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Intensive Archeological Survey Of South I-35 Water Line City Of Belton, Bell County, Texas

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Intensive Archeological Survey Of South I-35 Water Line City Of Belton, Bell County, Texas

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Cultural Resources Survey

INTENSIVE ARCHEOLOGICAL SURVEY OF SOUTH I-35 WATER LINE CITY OF BELTON, BELL COUNTY, TEXAS

January 21, 2020

Final Report – Public Copy

Terracon Project No. 96187433A

Antiquities Permit No. 9140

Caitlin Gulihur, MA, RPA, Principal Investigator



Prepared for:

Kasberg Patrick and Associates LP
Temple, Texas

Prepared by:

Caitlin Gulihur, MA, RPA and Ann M. Scott, PhD, RPA
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terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

ABSTRACT

The City of Belton has proposed the South I-35 Water Line project where a water transmission line will be constructed in southern Belton, Bell County, Texas. The project engineer, Kasberg Patrick and Associates LP, retained Terracon Consultants, Inc. to conduct a systematic, intensive pedestrian survey of the approximate 11-acre project area. Because the City of Belton, a political subdivision of the State of Texas, sponsored the project, the proposed undertaking is subject to compliance with the Antiquities Code of Texas and oversight from the Texas Historical Commission. In addition, the survey meets the standards for compliance under Section 106 of the National Historic Preservation Act of 1966, as amended, should federal permitting or funding be utilized for this project. The work described herein was performed under Texas Antiquities Permit Number 9140, issued to Caitlin Gulihur, MA, RPA Principal Investigator, and in adherence to Title 13, Chapter 26 of the Texas Administrative Code. Fieldwork was carried out by Caitlin Gulihur with assistance from Archeological Technician Ruben Castillo, Jr. Records from the project will be curated at the Center for Archaeological Studies at Texas State University.

The approximate 9,600-linear-foot alignment was considered the Area of Potential Effect (APE) for the project. Survey of the APE consisted of systematic pedestrian coverage, including discretionary shovel tests. The work was carried out on November 5 and 6, 2019. Twenty-four shovel tests were excavated in areas that appeared to be undisturbed. Shovel tests excavations were devoid of cultural materials; prehistoric or historic-age cultural materials were not observed on the ground surface. No sites were recorded or revisited as a result of the survey. Therefore, there are no historic properties present within the project area. It is Terracon's recommendation that there are no historic properties eligible for National Register of Historic Places inclusion or State Antiquities Landmark designation that will be affected by future construction of the proposed water line. In the unlikely event that human remains or intact cultural features are discovered during construction, those activities should cease in the vicinity of the remains and Terracon, the Texas Historical Commission's Archeology Division, or other proper authorities should be contacted.

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INTENSIVE ARCHEOLOGICAL SURVEY OF SOUTH I-35 WATER LINE, CITY OF BELTON, BELL COUNTY, TEXAS

Terracon Project No. 96187433A

Antiquities Permit No. 9140

January 21, 2020

1.0 INTRODUCTION AND MANAGEMENT SUMMARY

This report presents the findings from an intensive pedestrian survey of approximately 11 acres in which the City of Belton has proposed to construct the South I-35 Water Line project in southern Belton, Bell County, Texas (Appendix A, Exhibits 1 and 2). The proposed project consists of the construction of a water transmission line. The 11-acre survey was performed on behalf of the City of Belton, a political subdivision of the State of Texas. Therefore, the project is under the purview of the Texas Historical Commission (THC) in compliance with the Antiquities Code of Texas. In addition, the survey meets the standards for compliance under Section 106 of the National Historic Preservation Act of 1966, as amended, should federal funding or permitting be utilized for this project. The work described herein was performed under Texas Antiquities Permit Number 9140, issued to Caitlin Gulihur, MA, RPA Principal Investigator, and in adherence to Title 13, Chapter 26 of the Texas Administrative Code. The work was carried out on November 5 and 6, 2019, by Caitlin Gulihur with assistance from Archeological Technician Ruben Castillo, Jr.

Abiding by standards set forth by the Council of Texas Archaeologists (CTA) for short reports, this negative findings report includes introduction and management summary, defining the area of potential effects, methods, results, and recommendations. The report was authored by Caitlin Gulihur, Principal Investigator, and Ann M. Scott, Environmental Planning Group Manager.

2.0 DEFINING THE AREA OF POTENTIAL EFFECTS

The project area, which is the same as the area of potential effect (APE) for direct effects, consists of an approximate 9,600-linear-foot alignment with a width of 50 feet. The acreage of the APE is approximately 11 acres. The project area is located along Toll Bridge Road and the North I-35 access road in southern Belton, Bell County, Texas (See Appendix A, Exhibits 1 and 2). The proposed project will consist of the construction of a water transmission line. The northern end of the alignment is located south of the intersection of the North I-35 access road and E Grove Road. The alignment runs south, paralleling the North I-35 access road for approximately 3,000 feet. The alignment then continues south, paralleling Toll Bridge Road for approximately 5,600 feet before terminating. Near the southern end of the alignment, a spur of the water line runs approximately 750 feet from Toll Bridge Road to the North I-35 access road, and follows the access road north for approximately 250 feet before terminating. The width of the APE includes

the construction corridor, new right-of-way, and the temporary and permanent easements that will be taken.

3.0 RESEARCH AND SURVEY METHODS

The methods described below were employed to identify and characterize cultural resources present within the APE to the extent practicable. Desktop review focused on identifying previously known cultural materials and understanding the site setting, while fieldwork was used to both search for unknown cultural resources and gather more information based on the desktop review.

