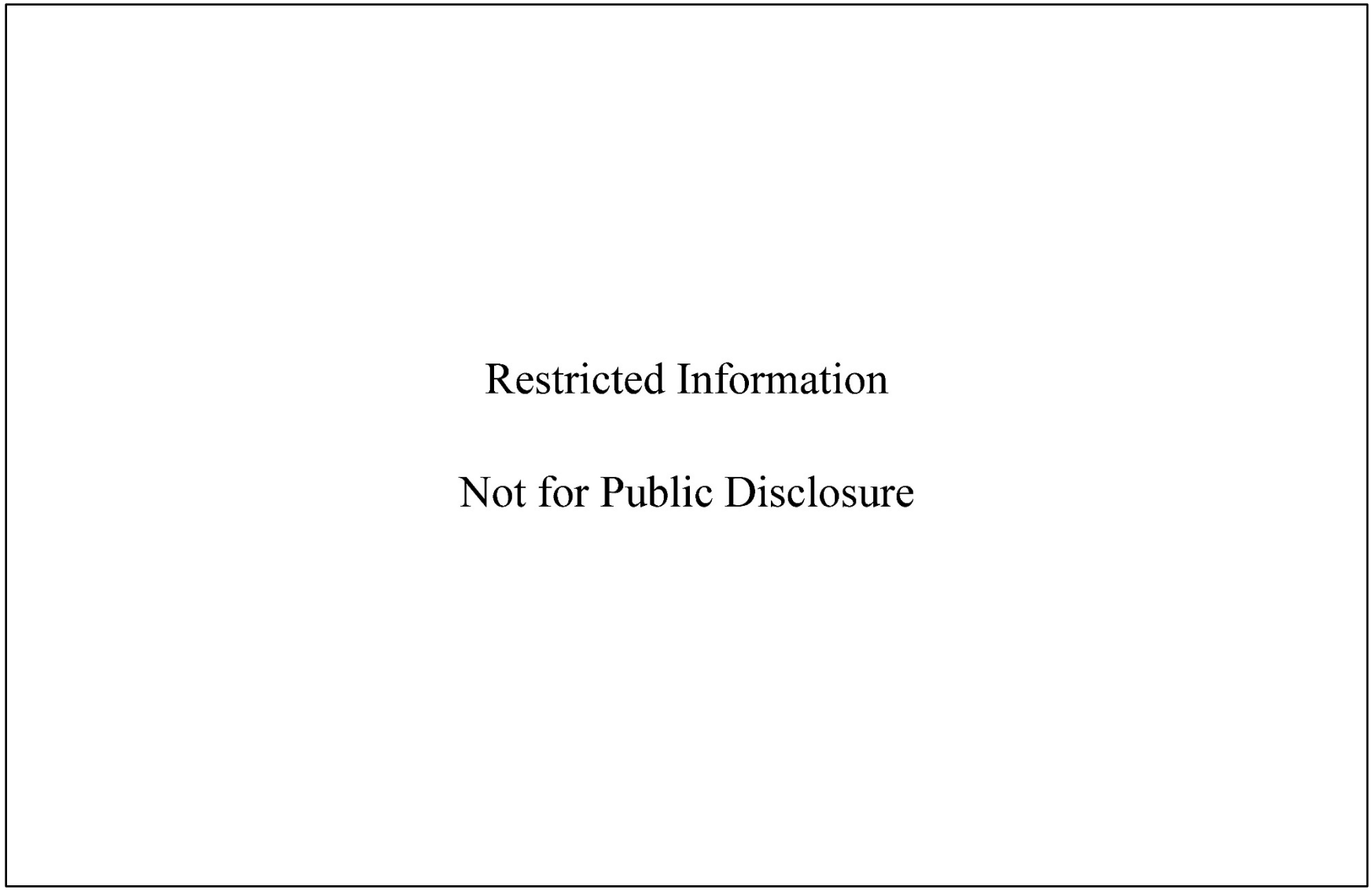


Figure 23. Site 41SM484 shown on parcel 46 within proposed ROW, existing ROW, and site boundary.

Figure 24. Site 41SM484 overview facing FM 16 with flagged buried water line in foreground, facing northeast on parcel 46.

Figure 25. Site 41SM484 overview of upland ridge with lone large oak grass pasture, facing west on parcel 46. The woods in the background indicate the drainage of Luckeible Branch with the tree line on the right side of the picture indicating the southern fence line of FM 16. Note the blue pipe to the right jutting out of the buried water pipe paralleling FM 16.

Figure 26. Site 41SM484 surface finds with bifacial thinning flake and modified flake tool. The flake tool has steep unifacial flaking on three edges. Identified on parcel 46.

Figure 27. IF1 ceramic sherd with incised marks along the exterior. The interior shows coiling perpendicular to the marks shown here. Identified on parcel 52.

SUMMARY AND RECOMMENDATIONS

During the cultural resources survey, SWCA archaeologists examined accessible portions of the 4.09-mile project area, totaling 40.37 acres of the total 68.1 acres of proposed ROW through intensive pedestrian inspection and the attempted excavation of 225 shovel tests, focusing subsurface investigations on contexts that exhibited the greatest potential for intact soils. Ultimately, due to standing water, subsurface utilities, and eroded areas, SWCA archaeologists excavated 215 shovel tests. In general, the project area consists of an eroded upland with shallow soils on the west side, inundated floodplain in the middle, and a heavily disturbed upland near Lindale with deep soils. As the APE is located along the edges of road ROW, there was a significant amount of disturbance throughout the project area. Disturbances consist of road construction and maintenance activity, buried and overhead utilities, private driveways, and sheet erosion.

The THC's minimum survey standards require 16 shovel tests per mile, per 100 feet of corridor width, or providing thorough documentation of any exceptions (e.g., disturbances, slope, or impervious surfaces). However, as per TxDOT, survey efforts west of the Toll 49 corridor, SWCA utilized 30-m transect intervals and excavated shovel tests every 30 m. East of the Toll 49 corridor, TxDOT agreed that the standard 100-m interval for shovel testing was adequate. Considering the very limited surface visibility and steep slopes encountered within the APE, the 215 shovel tests excavated within the 40.37 acres exceeds the THC's survey standards. Due to existing subsurface utilities and previous roadway construction, the current ROW adjacent to the site did not warrant shovel testing.

Six of the 226 shovel tests were positive for cultural material. These shovel tests were located on 41SM484 (n=5) and IF1 (n=1). SWCA newly recorded two archaeological sites (sites 41SM483 and 41SM484) as well as IF1. Site 41SM483 consists of a historic barn with no associated cultural material located along the southern fence line of FM 16. The structure may be depicted on a 1960 topographic map 230 feet southeast of the current location. Due to the likelihood that the structure is in a secondary context, as well as the paucity of cultural material and the absence of subsurface components, diagnostic artifacts, or cultural features, the portion of the site within the current APE is recommended not eligible for the NRHP or for designation as an SAL.

