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Archeological Survey Of The Proposed Sanger Outfall Pipeline Denton County, Texas

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Archeological Survey Of The Proposed Sanger Outfall Pipeline Denton County, Texas

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***ARCHAEOLOGICAL SURVEY OF THE PROPOSED
SANGER OUTFALL PIPELINE
DENTON COUNTY, TEXAS***

Texas Antiquities Permit Number 8338

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and
Emily D. Goetschius, BA

Principal Investigator: Allen M. Rutherford, MA

Submitted to:

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Dallas, Texas 75254

Submitted by:

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Cultural Resources Report 2018-34
June 5, 2018

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ABSTRACT

The City of Sanger is proposing to construct the 3.06-kilometer-long Sanger Outfall Pipeline in Denton County, Texas. Alan Plummer Associates, Inc. contracted with AR Consultants, Inc. to survey a 100-foot-wide corridor along the proposed route. AR Consultants, Inc. hypothesized that there would be low potential for both prehistoric and historic cultural resources. These hypotheses were based on the location of the pipeline route in the narrow Ranger Branch floodplain and lack of mapped historic structures remaining in the project area. Fieldwork was conducted on May 31, 2018 under Texas Antiquities permit 8338, during which 19 shovel tests were excavated and a total of 11 acres were surveyed. No historic or prehistoric cultural resources were noted within the survey corridor. As such, AR Consultants, Inc. recommends that no further cultural resource investigations are necessary for this project, and requests that the Texas Historical Commission concur with this recommendation. Project documents will be curated at the Center for Archaeological Studies, Texas State University, San Marcos.

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INTRODUCTION

The City of Sanger is proposing to construct the 3.06-km-long Sanger Outfall Pipeline route in Denton County, Texas (Figure 1). The proposed route follows Ranger Branch, an intermittent tributary of Clear Creek, from an existing wastewater treatment plant south to where an outfall structure will empty into Ranger Branch south of Paddock Lake. Much of the proposed route parallels a pipeline route surveyed by AR Consultants, Inc. (ARC) in 2008 (Todd 2008). A 100-foot-wide survey corridor will be used for the portions of the pipeline that do not overlap with the previous survey. The 3.06-km-long pipeline route includes a 2.58-km-long preferred route and a 0.48-km-long alternative route segment. Both portions were included in the survey, resulting in a combined 11-acre study area. A total 19 shovel tests were excavated.

The purpose of the archaeological survey was to determine if cultural resources were present along the proposed pipeline route and, if present, to make recommendations about their significance and how they might be impacted by construction. This would include recommendations of eligibility for inclusion on the National Register of Historic Places (NRHP) for any cultural resource found during survey. Alan Plummer Associates, Inc. (APAI) who is coordinating the environmental permitting for the City of Sanger, contracted with AR Consultants, Inc. (ARC) to conduct an intensive pedestrian survey of the route. Survey was conducted by Allen Rutherford and Emily Goetschius on May 31, 2018.

The cultural resource investigation was required by the Texas Antiquities Code because the City of Sanger is a political entity of the state. Texas Antiquities Permit Number 8338 was issued for the archaeological survey. Relevant legislation includes the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191). The Archeology Division of the Texas Historical Commission will review this report on behalf of the State.

This report is written in accordance with report guidelines used by the Archeology Division of the THC (Council of Texas Archeologists n.d.). The following report presents a brief description of the natural setting of the project area, followed by a discussion of the culture history and previous investigations within the study area. A chapter on the research design and methodology employed in the investigation is then followed by the results of the field investigation. The report concludes with recommendations followed by the references cited.