3.1 Desktop Review

Prior to fieldwork, and as part of the Antiquities Code of Texas permit application, background research and a literature search were conducted. This effort included desktop review of mapped geology and soils, search for previously recorded sites and investigations, a review of historic designations such as Recorded Texas Historic Landmarks (RTHLs), State Antiquities Landmarks (SALs), National Register of Historic Places (NRHP), and historical markers, and an examination of historic maps and aerials for evidence that the APE may have exhibited buildings or other features that may be considered historic (at least 50 years old).

3.2 Intensive Pedestrian Survey

In order to examine the approximate 11-acre APE for previously unknown cultural resources, an intensive pedestrian survey was conducted. The ground surface in the APE was systematically inspected by an archeologist walking transects spaced not more than 10 meters apart, for 100 percent coverage of the APE. The survey was augmented by shovel testing and twenty-four shovel tests were excavated within the APE.

As a general method, shovel tests are excavated to varying depths that target Holocene-aged soils. Sediment was excavated in arbitrary 20-cm levels to depth and passed through ¼-inch hardware mesh. Characteristics and contents of shovel tests are recorded with photographs, forms and notes, and a hand-held global positioning system (GPS) unit; upon completion of excavation and documentation, the unit holes and artifacts, if present, are backfilled. Cultural materials encountered through the course of shovel test excavations are described and returned to their approximate origin. Archeological sites, if encountered, would be recorded with the Texas Archeological Research Laboratory and be assessed for eligibility for inclusion in the NRHP or designation as a SAL as appropriate. This survey has a “no-collection” policy; therefore, diagnostic artifacts (if encountered) would be documented in the field and not collected. Records will be temporarily housed in Terracon’s office in Austin and will be permanently curated by the Center for Archaeological Studies (CAS) at Texas State University upon completion of the project.

3.3 National Register of Historic Places and State Antiquities Landmark Criteria

For a historic resource to be deemed eligible for inclusion in the National Register of Historic Places (NRHP), the resource must be at least 50 years old and must possess significance and integrity. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location design, setting, materials, workmanship, feeling, and association and:

- A. That are associated with the events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in our prehistory or history (36 CFR 60.4).

Additionally, the State of Texas affords important cultural resources a level of protection beyond that of NRHP status if the resource meets the criteria for listing as a State Antiquities Landmark (SAL). SAL criteria are divided into four categories based on the type of resource: archaeological site, shipwreck, cache and collection, and historic structure. The criteria for archaeological sites are:

- 1) The site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information;
- 2) The site's archeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interest of the site;
- 3) The site possesses unique or rare attributes concerning Texas prehistory and/or history;
- 4) The study of the site offers the opportunity to test theories and methods of preservation, thereby contributing to new scientific knowledge; and
- 5) There is a high likelihood that vandalism and relic collecting has occurred or could occur, and official landmark designation is needed to ensure maximum legal protection, or alternatively, further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected (Title 13, Rule 26.10).

4.0 RESULTS

4.1 Desktop Review

Results of the Desktop Review are detailed below.

4.1.1 Mapped Geology and Soils

The bedrock geology of the majority of the APE is identified as undivided parts of Washita and Fredericksburg Groups (Early Cretaceous) (Kwf) consisting of claystone, limestone, and shale (Barnes 1992). A small area in the southern portion of the APE is mapped as Terrace deposits (Pleistocene and Holocene) (Qt) consisting of sand, silt, clay and gravel in varying proportions. Eight soils are mapped within the APE and are described in Table 1 (Appendix A, Exhibit 3) (Huckabee et al. 1977; USDA NRCS 2019).

Table 1. Soil Survey data in Area of Potential Effect.

<i>Soil or Series Name</i>	<i>Drainage</i>	<i>Soil Depth</i>	<i>Associated Landform</i>
Brackett association, 8 to 12 percent slopes (BRE)	Well-drained; moderate permeability	14 inches to Cr horizon	Ridges
Crawford silty clay, 1 to 3 percent slopes (CrB)	Well-drained; very slow permeability	28 inches to bedrock	Ridges
Krum silty clay, cool, 1 to 3 percent slopes (KrB)	Well-drained; moderate slow permeability	72 inches to bedrock	Hillslopes
Lewisville silty clay loam, 3 to 5 percent slopes, eroded (LeC2)	Well-drained; moderate permeability	62 inches to bedrock	Stream terraces
Purves association, 1 to 8 percent slopes (PVD)	Well-drained; moderate slow permeability	14 inches to bedrock	Ridges
Speck association, 1 to 8 percent slopes (SPD)	Well-drained; slow permeability	18 inches to bedrock	Ridges
Speck soils, 1 to 3 percent slopes (SsB)	Well-drained; slow permeability	18 inches to bedrock	Ridges
Venus clay loam, 1 to 3 percent slopes (VeB)	Well-drained, moderate permeability	60 inches to bedrock	Stream terraces

4.1.2 Previous Investigations, Recorded Sites, and Designations

A review of the Texas Archeological Sites Atlas database with emphasis on 0.5-mile buffer indicates that no previously recorded sites are located within the project APE (Appendix A, Exhibit 4). No State Antiquities Landmarks (SALs), Recorded Texas Historic Landmarks (RTHLs), or National Register of Historic Places (NRHP) properties are present in the project APE or in the buffer search. Two cemeteries, Rest Haven Cemetery and Rock Hollow Cemetery, are mapped within the 0.5-mile search buffer (see Appendix A, Exhibit 4). Five previously recorded sites are located within the 0.5-mile search buffer and are summarized in Table 2.