Site 41SM484 is a diffuse prehistoric lithic scatter located just south of FM 16 on an upland ridge. Although a small number of shovel tests located a subsurface component to the site, the landform has been highly disturbed from utilities and road construction and the cultural material appears to be limited and ephemeral in nature. Due to the paucity of cultural material, diagnostic artifacts, or cultural features, the portion of the site within the current APE is recommended not eligible for the NRHP or for designation as an SAL. No further work or avoidance is recommended for both sites within the project APE.

Finally, IF1, consisting of one possible Caddo bottleneck ceramic sherd with parallel incised lines discovered in a single shovel test (DR26) between artificial berms east of Hubbard Creek. There are several Caddo ware styles with similar incised lines, all which date to A.D. 900–1300 (Perttula 2004). No additional cultural material was encountered and the isolated sherd does not warrant designation as an archaeological site and no further work is recommended. However, should the proposed APE change and shift northward into the adjacent parcel, additional survey may be necessary prior to construction.

Throughout the western APE, investigators documented an eroded upland environment with a little Holocene deposition and prevalent disturbance related to roadway construction and maintenance, existing utilities, and erosion. This heavy disturbance continues throughout the APE, with the eastern APE experiencing heavy urban development in proximity to the proposed Highway Toll 49 corridor and the city of Lindale, although deeper Holocene deposits are present. In accordance with the ACT and 33 CFR 800.4, SWCA has made a reasonable and good faith effort to identify cultural resources within the currently accessible APE. No properties were identified that may meet the criteria for listing on the NRHP, according to 36 CFR 60.4, or for designation as an SAL, according to 13 TAC 26.12; therefore, SWCA recommends no further cultural resources investigations within the accessible project APE and that a determination of *No Historic Properties Affected* be granted for the assessed portion of the project.

As a result of the current survey and landform and topography, SWCA recommends that an intensive archaeological survey be conducted on 33 of the currently inaccessible parcels within the proposed ROW (see Figure 2a-2c), to ensure that no potentially significant cultural resources would be impacted by the planned construction (Appendix A). Particular attention should be given to parcels 49, 50 and 51, which are in close proximity to IF1 and Hubbard Creek.

Traditional Cultural Properties

Appendix C provides a statement from TxDOT regarding Traditional Cultural Properties and the current project. As noted in the survey report's background review, the APE is within the region occupied by the Caddo at the time of European contact. Sources place the locus of early nineteenth settlement by immigrant Native American groups to the east and south of the APE. Thus, this project area has a low likelihood of containing property types associated with the early-nineteenth-century settlement by non-Caddo Native American groups. Property types associated with Caddo and pre-Caddo peoples are much more likely to be found within the APE. The archaeological survey identified a single archaeological site, likely dating prior to European contact, and an isolated Caddo pottery sherd. Based on the background review and available archaeological evidence, the project area will not affect Traditional Cultural Properties associated with non-

Caddo Native American groups. Indeed, the work presented in this report has not identified any historic properties, associated with the Caddo or otherwise. The archaeological site and isolated find described in this report hint at sporadic, limited use of the APE in the past, but these impressions will be supplemented by additional field investigation. TxDOT will conduct additional survey once it acquires properties to which the current private property owners denied access. TxDOT will also conduct further evaluation of 41SM484.

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APPENDIX A

PROPOSED RIGHT-OF-WAY SURVEY TABLE

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Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
1	No Access	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
3	Granted	N/A	N/A	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
4	No Access	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
7	Granted	0.21	Buried utilities on side of road (cable) in existing TxDOT ROW. Very erosional soils.	Highly disturbed from FM 16 and housing development within proposed ROW. Parcel fence line 25 m west of marked location on maps.	2	No further work recommended based on negative survey results.
8	No Access	0.3	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
9	No Access	0.51	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
10	No Access	0.5	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
11	Granted	0.85	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Surveyed moderately old mixed pine forest.	7	No further work recommended based on negative survey results.
12	Granted	1.17	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Surveyed moderately old mixed pine forest. An unusual sinkhole or collapsed well located just beyond proposed ROW, photographed and plotted.	11	No further work recommended based on negative survey results
13	Granted	1	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Surveyed moderately old mixed pine forest.	10	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
14	No Access	3.02	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
15	No Access	0.31	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
16	No Access	1.04	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
17	Granted	1.3	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Crepe myrtle farm with possible buried irrigation.	13	No further work recommended based on negative survey results.
18	Granted	0.18	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Residential yard with probable private utilities. Existing buried water line takes up the proposed ROW, photographed but not tested.	9	No further work recommended based on negative survey results.
19	No access	0.3	Unknown	No survey permission	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
20	Granted	0.42	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW.	Surveyed	5	No further work recommended based on negative survey results.
21	Granted	0.2	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW.	Horse farm, surveyed.	2	No further work recommended based on negative survey results.
22	No Access	1.28	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
23	Granted	1.37	Buried water pipeline crosses street on west side of this parcel, fiber optic lines continue, residential property, area leveled for house	Landform modified to accommodate house.	8	No further work recommended based on negative survey results
24	No Access	1.76	Unknown	No survey permission	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
25	Granted	0.7	Raised telephone utility, buried fiber optic along existing TxDOT ROW. There are likely private utilities running to house in back.	Modified with additional soil fill on top, horse farm next to lowland woods and creek. When called landowner (wife of owner of parcel 50) they related how wet the property stays and how beavers have dammed the creeks raising the water table. Water table in shovel tests found at approximately 50 cmbs.	5	No further work recommended based on negative survey results.
26	Granted	1.36	Raised telephone utility and buried fiber optic	Mixed wood lowlands, water on surface and approx. 10-30 cmbs in shovel tests. When called landowner she related how wet the area was now that the beavers have moved in.	10	No further work recommended based on negative survey results.
27	No Access	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
28	Granted	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
29	Granted	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
31	Granted	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
32	No Access	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
33	No Access	N/A	Unknown	Not in proposed ROW	None	No further work recommended as area not in proposed ROW.
37	No access	0.87	Unknown	No survey permission	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
38	Granted	0.04	Buried fiber optic cable	New ROW very small and next to buried fiber optic utilities, photographed but not shovel tested.	None	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
39	No Access	0.04	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
40	No Access	0.09	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
41	Granted	0.5	Very steeply incised drainages with buried fiber optic lines on private property within proposed ROW.	Documented but not shovel tested due to slope. Utilities buried along steep slope in private property, nowhere to dig on steep slope.	None	No further work recommended based on negative survey results.
42	No Access	1.19	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
43	Granted	0.71	Erosional slope with raised telephone utility in proposed ROW. Buried fiber optic cables along fence line.	Located 41SM483 (historic barn/shed) on fence line of TxDOT ROW. Looks to be storing more modern agricultural debris and may have been moved to the fence line of the property. Two modern barns are located just southeast of the structure.	9	Site is not recommended eligible for NRHP or SAL designation; no further work recommended.
44	Granted	0.29	Erosional slope with raised telephone utility in proposed ROW. Buried fiber optic cables along fence line.	Surveyed	4	No further work recommended based on negative survey results.
45	Granted	0.35	Erosional slope with raised telephone utility in proposed ROW. Buried fiber optic cables along fence line.	Surveyed	3	No further work recommended based on negative survey results.
46	Granted	1.68	Buried water pipe crosses to parallel the south side of FM 16 on the west side of this property. Buried fiber optic utilities located along the existing FM 16 ROW.	41SM484 (prehistoric lithic scatter) located on an upland ridge overlooking a portion of Luckeible Branch. Landform is eroding with two artifacts located on erosional exposures along the eastern slope. The eastern portion of the proposed ROW ends in a very disturbed wooded drainage(?) with old trees and push piles.	27 (5 positive)	Site is not recommended eligible for NRHP or SAL designation; no further work recommended.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
47	No Access	0.9	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
48	No Access	3.77	Unknown	No survey permission. Standing water and tall reeds on south side of road.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
49	No Access	0.68	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
50	Granted	3.22	Raised telephone utility, buried fiber optic along existing TxDOT ROW. Mechanics shop situated on heavily modified terrace (large amount of concrete and road fill within the terrace).	East of the mechanics shop appears to be a true forested wetland with wetland grasses growing among the numerous standing water "ponds." Shovel tests were unable to be placed in the middle of the property due to standing water and deep mud. Along the east side by Hubbard Creek there was a slight rise that appears to be artificial with asphalt up to 60 cmbs within Shovel Tests DR08 and DR09. This, the only dry rise in landform, may have been a staging area for bridge or road construction at some point.	20 (8 Not Excavated)	No further work recommended based on negative survey results.
51	No Access	1.9	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
52	Granted	0.48	Buried utilities on side of road (cable). Heavily modified terraced with incised old road cuts along the existing TxDOT ROW fence line.	Young pine tree farm with at least two man-made or berms. Located a piece of prehistoric pottery in Shovel Test DR26 (Isolated Find 1-Early Caddo ceramic sherd). Conducted radials but no further cultural material.	11 (1 positive)	No further work recommended based on negative survey results; however, if APE shifts to the north, then additional survey in that area would be necessary.
53	Granted	1.9	Buried utilities on side of road (cable). Heavily modified terraced with incised old road cuts along the existing TxDOT ROW fence line. Very erosional uplands on east side.	Young pine tree farm with at least two man-made berms.	5	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
54	No Access	1.18	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
55	No Access	0.68	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
56	Granted	1	Disturbed by clearing, buried utilities, and other construction activities for Toll 49.	Disturbed by clearing and other construction activities.	9	No further work recommended based on negative survey results.
57	Granted	0.77	Numerous buried utilities on private property north of FM 16, also raised telephone line and perpendicular water lines in middle and east portion of parcel. Construction of Toll 49 has heavily impacted this property	High density of marked utilities and bare sandy ground due to use as access road for Toll 49 construction. Currently a shipping container is resting on proposed ROW.	7	No further work recommended based on negative survey results.
58	No Access	N/A	Numerous buried utilities on private property north of FM 16, also raised telephone line and perpendicular water lines in middle and east portion of parcel. Construction of Toll 49 has heavily impacted this property	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
77	Granted	0.2	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW. Numerous push piles by entrance to property from clearing and grading ongoing.	Ongoing deforestation and grading of property.	2	No further work recommended based on negative survey results.
78	Granted	0.57	Buried water pipeline corridor with perpendicular branches to houses in proposed ROW. Buried fiber optic cables within existing TxDOT ROW. Numerous push piles by entrance to property from clearing and grading ongoing.	Wooded sandy rise heavily impacted by buried pipeline within proposed ROW. Parcel fence line has encroached 25 m onto FM 16 ROW.	6	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
79	No Access	0.32	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
80	Granted	0.48	Deeply incised drainage on property. Buried fiber optic and water utilities.	Tested where slope allowed.	5	No further work recommended based on negative survey results.
81	No Access	0.24	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
82	No Access	0.21	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
83	No Access	0.17	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
84	No Access	0.13	Unknown	No survey permission.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
85	Granted	0.15	Multiple buried water utilities one property as well as at least three fiber optic cables.	Cleared, plowed pasture with multiple utilities; under construction for Toll 49 Highway.	1	No further work recommended based on negative survey results.
86	No access	0.21	Unknown	No survey permission	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
87	Granted	0.42	Manicured lawn with buried fiber optic and buried water utilities.	Partially wooded. Least disturbed portion of property tested.	1	No further work recommended based on negative survey results.
88	Granted	0.71	Buried fiber optic and water utilities near existing ROW. Used for a trash dump.	Area impacted by heavy erosion. New growth forest.	2	No further work recommended based on negative survey results.
89	Granted	1.02	Buried fiber optic and water utilities near existing ROW. Used for a trash dump.	Area impacted by heavy erosion. New growth forest.	2	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
90	No Access	1.41	Unknown	No access	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
91	Granted	0.99	Buried fiber optic and water utilities near existing ROW. Inhabited structures within ROW. Fiber optic line runs parallel to both roads bordering parcel.	Partially wooded. Least disturbed portion of property tested.	2	No further work recommended based on negative survey results.
92	Granted	0.29	Buried fiber optic and water utilities near existing ROW.	Not shovel tested due to buried utilities and access issues. Inhabited structure within proposed ROW. Enclosed by locked gate.	None	No further work recommended based on negative survey results.
93	Granted	0.39	Inhabited structure on parcel as well as buried fiber optic and water utilities. Suspected buried sprinkler system.	Not shovel tested due to buried utilities. Buried utilities and inhabited structure - heavily disturbed context	None	No further work recommended based on negative survey results.
94	Granted	0.42	Inhabited structure on parcel as well as buried fiber optic and water utilities. Suspected buried sprinkler system.	Buried utilities and inhabited structure - heavily disturbed context	1	No further work recommended based on negative survey results.
95	Granted	0.55	Inhabited structure on parcel as well as buried fiber optic and water utilities. Suspected buried sprinkler system.	Buried utilities and inhabited structure - heavily disturbed context	1	No further work recommended based on negative survey results.
96	Granted	1.06	Relatively undisturbed proposed ROW.	Old growth forest. Less disturbed than surrounding areas.	3	No further work recommended based on negative survey results.
97	Granted	0.57	Inhabited structure on parcel as well as buried fiber optic and water utilities.	No shovel test because of concern with disturbing public utilities and possible sprinkler system.	None	No further work recommended based on negative survey results.
98	No Access	0.01	Relatively undisturbed proposed ROW.	Old growth forest. Less disturbed than surrounding areas.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
99	Granted	0.62	Relatively undisturbed proposed ROW.	Old growth forest. Less disturbed than surrounding areas.	1	No further work recommended based on negative survey results.
100	Granted	0.62	Inhabited structure on parcel as well as buried fiber optic and water utilities.	Majority of parcel disturbed. Least disturbed portion of property tested.	1	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
101	Granted	0.51	Inhabited structure on parcel as well as buried fiber optic and water utilities.	Not shovel tested to avoid buried utilities. Buried utilities and inhabited structure - heavily disturbed context.	None	No further work recommended based on negative survey results.
103	Granted	0.07	New proposed ROW consists of deeply incised sandy drainage.	Not shovel tested due to very steep slope.	None	No further work recommended based on negative survey results.
104	Granted	2.44	Clear cut for pasture. Buried fiber optic utilities within ROW.	Tall grass pasture.	7	No further work recommended based on negative survey results.
105	Granted	0.27	Inhabited structure built on fill on parcel as well as buried water utilities.	Not shovel tested to avoid buried utilities. Buried utilities and inhabited structure - heavily disturbed context.	None	No further work recommended based on negative survey results.
107	Granted	0.55	Inhabited structure built on fill on parcel as well as buried water utilities.	Plowed field least disturbed context on property.	1	No further work recommended based on negative survey results.
108	Granted	0.47	Uninhabited structure within proposed ROW. House burned and abandoned. Not historic.	Tested on edge of property boundary where utilities could be avoided.	1	No further work recommended based on negative survey results.
109	Granted	2.41	Clear cut for pasture. Buried water line within ROW. Steep drop off on east side of property.	Cleared, disturbed context near steep drop off. Deep sandy soils.	5	No further work recommended based on negative survey results.
110	Granted	0.31	Abandoned mobile home foundation on property.	Not shovel tested due to modern refuse dump. Did not fall on transect during survey. Areas to the south were tested, which were less disturbed.	None	No further work recommended based on negative survey results.
111	Granted	0.35	Abandoned mobile home foundation on property. Modern refused dump. Imported gravels for active driveway.	Modern refuse dump. Did not fall on transect during survey. Areas to the south were tested which were less disturbed.	1	No further work recommended based on negative survey results.
112	Granted	0.09	Asphalt road within proposed ROW. East side of parcel bordered by steep rock outcrop.	Very shallow soils.	None	No further work recommended based on negative survey results.
109		1.56	Clear cut for pasture. Buried water line within ROW. Steep drop off on east side of property.	Cleared, disturbed context near steep drop off. Deep sandy soils.	4 (2 Not Excavated)	No further work recommended based on negative survey results.
113	No Access	2.32	Unknown	No access	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
119	No Access	0.99	Unknown	No access	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
121	Granted	0.62	High degree of erosion on property. Imported gravel for various roads on parcel present.	Shovel tests placed in areas with lowest degree of erosion.	2	No further work recommended based on negative survey results.
122	Granted	0.36	Manicured lawn with above ground transmission line. Proposed ROW built on fill.	Shovel tests placed in areas with lowest degree of disturbance.	1	No further work recommended based on negative survey results.
123	Granted	1.28	Deeply incised drainage present in proposed ROW where it extends to the north. Buried fiber optic utility.	Parcel tested where degree of erosion was minimal.	3	No further work recommended based on negative survey results.
124	Granted	0.51	Buried fiber optic utilities within proposed ROW.	New growth forest. Shovel tests placed in areas with least degree of disturbance.	2	No further work recommended based on negative survey results.
126	Granted	0.24	Buried fiber optic utilities within proposed ROW.	New growth forest. Shovel test placed in areas with least degree of disturbance.	1	No further work recommended based on negative survey results.
127	Granted	0.01	Cleared lawn.	Cleared lawn.	None	No further work recommended based on negative survey results.
129	Granted	0.2	Moderately incised sandy drainage on parcel.	New growth forest. Shovel test placed in areas with least degree of disturbance.	1	No further work recommended based on negative survey results.
140	Granted	0.07	High school parking lot on east half of parcel. Practice marching band field on west side. Built on fill.	Shovel test placed within practice field - revealed disturbed fill.	1	No further work recommended based on negative survey results.
144	Granted	0.02	Manicured lawn, driveway, buried water utility.	Not shovel tested due to heavy disturbance and buried utilities.	None	No further work recommended based on negative survey results.
147	Granted	0.03	Manicured lawn, driveway, buried water utility.	No place for shovel test within small yard or on border of driveway.	None	No further work recommended based on negative survey results.
151	No Access	0.02	Manicured lawn, driveway, buried water utility.	No access.	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
152	Granted	0.03	Manicured lawn, driveway, buried water utility.	No place for shovel test within small yard or on border of driveway.	None	No further work recommended based on negative survey results.
154	Granted	0.03	Manicured lawn, driveway, fiber optic utility.	Narrow proposed ROW paired with buried utilities left no place for shovel tests.	None	No further work recommended based on negative survey results.