Table 2. Summary of previously recorded archeological sites within 0.5-mile buffer.

<i>Site #</i>	<i>Site Type</i>	<i>Year Recorded/Company</i>	<i>NRHP Eligibility Determination by THC</i>
41BL1203	Prehistoric-age campsite	2003/Prewitt & Associates	Undetermined
41BL1204	Prehistoric-age lithic procurement site	2003/Prewitt & Associates	Ineligible
41BL1205	Prehistoric-age lithic procurement site	2003/Prewitt & Associates	Ineligible
41BL1360	Prehistoric-age buried site	2012/American Archaeology Group	None
41BL1397	Historic-age artifact scatter	2016/Terracon Consultants, Inc.	Ineligible

Six previous investigations have been conducted as indicated in the 0.5-mile search and are summarized in Table 3. A portion of the project area has been previously surveyed, in 2016, by Terracon Consultants, Inc.

Table 3. Summary of previous investigations within 0.5-mile buffer.

<i>Year</i>	<i>Antiquities Code Permit #</i>	<i>Company</i>	<i>Sponsor</i>
1975	--	--	Texas Department of Transportation (TXDOT)
2001	--	--	Federal Highway Administration
2003	3093	Prewitt & Associates	City of Belton
2012	5665	Atkins	TXDOT
2012	6165	American Archaeology Group	City of Belton
2016	7857	Terracon Consultants, Inc.	City of Belton

4.1.3 Historical Imagery and Maps

Historical topographic maps dating back over 100 years cover the project area. Several years were examined including 1892, 1931, 1965, 1974, and 1993. In the 1892 and 1931 topographic maps, the Meridian Highway, which here roughly follows the path of present-day I-35, is marked west of the project area. In the 1965, 1974, and 1993 topographic maps, I-35 and Toll Bridge Road can be observed near the project area. Throughout these maps, there is increasing development in the vicinity of the APE; structures are not marked within the project area.

Historic aerials were also reviewed, the earliest of which was dated 1943. Others were dated 1953, 1964, 1976, 1981, 1995, 2004, 2010, and 2016. In the aerial photographs from 1943 and

1953, Toll Bridge Road can be observed west of the project APE; the project area generally consists of cleared fields, several of which appear to have been plowed. In the aerial photos from 1964, 1976, 1981, 1995, 2004, and 2010, I-35 can be observed; the project area consists generally of cleared fields, with some lightly wooded areas in the central and northern portions of the APE. In the aerial photograph from 2016, I-35 has been expanded to its present-day configuration. Throughout the aerial photographs, increasing development can be observed in the vicinity of the project area; structures were not noted within the APE.

4.2 Intensive Pedestrian Survey

The southern portion of the project area, along the North I-35 access road, was in a lightly wooded area, with local short grasses and ground surface visibility under 10 percent (Appendix B, Photo 1). The portion of the project area between the I-35 access road and Toll Bridge Road was located in a cleared field with very short local grasses and ground surface visibility between 30 and 40 percent (Appendix B, Photo 2). This portion of the project area also contained an artificial earthen berm (Appendix B, Photo 3). Mechanically fractured chert nodules were observed in Shovel Test 03 and on the ground surface in this portion of the project alignment (Appendix B, Photos 4 and 5). On the east side of Toll Bridge Road, the project area was generally located in maintained residential yards, with ground surface visibility between 40 and 60 percent (Appendix B, Photos 6 and 7). The southern portion of the project alignment also ran through a livestock pasture, where ground surface visibility was above 80 percent (Appendix B, Photo 8).

The central portion of the project alignment contained a small drainage, surrounded by moderately dense wooded vegetation (Appendix B, Photo 9). North of this small drainage, the APE continued to parallel Toll Bridge Road. Vegetation consisted of cedar trees and sparse local grasses (Appendix B, Photos 10 and 11). This portion of the APE also contained modern trash on the ground surface (Appendix B, Photo 12). The central portion of the APE, which ran parallel to the North I-35 access road, contained sparse local grasses and cedar tree vegetation; ground surface visibility was generally above 80 percent, with caliche at the surface in many areas (Appendix B, Photos 13 and 14).

The northern portion of the project alignment contained more commercial development and previous disturbances than the central and southern portions of the alignment. Disturbances associated with a hospital included landscaping, irrigation lines, and a concrete driveway (Appendix B, Photos 15 and 16). The portion of the alignment just north of the hospital contained, or was adjacent to, buried utilities including fiber optic lines and gas lines (Appendix B, Photos 17 and 18). The alignment north of the hospital was in a setting with ground surface visibility above 60 percent, with sparse local grasses and cedar tree vegetation (Appendix B, Photos 19 and 20). The northernmost portion of the alignment contained two commercial properties, and was heavily disturbed from construction activities, landscaping, and previous ground clearing (Appendix B, Photos 21-24).

Twenty-four shovel tests were placed in areas that appeared mostly undisturbed (Appendix A, Exhibit 5) (Appendix B, Photos 25 and 26). See Appendix C for shovel test log. Shovel tests were negative for cultural materials. No historic-age or prehistoric-age cultural materials were noted on the ground surface. No archaeological sites were recorded or revisited during the course of the current survey.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Terracon archaeologists conducted an intensive pedestrian survey of an approximate 11-acre APE in advance of the construction of the South 1-35 Water Line project by the City of Belton, in southern Belton, Bell County, Texas. The project area was systematically surveyed, and twenty-five shovel tests were placed within the APE. No archeological sites were recorded or revisited.