Parcel	Survey Status	Area (acres)	Disturbances	Survey Comments	No. of Shovel Tests	Recommendations
156	Granted	0.06	Manicured lawn, driveway, fiber optic utility.	Narrow proposed ROW paired with buried utilities left no place for shovel tests.	None	No further work recommended based on negative survey results.
159	No Access	0.01	Unknown	No access	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
160	Granted	0.01	Manicured lawn, driveway, buried water utility.	Narrow proposed ROW paired with buried utilities left no place for shovel tests.	None	No further work recommended based on negative survey results.
167	No Access	0.01	Unknown	No access	None	Due to no access, for consistency the parcel should be subject to an archaeological survey when right-of-entry is available.
169	Granted	0.01	Manicured lawn, driveway, buried water utility.	Very small proposed new ROW	None	No further work recommended based on negative survey results.
170	Granted	0.01	Manicured lawn, driveway, buried water utility.	Very small proposed new ROW	None	No further work recommended based on negative survey results.
171	Granted	0.04	Manicured lawn, sidewalk, buried water utility.	Very small proposed new ROW	None	No further work recommended based on negative survey results.
174	Granted	0.06	Manicured lawn, driveway, buried water utility.	Narrow proposed ROW paired with buried utilities left no place for shovel tests.	None	No further work recommended based on negative survey results.
181	Granted	0.06	Large parking lot for church.	Ground surface covered with asphalt	None	No further work recommended based on negative survey results.
186	Granted	0.02	Large parking lot for shopping center.	Ground surface covered with asphalt and fill.	None	No further work recommended based on negative survey results.

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APPENDIX B

SHOVEL TEST TABLE

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ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
1	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
2	1	0-30	2.5YR 4/6	red	Sandy Clay	>20%	Gravels	N	No cultural material encountered. Terminated at bedrock.
3	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
4	1	0-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
5	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
6	1	0-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
7	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
8	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
9	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
10	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
11	1	0-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
12	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
13	1	0-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
14	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
15	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
16	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
17	1	0-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
18	1	0-20	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
19	1	0-20	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
20	1	0-40	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	40-50	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
21	1	0-50	5YR 4/4	reddish brown	Sand			N	No cultural material encountered.
	2	50-55	7.5YR 5/4	brown	Clay			N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
22	1	0-10	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	10-30	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
23	1	0-30	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	30-40	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
24	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
25	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
26	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
27	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-40	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
28	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
29	1	0-25	10YR 4/4	dark yellowish brown	Sandy Loam	5-10%	Cobbles	N	No cultural material encountered. Terminated at bedrock.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
30	1	0-10	10YR 4/4	dark yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	10-50	7.5YR 6/4	light brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	3	50-60	2.5YR 5/8	red	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at basal clay.
31	1	0-15	7.5YR 5/4	brown	Sandy Loam	10-20%	Cobbles	N	No cultural material encountered. Terminated at disturbance, edge of water line corridor.
32	1	0-10	10YR 4/4	dark yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	10-50	7.5YR 6/4	light brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	3	50-60	2.5YR 5/8	red	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at basal clay.
33	1	0-30	5YR 4/4	reddish brown	Sandy Loam	5-10%	Pebbles, Degrading bedrock	N	No cultural material encountered. Terminated at bedrock.
34	1	0-10	10YR 4/4	dark yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	10-80	7.5YR 6/4	light brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	3	80-90	2.5YR 5/8	red	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at basal clay.
35	1	0-15	10YR 3/4	dark yellowish brown	Sandy Loam			N	No cultural material encountered.
	2	15-35	5YR 4/4	reddish brown	Sand			N	No cultural material encountered.
	3	35-55	10YR 4/1	dark gray	Sand			N	No cultural material encountered. Terminated at water table.
36	1	0-10	10YR 4/4	dark yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	10-50	7.5YR 6/4	light brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	3	50-60	2.5YR 5/8	red	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
37	1	0-25	7.5YR 4/4	brown	Sand			N	No cultural material encountered.
	2	25-30	5YR 5/6	yellowish red	Sandy Clay	>20%	Mottles	N	No cultural material encountered. Terminated at disturbance.
38	1	0-50	7.5YR 6/4	light brown	Sandy Clay Loam	1-5%	Gravels	N	No cultural material encountered. Terminated at water table.
39	1	0-15	10YR 4/4	dark yellowish brown	Loamy Sand	10-20%	Cobbles, Gravels	N	No cultural material encountered. Terminated at bedrock.
40	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
41	1	0-35	10YR 4/4	dark yellowish brown	Loamy Sand	10-20%	Cobbles, Gravels	N	No cultural material encountered. Terminated at bedrock.
42	1	0-25	10YR 4/4	dark yellowish brown	Sandy Loam	10-20%	Cobbles, Gravels	N	No cultural material encountered.
	2	25-35	5YR 4/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
43	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
44	1	0-40	10YR 4/4	dark yellowish brown	Sandy Loam	10-20%	Cobbles, Gravels	N	No cultural material encountered.
	2	40-45	5YR 4/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
45	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
46	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
47	1	0-25	5YR 4/4	reddish brown	Sandy Loam	5-10%	Cobbles, Gravels	N	No cultural material encountered. Terminated at bedrock.
48	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
49	1	0-25	10YR 4/4	dark yellowish brown	Sandy Loam	10-20%	Cobbles, Gravels	N	No cultural material encountered.
	2	25-35	5YR 4/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
DR1	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR10	1	0-50	7.5YR 5/6	strong brown	Sandy Loam	1-5%	Gravels	Y	1: Flake (tertiary)
	2	50-60	7.5YR 6/8	reddish yellow	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at bedrock.
DR11	1	0-60	7.5YR 4/6	strong brown	Sandy Clay Loam	1-5%	Gravels	Y	1: Flake (tertiary) [Flake at 30-50 cmbs]
	2	60-70	7.5YR 6/8	reddish yellow	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at bedrock.
DR12		Not Excavated							
DR13	1	0-50	7.5YR 4/6	strong brown	Sandy Clay Loam	1-5%	Gravels	N	No cultural material encountered.
	2	50-60	7.5YR 6/8	reddish yellow	Sandy Clay	1-5%	Gravels	N	No cultural material encountered. Terminated at bedrock.
DR14	1	0-20	5YR 4/6	yellowish red	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
DR15	1	0-30	7.5YR 4/4	brown	Loam	1-5%	Gravels	N	No cultural material encountered.
	1	30-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay and gravels.
DR16	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR17	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
DR18	1	0-100	7.5YR 6/4	light brown	Sand			N	No cultural material encountered. Terminated at depth.
DR19	1	0-60	10YR 6/4	light yellowish brown	Loamy Sand			N	No cultural material encountered.
	2	60-70	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
DR2	1	0-50	7.5YR 6/4	light brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.
DR20	1	0-50	10YR 6/4	light yellowish brown	Loamy Sand			N	No cultural material encountered.
	2	50-60	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
DR21	1	0-100	7.5YR 6/4	light brown	Sand			N	No cultural material encountered. Terminated at depth.
DR22	1	0-60	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	60- 70	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR23	1	0-40	7.5YR 4/6	strong brown	Loamy Sand	5-10%	Gravels, Large Rock Frags	N	No cultural material encountered. Terminated at bedrock.
DR24	1	0-40	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	40-50	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
DR25	1	0-35	7.5YR 6/6	reddish yellow	Sand	>20%	Mottles	N	No cultural material encountered. Terminated at disturbance.
DR26	1	0-100	10YR 5/6	yellowish brown	Loamy Sand	1-5%	Gravels	Y	1: Other Prehistoric [Sherd found at 50 cmbs] Terminated at depth.
DR27	1	0-100	10YR 4/6	dark yellowish brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered. Terminated at depth.
DR28	1	0-60	10YR 4/6	dark yellowish brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	60-70	2.5YR 5/6	red	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
DR29	1	0-90	10YR 4/6	dark yellowish brown	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	90-95	2.5YR 5/6	red	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
DR3	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	5-10%	Redox and manganese	N	No cultural material encountered.
	2	30-50	10YR 5/2	grayish brown	Silt Loam	1-5%	Manganese	N	No cultural material encountered. Terminated at water table.
DR30	1	0-35	5YR 4/4	reddish brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-45	5YR 5/4	reddish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
DR31	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR32	1	0-20	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR33	1	0-20	2.5YR 4/6	red	Loamy Sand	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	7.5YR 8/3	pink	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
DR34	1	0-40	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
DR4	1	0-80	2.5YR 4/6	red	Sandy Clay Loam	10-20%	Gravels, Pebbles	N	No cultural material encountered. Terminated at water table.
DR5	1	0-20	2.5YR 4/6	red	Sandy Clay Loam	10-20%	Gravels, Pebbles	N	No cultural material encountered. Terminated at water table.
DR6	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	5-10%	Redox and manganese	N	No cultural material encountered.
	2	30-50	10YR 5/2	grayish brown	Silt Loam	1-5%	Manganese	N	No cultural material encountered. Terminated at water table.
DR7	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	10-20%	Gravels, Pebbles	N	No cultural material encountered. Terminated at water table.
DR8	1	0-60	5YR 7/3	pink	Sandy Clay Loam	10-20%	Cobbles, Gravels, Large Rock Frags, Pebbles, Small asphalt chunks	N	No cultural material encountered. Terminated at compact soil.
DR9	1	0-40	5YR 7/3	pink	Sandy Clay Loam	10-20%	Cobbles, Gravels, Large Rock Frags, Pebbles, Small asphalt chunks	N	No cultural material encountered. Terminated at compact soil.
JU50	1	0-30	5YR 5/4	reddish brown	Sandy Clay	5-10%	Mottles	N	No cultural material encountered. Terminated at disturbance.
JU51	1	0-10	5YR 4/4	reddish brown	Sandy Clay	>20%	Cobbles, Gravels, Pebbles	N	No cultural material encountered. Terminated at bedrock.
JU52	1	0-30	5YR 5/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.
JU53	1	0-35	5YR 4/4	reddish brown	Sandy Loam			N	No cultural material encountered.
	2	35-40	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU54	1	0-35	7.5YR 6/4	light brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
JU55	1	0-50	7.5YR 6/4	light brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.
JU56	1	0-15	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	15-35	10YR 5/2	grayish brown	Sandy Clay	>20%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at hydric soil.
JU57	1	0-20	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
JU57	2	20-50	10YR 5/2	grayish brown	Sandy Clay	>20%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at hydric soil.
JU58	1	0-30	7.5YR 4/4	brown	Clay	5-10%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at water table.
JU59	1	0-15	7.5YR 4/4	brown	Clay	5-10%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at water table.
JU60	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
JU61	1	0-20	7.5YR 5/4	brown	Sandy Clay			N	No cultural material encountered. Terminated at water table.
JU62	1	0-30	5YR 5/6	yellowish red	Clay	10-20%	Gravels, Mottles	N	No cultural material encountered. Terminated at basal clay.
JU63	1	0-45	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	45-55	5YR 5/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
JU64	1	0-45	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	45-55	5YR 5/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
JU65	1	0-45	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	45-55	5YR 5/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
JU66	1	0-25	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	25-35	5YR 5/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
JU67	1	0-30	7.5YR 4/4	brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at impassable root.
JU68	1	0-15	10YR 4/4	dark yellowish brown	Sandy Loam			N	No cultural material encountered.
	2	15-45	7.5YR 5/6	strong brown	Sandy Clay	>20%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at hydric soil.
JU69	1	0-45	5YR 4/4	reddish brown	Sandy Loam	5-10%	Gravels	N	No cultural material encountered.
	2	45-55	5YR 5/4	reddish brown	Clay			N	No cultural material encountered. Terminated at basal clay.
JU70	1	0-30	10YR 5/1	gray	Silt Loam	10-20%	Mottles, Iron oxide	N	No cultural material encountered. Terminated at disturbance.
JU71	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
JU72	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
JU73	1	0-60	10YR 6/4	light yellowish brown	Loamy Sand			N	No cultural material encountered.
	2	60-70	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU74	1	0-50	10YR 6/4	light yellowish brown	Loamy Sand			N	No cultural material encountered.
	2	50-55	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU75	1	0-100	7.5YR 6/4	light brown	Sand			N	No cultural material encountered. Terminated at depth.