It is Terracon's opinion that there are no historic properties in the APE eligible for listing on the NRHP or designation as a SAL. Therefore, Terracon recommends that the project be allowed to proceed as future construction of the water transmission line will not affect historic properties. In the unlikely event that human remains or intact cultural resources are discovered during construction, those activities should cease in the vicinity of the discovery and Terracon, the Texas Historical Commission's Archeology Division, or other proper authorities should be contacted.

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Cultural Resources Services

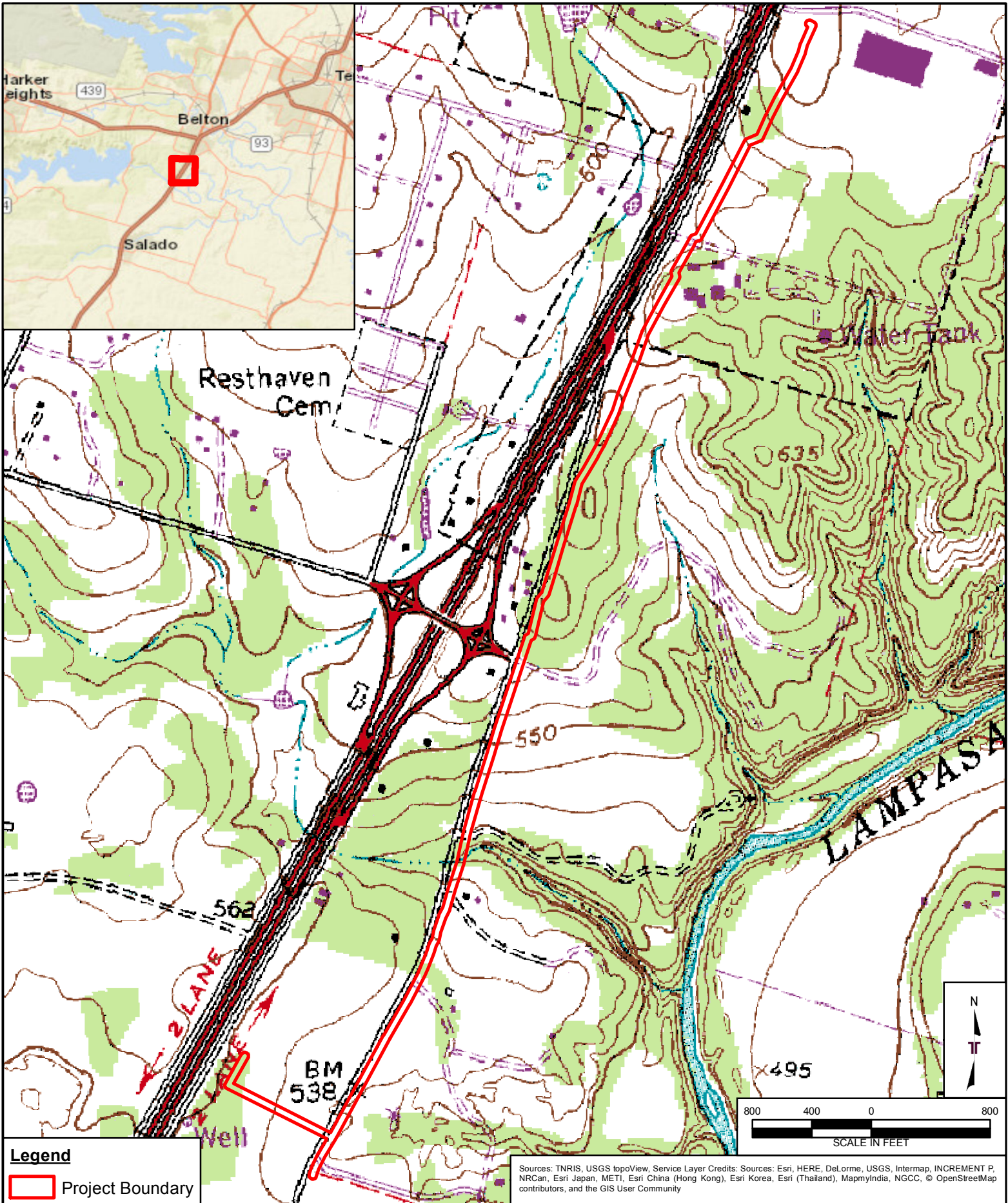
South I-35 Water Line ■ Belton, Bell County, Texas


January 21, 2020 ■ Terracon Project No. 96187433A



APPENDIX A

Exhibit Maps



Legend
 Project Boundary

Sources: TNRS, USGS topoView, Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