JU76	1	0-70	10YR 6/4	light yellowish brown	Sand	1-5%	Gravels	N	No cultural material encountered. Terminated at impassable roots.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
JU77	1	0-20	10YR 6/4	light yellowish brown	Sand	10-20%	Cobbles, Gravels	N	No cultural material encountered. Terminated at bedrock.
JU78	1	0-35	7.5YR 6/6	reddish yellow	Sand	>20%	Mottles	N	No cultural material encountered. Terminated at disturbance.
JU79	1	0-40	10YR 6/4	light yellowish brown	Sand	1-5%	Gravels	N	No cultural material encountered. Terminated at disturbed.
JU80	1	0-100	10YR 6/4	light yellowish brown	Sand	1-5%	Cobbles, Gravels	N	No cultural material encountered. Terminated at depth.
JU81	1	0-100	10YR 6/4	light yellowish brown	Sand	1-5%	Cobbles, Gravels	N	No cultural material encountered. Terminated at depth.
JU82	1	0-40	7.5YR 6/6	reddish yellow	Sandy Clay	10-20%	Gravels, Mottles	N	No cultural material encountered. Terminated at disturbed.
JU83	1	0-30	5YR 5/6	yellowish red	Clay	10-20%	Mottles	N	No cultural material encountered. Terminated at basal clay.
JU84	1	0-30	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU85	1	0-30	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU86	1	0-30	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU87	1	0-30	7.5YR 5/4	brown	Clay			N	No cultural material encountered. Terminated at basal clay.
JU88	1	0-30	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
JU89	1	0-30	7.5YR 5/4	brown	Sand			N	No cultural material encountered.
	2	30-35	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
JU90	1	0-30	7.5YR 5/4	brown	Sand			N	No cultural material encountered.
	2	30-35	5YR 5/6	yellowish red	Clay			N	No cultural material encountered. Terminated at basal clay.
MR1	1	0-50	5YR 5/2	reddish gray	Loamy Sand			N	No cultural material encountered.
	2	55-65	7.5YR 5/6	strong brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR10	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
MR11	1	0-20	2.5YR 5/6	red	Sandy Clay		Mottles	N	No cultural material encountered. Terminated at bedrock.
MR12	1	0-100	10YR 5/3	brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR13	1	0-10	2.5YR 5/3	reddish brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered.
	2	10-30	2.5YR 5/8	red	Sandy Clay	5-10%	Gravels	N	No cultural material encountered. Terminated at basal clay.
MR14	1	0-70	10YR 6/2	light brownish gray	Sandy Loam			N	No cultural material encountered.
	2	70-80	10YR 5/6	yellowish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR15	1	0-70	10YR 6/2	light brownish gray	Sandy Loam			N	No cultural material encountered.
	2	70-80	10YR 5/6	yellowish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR16	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR17	1	0-45	10YR 6/3	pale brown	Sandy Loam	10-20%	Mottles	N	No cultural material encountered. Terminated at disturbed fill.
MR18	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
MR19	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR2	1	0-50	5YR 5/2	reddish gray	Loamy Sand			N	No cultural material encountered.
	2	55-65	7.5YR 5/6	strong brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR20	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR21	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
	1	0-40	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at large root.
MR22	1	0-70	10YR 6/2	light brownish gray	Sandy Loam			N	No cultural material encountered.
	2	70-80	10YR 5/6	yellowish brown	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR23	1	0-20	2.5YR 5/6	red	Sandy Clay		Mottles	N	No cultural material encountered. Terminated at bedrock.
MR24	1	0-20	2.5YR 5/6	red	Sandy Clay		Mottles	N	No cultural material encountered. Terminated at bedrock.
MR25	1	0-50	7.5YR 6/4	light brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.
MR26	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	5-10%	Redox and manganese	N	No cultural material encountered.
	2	30-50	10YR 5/2	grayish brown	Silt Loam	1-5%	Manganese	N	No cultural material encountered. Terminated at water table.
MR27	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	5-10%	Redox and manganese	N	No cultural material encountered.
	2	30-50	10YR 5/2	grayish brown	Silt Loam	1-5%	Manganese	N	No cultural material encountered. Terminated at water table.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
MR28	1	0-30	2.5YR 4/6	red	Sandy Clay Loam	5-10%	Redox and manganese	N	No cultural material encountered.
	2	30-50	10YR 5/2	grayish brown	Silt Loam	1-5%	Manganese	N	No cultural material encountered. Terminated at water table.
MR29	1	0-30	10YR 5/6	yellowish brown	Loamy Sand	10-20%	Mottles	N	No cultural material encountered. Terminated at water table.
MR3	1	0-50	5YR 5/2	reddish gray	Sandy Loam			N	No cultural material encountered. Terminated at large root.
MR30	1	0-30	10YR 5/6	yellowish brown	Loamy Sand	10-20%	Mottles	N	No cultural material encountered. Terminated at water table.
MR31	1	0-50	7.5YR 6/4	light brown	Silt Loam	5-10%	Gravels	N	No cultural material encountered. Terminated at bedrock.
MR32	1	0-30	7.5YR 5/6	strong brown	Loamy Sand			N	No cultural material encountered.
	2	30-40	7.5YR 5/6	strong brown	Sandy Loam			Y	1: Flake (tertiary)
	3	40-50	7.5YR 6/8	reddish yellow	Sandy Clay			N	No cultural material encountered. Terminated at basal clay.
MR33	1	0-20	10YR 5/6	yellowish brown	Loamy Sand	5-10%	Cobbles	N	No cultural material encountered.
	2	20-30	10YR 5/6	yellowish brown	Loamy Sand	5-10%	Cobbles	Y	2: Flake (tertiary), Other Prehistoric
	3	30-80	10YR 6/8	brownish yellow	Loamy Sand	5-10%	Cobbles	N	No cultural material encountered. Terminated at bedrock.
MR34	1	0-20	10YR 5/6	yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	10YR 6/8	brownish yellow	Sandy Clay	5-10%	Cobbles, Gravels	N	No cultural material encountered. Terminated at basal clay.
MR35	1	0-20	10YR 5/6	yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.
	2	20-30	10YR 6/8	brownish yellow	Sandy Clay	5-10%	Cobbles, Gravels	N	No cultural material encountered. Terminated at basal clay.
MR36	1	0-20	10YR 5/6	yellowish brown	Sandy Loam	1-5%	Gravels	N	No cultural material encountered.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
	2	20-30	10YR 6/8	brownish yellow	Sandy Clay	5-10%	Cobbles, Gravels	N	No cultural material encountered. Terminated at basal clay.
MR37	1	0-25	7.5YR 6/8	reddish yellow	Sandy Clay			N	No cultural material encountered. Terminated at bedrock.
MR38	1	0-25	7.5YR 6/8	reddish yellow	Sandy Clay			N	No cultural material encountered. Terminated at bedrock.
MR39	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
MR4	1	0-20	5YR 5/6	yellowish red	Silt Loam	10-20%	Large Rock Frags	N	No cultural material encountered. Terminated at bedrock.
MR40	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR41	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR42	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR43	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR44	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR45	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR46	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR47	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR48	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
MR49	1	0-100	10YR 6/3	pale brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR5	1	0-20	5YR 5/6	yellowish red	Silt Loam	10-20%	Large Rock Frags	N	No cultural material encountered. Terminated at bedrock.
MR50	1	0-60	10YR 5/6	yellowish brown	Loamy Sand	5-10%	Gravels	N	No cultural material encountered. Terminated at water table.
MR51	1	0-60	10YR 5/6	yellowish brown	Loamy Sand	5-10%	Gravels	N	No cultural material encountered. Terminated at water table.
MR52		Not Excavated	-	-	-	-	-	-	
MR6	1	0-100	10YR 5/3	brown	Sandy Loam			N	No cultural material encountered. Terminated at depth.
MR7	1	0-30	5YR 5/2	reddish gray	Loamy Sand			N	No cultural material encountered. Terminated at water table.
MR8	1	0-50	5YR 5/2	reddish gray	Loamy Sand			N	No cultural material encountered. Terminated at bedrock.
MR9	1	0-20	5YR 5/6	yellowish red	Silt Loam	10-20%	Large Rock Frags	N	No cultural material encountered. Terminated at bedrock.
TM1	1	0-50	7.5YR 5/1	gray	Sandy Loam	1-5%	Pebbles	N	No cultural material encountered.
	2	50-100	7.5YR 5/3	brown	Silt	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM10	1	0-100	7.5YR 5/4	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM11	1	0-20	7.5YR 5/3	brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	20-50	7.5YR 5/4	brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	3	50-65	7.5YR 5/4	brown	Sandy Clay	1-5%	Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM12	1	0-15	7.5YR 6/3	light brown	Sandy Clay Loam			N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
TM13	1	0-100	7.5YR 6/2	pinkish gray	Sand			N	No cultural material encountered. Terminated at depth.
TM14	1	0-100	7.5YR 6/2	pinkish gray	Sand			N	No cultural material encountered. Terminated at depth.
TM15	1	0-20	7.5YR 5/1	gray	Sandy Loam	1-5%	Pebbles	N	No cultural material encountered.
	2	20-100	7.5YR 5/4	brown	Sandy Loam	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM16	1	0-30	7.5YR 5/2	brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	30-100	7.5YR 6/4	light brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM17	1	0-35	7.5YR 3/2	dark brown	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	35-100	7.5YR 4/3	brown	Sandy Loam	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM18	1	0-100	7.5YR 5/4	brown	Sand			N	No cultural material encountered. Terminated at depth.
TM19	1	0-100	7.5YR 5/4	brown	Sand			N	No cultural material encountered. Terminated at depth.
TM2	1	0-30	7.5YR 4/1	dark gray	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM20	1	0-100	7.5YR 5/4	brown	Sand			N	No cultural material encountered. Terminated at depth.
TM21	1	0-30	7.5YR 3/4	dark brown	Sandy Clay	5-10%	Gravels, Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM22	1	0-5	7.5YR 2.5/2	very dark brown	Sandy Clay Loam	1-5%	Gravels, Pebbles	N	No cultural material encountered.
	2	5-15	7.5YR 5/8	strong brown	Sandy Clay Loam	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at basal clay.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
TM23	1	0-100	7.5YR 5/4	brown	Sand			N	No cultural material encountered. Terminated at depth.
TM24	1	0-10	7.5YR 4/4	brown	Sandy Clay Loam	5-10%	Gravels, Pebbles	N	No cultural material encountered.
	2	10-30	7.5YR 5/4	brown	Sandy Clay Loam	5-10%	Gravels, Pebbles	N	No cultural material encountered. Terminated at bedrock.
TM25	1	0-50	7.5YR 4/3	brown	Sandy Loam	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at root impasse.
TM26	1	0-35	7.5YR 4/4	brown	Sandy Clay Loam	5-10%	Gravels, Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM27	1	O-35	7.5YR 5/6	strong brown	Sand	5-10%	Gravels, Pebbles	N	No cultural material encountered. Terminated at root impasse.
TM28	1	0-30	7.5YR 4/4	brown	Clay Loam			N	No cultural material encountered. Terminated at basal clay.
TM29	1	0-25	7.5YR 4/4	brown	Clay Loam			N	No cultural material encountered. Terminated at basal clay.
TM3	1	0-45	7.5YR 4/1	dark gray	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM30	1	0-25	7.5YR 5/2	brown	Clay Loam			N	No cultural material encountered. Terminated at water table.
TM31	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
TM32	1	0-20	7.5YR 3/1	very dark gray	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered.
	2	20-40	7.5YR 5/6	strong brown	Sandy Clay	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM33	1	0-30	7.5YR 5/6	strong brown	Sand	5-10%	Gravels, Pebbles	Y	1: Flake (tertiary)
	2	30-75	7.5YR 5/6	strong brown	Sand		Gravels, Pebbles	N	No cultural material encountered. Terminated at compact soil.
TM34	1	0-10	7.5YR 4/3	brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
	2	10-50	7.5YR 4/4	brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at compact soil.
TM35	1	0-10	7.5YR 4/1	dark gray	Sandy Clay	1-5%	Gravels, Pebbles	N	No cultural material encountered.
	2	10-15	7.5YR 5/8	strong brown	Clay	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM36	1	0-30	7.5YR 4/1	dark gray	Sandy Clay	1-5%	Gravels, Pebbles	N	No cultural material encountered.
TM37	1	0-10	7.5YR 3/2	dark brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered.
	2	10-40	7.5YR 5/3	brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at root impasse.
TM38	N/A	Not Excavated	-	-	-	-	-	-	Not dug due to water at surface.
TM39	1	0-100	7.5YR 7/2	pinkish white	Sand			N	No cultural material encountered. Terminated at depth.
TM4	1	0--30	7.5YR 5/1	gray	Sand	1-5%	Pebbles	N	No cultural material encountered.
	2	30-50	7.5YR 5/4	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM40	1	0-50	7.5YR 7/2	pinkish white	Sand			N	No cultural material encountered. Terminated at root impasse.
TM41	1	0-60	7.5YR 7/2	pinkish white	Sand			N	No cultural material encountered. Terminated at root impasse.
TM42	1	0-100	7.5YR 5/4	brown	Sand			N	No cultural material encountered. Terminated at depth.
TM43	1	0-65	7.5YR 7/2	pinkish white	Sand			N	No cultural material encountered. Terminated at root impasse.
TM44	1	0-40	7.5YR 4/2	brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered.
	2	40-100	7.5YR 5/6	strong brown	Sandy Loam	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at depth.

ST No.	Level	Depth	Munsell Value	Munsell Color	Soil Texture	Inclusion %	Inclusion Type	Cultural Material	Reason for Termination
TM45	1	0-15	7.5YR 5/6	strong brown	Sand	10-20%	Gravels, Large Rock Frags, Pebbles	N	No cultural material encountered. Terminated at bedrock.
TM46	1	0-70	7.5YR 5/2	brown	Sand	1-5%	Gravels, Pebbles	N	No cultural material encountered. Terminated at disturbed.
TM47	1	0-30	7.5YR 4/2	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at root impasse.
TM48	1	0-50	7.5YR 4/2	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at root impasse.
TM49	1	0-30	7.5YR 4/4	brown	Sand			N	No cultural material encountered. Terminated at root impasse.
TM5	1	0-10	7.5YR 5/8	strong brown	Sand			N	No cultural material encountered. Terminated at basal clay.
TM6	1	0-15	7.5YR 3/4	dark brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at basal clay.
TM7	N/A	Not Excavated	-	-	-	-	-	-	Not dug, in middle of creek.
TM8	1	0-100	7.5YR 5/2	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.
TM9	1	0-100	7.5YR 5/4	brown	Sand	1-5%	Pebbles	N	No cultural material encountered. Terminated at depth.