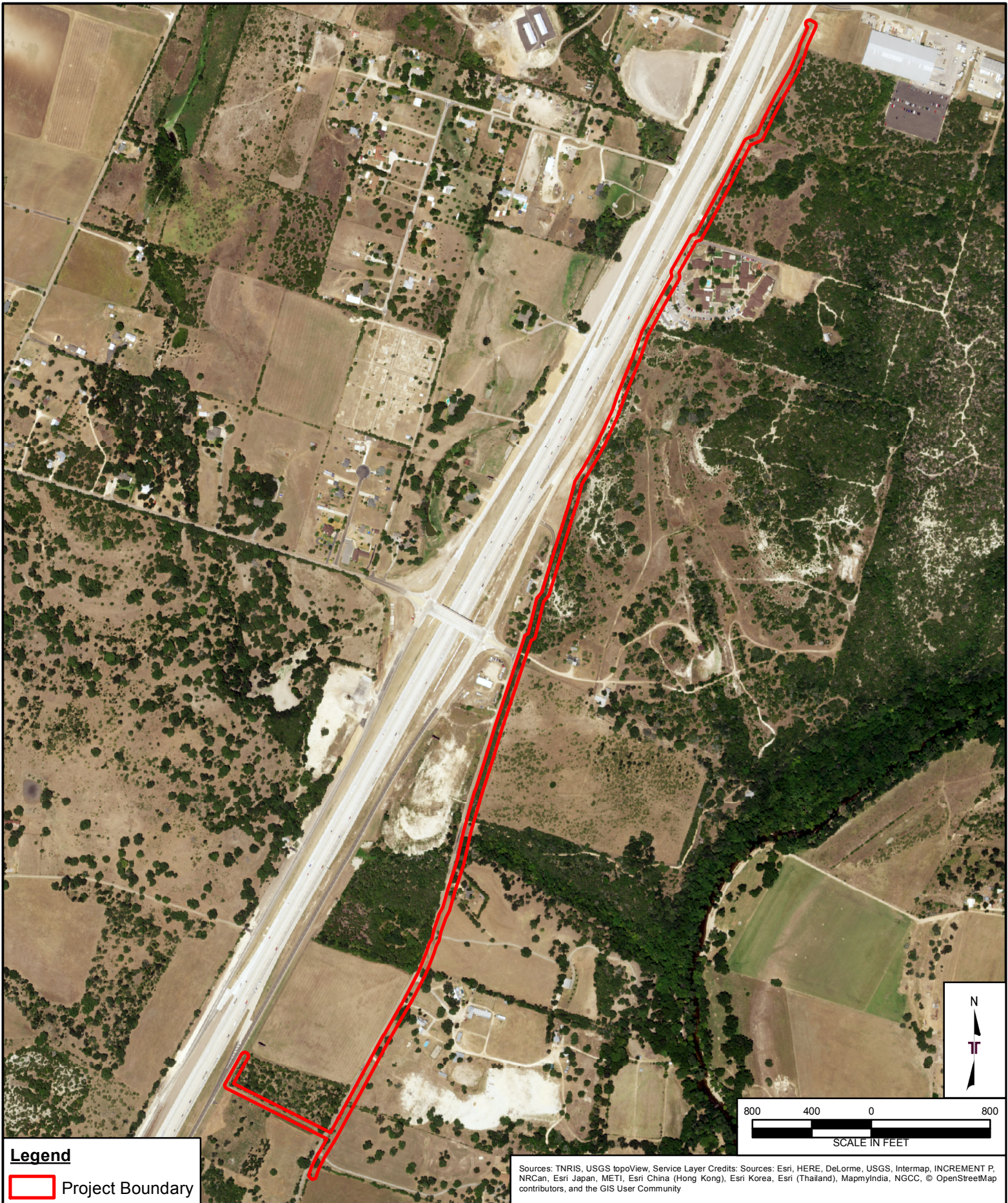
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Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No:	96187433A
Scale:	AS SHOWN
File No.:	96187433A
Date:	Sep 28, 2019

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1995 USGS Topographic Map: Belton
 South I-35 Water Line
 Toll Bridge Road
 Belton, Bell County, Texas

EXHIBIT
 1



Legend

Project Boundary

Sources: TNRS, USGS topoView, Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

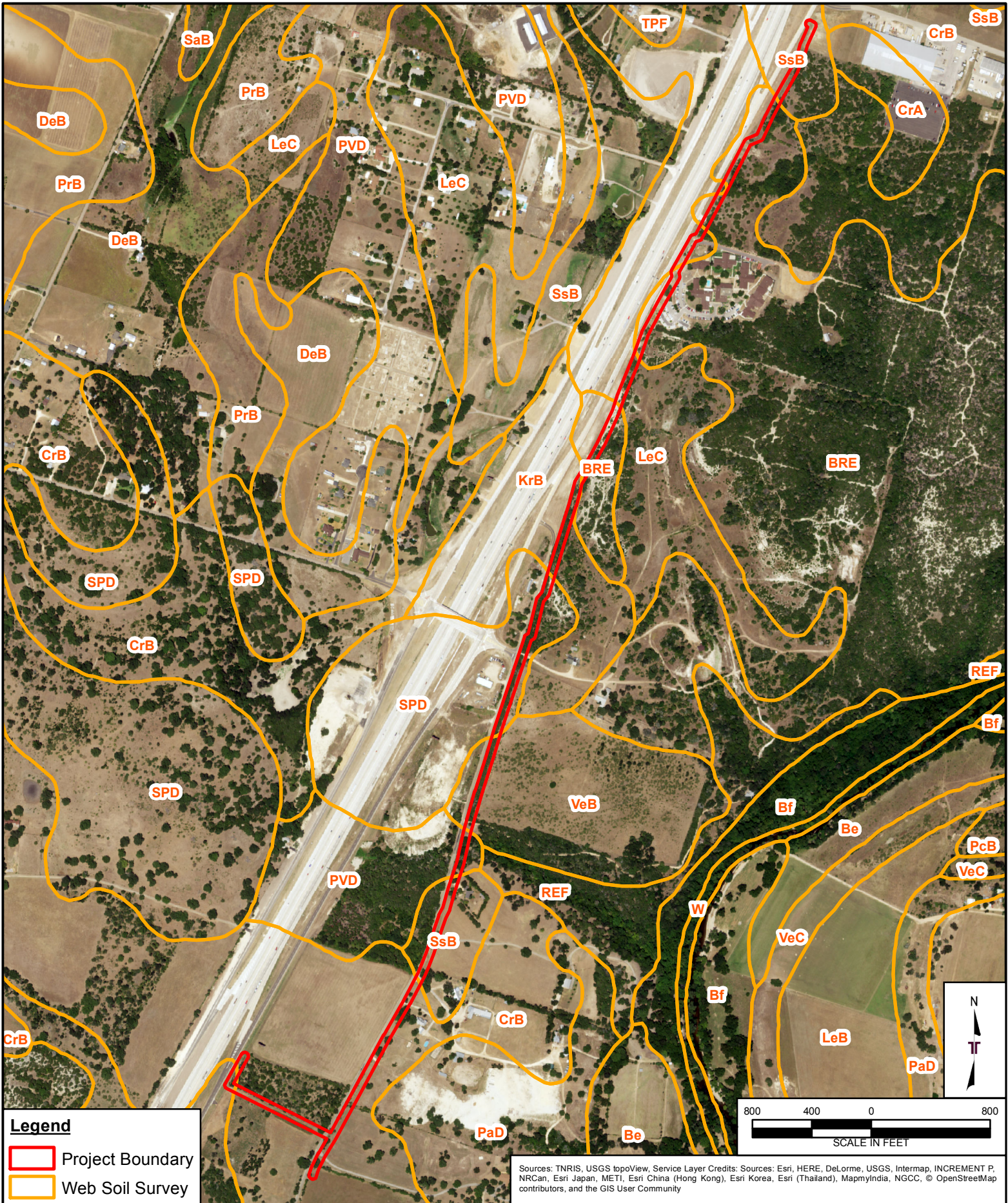
Project Mngr:	CG
Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96187433A
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2016 Aerial Photograph
 South I-35 Water Line
 Toll Bridge Road
 Belton, Bell County, Texas

EXHIBIT
 2



Legend

- Project Boundary
- Web Soil Survey

Sources: TNRS, USGS topoView, Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Project Mngr:	CG
Drawn By:	Terracon
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Approved By:	AS

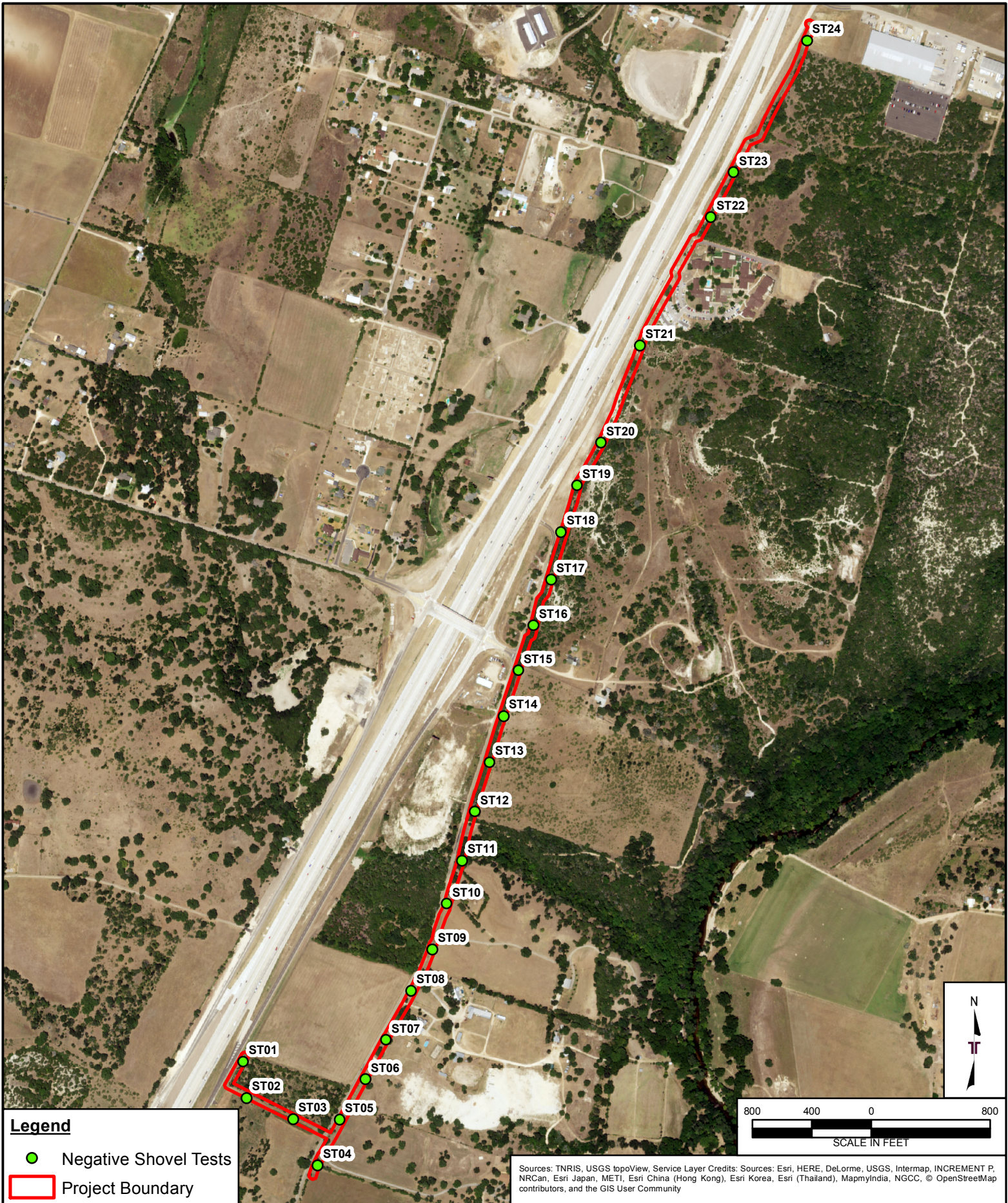
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File No.:	96187433A
Date:	Sep 28, 2019