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APPENDIX C

TXDOT STATEMENT REGARDING TRADITIONAL CULTURAL PROPERTIES

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Traditional Cultural Properties

Traditional Cultural Properties (TCP) are properties that are eligible for inclusion in the National Register of Historic Places (NRHP) based on their association with the beliefs, traditions, practices, and lifeways of a living community. TCPs derive their significance from their place in a traditional community's history and the maintenance of that community's continuing cultural identity. While TCPs derive their significance from a community's beliefs and practices, TCPs also must have a physical manifestation as an object, building, structure, site, or district. TCPs must meet the standard criteria for eligibility for listing in the NRHP (36 CFR 60.4).

The National Register Bulletin 38 provides a list of hypothetical examples to illustrate the range of variation in TCPs (Patterson and King 1998: 1). The list includes:

- "a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
- a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
- a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity."

This bulletin also suggests that initial identification efforts begin with a review of existing literature (Patterson and King 1998: 7). This review can help establish whether known TCPs occur within a project area, what types of properties might be present, and who should be consulted.

The review of existing literature and historic maps conducted as background for the SH 16 archeological survey provides information relevant to the identification of TCPs. Several Native American groups are known to have lived within the region in which the project area occurs. This history of occupation may be associated with a number of different property types.

As noted in the archeological survey report's background review, the area of potential effects is within the region occupied by the Caddo at the time of European contact. The Caddo occupied the minor and major river valleys throughout east Texas. In this region, Caddo population and settlement remained relatively stable in the years following initial contact with European explorers and traders (Girard et al 2014). The Caddo continued to occupy the region until 1839 by which time Texan forces had driven them out of Texas (Smith 1995: 141). The Caddo lived in farmsteads, hamlets, and villages; made ceramics for ceremonial and utilitarian purposes; and traded with neighboring groups, using an extensive trail network that was later followed by European settlers. Consequently, property types associated with the Caddo might include – but is not necessarily limited to – small and large settlements, cemeteries and individual burials, clay procurement areas, and trails.

By the 1820s and 1830s, several other Native American groups had entered the region, having arrived from the east outside of Texas, and settled among the Caddo (Newcomb 1961: 347; Smith 1995: 109-119). The groups included Cherokees, Delaware, Kickapoo, and other groups. These groups were also driven from the region in 1839 by Texan forces (Smith 1995: 142).

Like the Caddo, these groups also farmed, made ceramics, and traded. The property types associated with this settlement might include – but is not necessarily limited to – small and large settlements, cemeteries and individual burials, clay procurement areas, and trails. Archeological research and documentary sources have identified a number of their settlements within this region (Kenmotsu and Perttula 1993: 163-4, 166, 172; see Figure 1, below).

These sources place the locus of early nineteenth settlement by immigrant Native American groups to the east and south of the area of potential effects. Thus, this project area has a low likelihood of containing property types associated with the early nineteenth century settlement by non-Caddo Native American groups. Property types associated with Caddo and pre-Caddo peoples are much more likely to be found within the APE. The archeological survey identified a single archeological site, likely dating prior to European contact, and an isolated Caddo pottery sherd.

Based on the background review and available archeological evidence, the project area won't affect Traditional Cultural Properties associated with non-Caddo Native American groups. Indeed, the work presented in this report hasn't identified any historic properties, associated with the Caddo or otherwise. The archeological site and isolated find described in the archeological survey report hint at sporadic, limited use of the area of potential effects in the past, but these impressions will be supplemented by additional field investigation. Additional survey will be conducted once TxDOT acquires properties to which the current private property owners denied access. TxDOT will also conduct further evaluation of 41SM484.

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