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USDA Web Soil Survey
 South I-35 Water Line
 Toll Bridge Road
 Belton, Bell County, Texas

EXHIBIT
 3

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Project Mngr:	CG
Drawn By:	Terracon
Checked By:	CG
Approved By:	AS

Project No.	96187433A
Scale:	AS SHOWN
File No.:	96187433A
Date:	Nov 20, 2019

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Results Map
 South I-35 Water Line
 Toll Bridge Road
 Belton, Bell County, Texas

EXHIBIT
 5

Cultural Resources Services

South I-35 Water Line ■ Belton, Bell County, Texas

January 21, 2020 ■ Terracon Project No. 96187433A



APPENDIX B

Photographs

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 1. Southern portion of project area. Note poor ground surface visibility. View to the southwest.



Photo 2. Southern portion of project area. Note short local grasses and ground surface visibility. View to the southeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 3. Southern portion of project area. Note earthen berm. View to the southeast.



Photo 4. Southern portion of project area. Mechanically fractured chert on ground surface.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 5. Mechanically fractured chert from ST03, 0-20 cmbs.



Photo 6. Southern portion of project area. Alignment through maintained residential yard. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 7. Southern portion of project area. Alignment through maintained residential yard. View to the northeast.



Photo 8. Southern portion of project area. Alignment through livestock pasture. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 9. Central portion of project area. Note wooded vegetation. View to the northeast.



Photo 10. Central portion of project area. Note cedar trees. View to the southwest.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 11. Central portion of project area. Note cedar tree vegetation. View to the northeast.



Photo 12. Central portion of project area. Note modern trash on ground surface.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 13. Central portion of project area. Note I-35 access road, ground surface visibility. View to the northeast.



Photo 14. Central portion of project area. Note I-35 access road, caliche at surface. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 15. Northern portion of project area, at hospital. Note landscaping. View to the northeast.



Photo 16. Northern portion of project area, at hospital. Note concrete driveway. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 17. Northern portion of project area. Note marker for buried fiber optic line. View to the northeast.



Photo 18. Northern portion of project area. Station for buried gas line. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 19. Northern portion of project area. Note sparse grasses and cedar trees. View to the northeast.



Photo 20. Northern portion of project area. Note short grasses and cedar trees. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 21. Northern portion of project area. Note disturbances from construction activities. View to the northeast.



Photo 22. Northern portion of project area. Note disturbances from landscaping. View to the northeast.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 23. Northern portion of project area. Note disturbances from previous ground clearing. View to the northeast.



Photo 24. Northern end of project area. View towards I-35. View to the west.

Appendix B. Photographs

South I-35 Water Line ■ Belton, Bell County, Texas

Terracon Project No. 96187433A ■ Photos taken November 5 and 6, 2019



Photo 25. Shovel Test 07.



Photo 26. Shovel Test 19.

Cultural Resources Services

South I-35 Water Line ■ Belton, Bell County, Texas

January 21, 2020 ■ Terracon Project No. 96187433A



APPENDIX C

Shovel Test Log

Appendix C. Shovel Test Log

South I-35 Water Line ■ Belton, Bell County, Texas

Shovel Tests from November 5-6, 2019 ■ Terracon Project No. 96187433A

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
01	0-30	-	90%	10YR3/2 Very Dark Grayish Brown	Clay	2-20%	Very dense, cherty gravels. Very rooty and dry.
01	30-50	-	-	10YR2/2 Very Dark Brown	Clay	<2%	Extremely dense and dry with few gravels. Terminated at subsoil.
02	0-20	-	90%	10YR3/2 Very Dark Grayish Brown	Clay	2-20%	Very dense and dry. Short grasses, rooty, large gravels.
02	20-30	-	-	10YR2/2 Very Dark Brown	Clay	<2%	Extremely dense, Somewhat moist, large gravels and decomposing limestone. Terminated due to gravels.
03	0-20	-	90%	10YR3/1 Very Dark Gray	Clay	<2%	Moist but rooty and dense. Just north of linear push pile that runs west to east, test is at the approximate middle of the pile.
03	20-30	-	-	10YR2/1 Black	Clay	<2%	Extremely dense and dry, rooty. Likely disturbed by machinery. Terminated at extreme density.
04	0-30	-	90%	10YR3/1 Very Dark Gray	Clay	<2%	Clay, moist, dense, rooty, many carbonates throughout. Terminated at subsoil.
05	0-20	-	-	10YR3/1 Very Dark Gray mottled with 7.5YR7/6 Reddish Yellow	Clay	<2%	Moist, rootlets, very few carbonates.

Appendix C. Shovel Test Log

South I-35 Water Line ■ Belton, Bell County, Texas

Shovel Tests from November 5-6, 2019 ■ Terracon Project No. 96187433A

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
05	20-40	-	-	10YR2/1 Black	Clay	<2%	Roots, density increases with depth. Terminated at density.
06	0-20	-	90+%	10YR2/2 Very Dark Brown	Clay	2-20%	Dense but plastic and moist. Rootlets and animal burrows, very few carbonates.
06	20-35	-	-	7.5YR3/3 Dark Brown	Clay	<2%	Extremely dense, dry, poorly sorted pea gravels, terminated at extreme compaction.
07	0-15	-	90+%	10YR2/2 Very Dark Brown	Clay	2-20%	Dense but plastic and moist. Rootlets and animal burrows, very few carbonates.
07	15-40	-	-	7.5YR3/3 Dark Brown	Clay	<2%	Extremely dense, dry, poorly sorted pea gravels terminated at extreme compaction.
08	0-30	-	90+%	7.5YR3/3 Dark Brown	Clay	2-20%	Dense, moist, rooty, density increases with depth, terminated at extreme compaction.
09	0-25	-	90+%	10YR4/3 Brown mottled with 7.5YR7/6 Reddish Yellow	Clay Loam	>50%	Clay loam disturbed by nearby utilities, fence lines, and trampling from livestock. Terminated at disturbance.
10	0-10	-	90+%	10YR4/3 Brown mottled with 7.5YR7/6 Reddish Yellow	Clay Loam	>20%	Transitions from clay loam to clay at 10 centimeters below surface.

Appendix C. Shovel Test Log

South I-35 Water Line ■ Belton, Bell County, Texas

Shovel Tests from November 5-6, 2019 ■ Terracon Project No. 96187433A

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
10	10-25	-	-	10YR4/3 Brown mottled with 7.5YR7/6 Reddish Yellow	Clay	>20%	Many carbonates. Extremely dense. Terminated at carbonates and extreme compaction.
11	0-10	-	90+%	10YR3/2 Very Dark Grayish Brown	Clay Loam	>20%	Moist, dense, friable. Near drainage with nearby oaks and juniper trees.
11	10-20	-	-	10YR6/6 Brownish Yellow	Rock	>50%	Bedrock and Weathered Limestone. Terminated due to bedrock.
12	0-25	-	90+%	10YR4/3 Brown	Clay Loam	>50%	Many carbonates, soft with increasing density. Rootlets. Terminated at carbonates and extreme compaction.
13	0-25	-	20-40%	10YR4/3 Brown	Clay Loam	>20%	Many carbonates, soft with increasing density. Rootlets. Terminated at carbonates and extreme compaction.
14	0-20	-	40-60%	10YR6/3 Pale Brown	Clay	>50%	Many carbonates. Terminated at extreme density.
15	0-35	-	90+%	10YR6/3 Pale Brown	Clay Loam	>50%	Many carbonates. Terminated at extreme density.
16	0-25	-	80-90%	10YR4/2 Dark Grayish Brown	Clay Loam	>50%	Many carbonates, dry, soft, rootlets; decomposing limestone, marl, and chalk throughout test. Terminated at bedrock.

Appendix C. Shovel Test Log

South I-35 Water Line ■ Belton, Bell County, Texas

Shovel Tests from November 5-6, 2019 ■ Terracon Project No. 96187433A

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
17	0-25	-	20-40%	10YR6/2 Light Brownish Gray	Possible Crushed Limestone	>50%	Surface covered by poorly sorted limestone and marl gravels. Soft, rootlets, dry, possibly leftover base or earthwork material abandoned from prior road construction. Near push pile. Terminated at bedrock.
18	0-20	-	90+%	10YR4/2 Dark Grayish Brown	Clay Loam	>50%	Many carbonates, dry, soft, rootlets; decomposing limestone, marl, and chalk throughout test. Terminated at bedrock.
19	0-21	-	90+%	10YR4/2 Dark Grayish Brown	Clay Loam	>50%	Clay loam with decomposing limestone gravels and marl with chalk. Rooty, big tree root at 21 centimeters below surface.
19	21-30	-	-	10YR8/1 White	Chalk	>50%	Concentrated chalk deposit, soft. Terminated at bedrock.
20	0-15	-	<5%	10YR4/2 Dark Grayish Brown	Caliche	>50%	Caliche and marl; terminated at bedrock.
21	0-15	-	60-80%	10YR4/2 Dark Grayish Brown	Caliche	>50%	Caliche and marl; terminated at bedrock.
22	0-15	-	40-60%	10YR4/2 Dark Grayish Brown	Clay Loam	>50%	Shallow clay loam strata; rooty and soft. Terminated at caliche and marl.

Appendix C. Shovel Test Log

South I-35 Water Line ■ Belton, Bell County, Texas

Shovel Tests from November 5-6, 2019 ■ Terracon Project No. 96187433A

ST ID #	Depth (cmbs)	+/-	Ground cover	Munsell & Color	Texture	% Gravels	Comments
23	0-50	-	90+%	10YR4/2 Dark Grayish Brown	Clay Loam	>50%	Many carbonates and poorly sorted gravels; rooty, density increases with depth, dry. Terminated at extreme compaction.
24	0-50	-	<5%	10YR4/3 Brown	Clay	>50%	Disturbed fill from prior earthwork and construction. Northwest of Prostar and west of UPS. Terminated at disturbance.