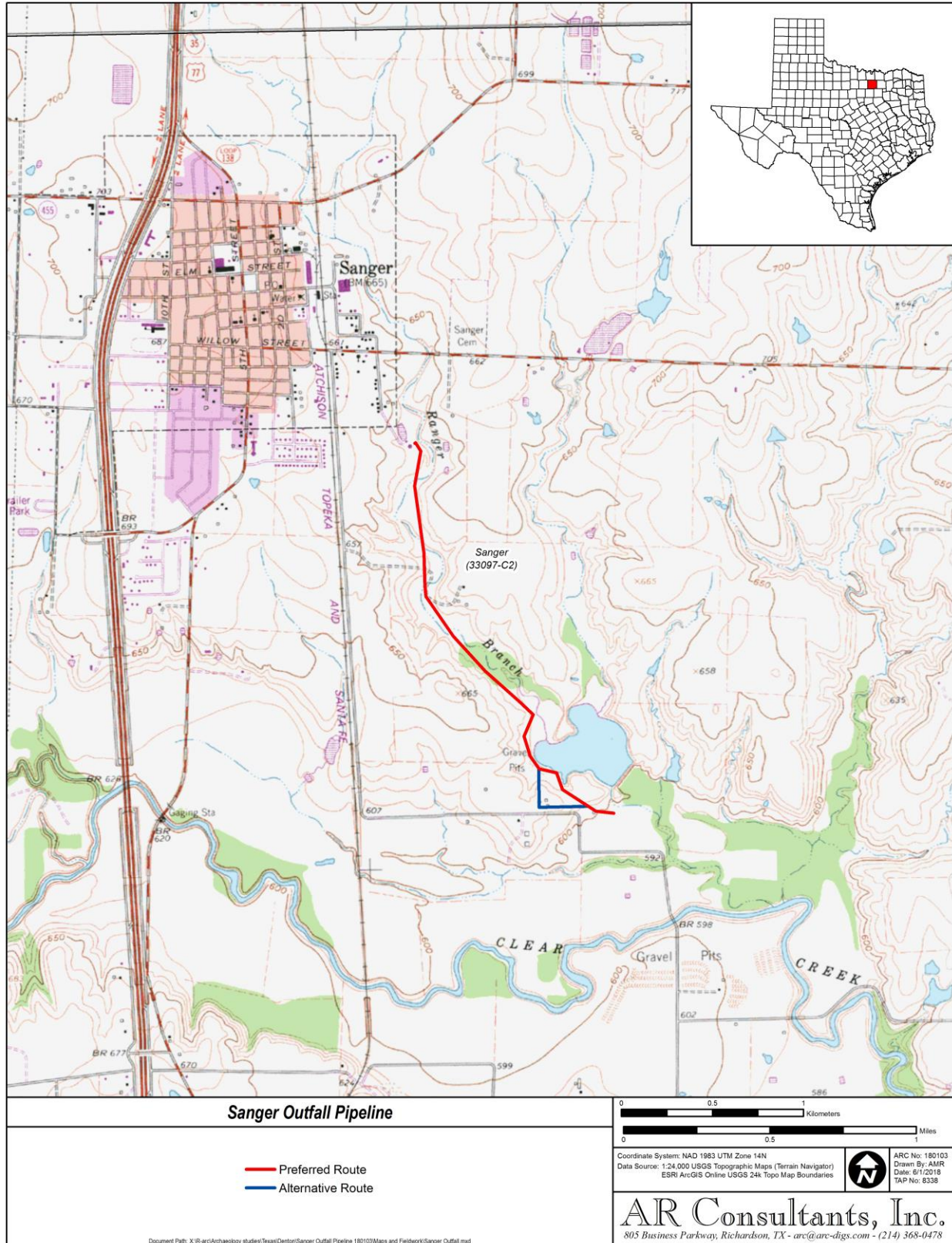


Figure 1. The proposed Sanger Outfall Pipeline preferred and alternative routes shown on a 1:24,000-scale USGS Topographic Map.

Administrative Information:

ARC Project Number: 180103
Sponsor: The City of Sanger with Alan Plummer Associates, Inc. handling the environmental permitting
Review Agency: The Archeology Division of the Texas Historical Commission
Principal Investigator: Allen M. Rutherford, MA
Field Dates: May 31, 2018
Field Crew: Emily D. Goetschius and Allen M. Rutherford
Field Person Days: 2
Acres Surveyed: Approximately 11 acres
Sites Investigated: None
Curation: The Center for Archaeological Studies, Texas State University, San Marcos

NATURAL ENVIRONMENT

Denton County is located in North Central Texas. It is bisected by the sandy soil of the Eastern Cross Timbers. The western portion of the county is covered by the black soil of the Fort Worth Prairie and the eastern part consists of the rich, black soil of the Blackland Prairie in which the study area lies. The county is drained by the Elm Fork of the Trinity River and several major creeks (Odom 2016). The Lower Cretaceous-aged undivided Fort Worth Limestone and Duck Creek Formation underlies the majority of the project area. The southernmost extent of the project area is mapped as containing both Quaternary alluvium and Quaternary terrace deposits (Bureau of Economic Geology 1967).

Bedrock decomposition and pedogenesis in the study area have resulted in creation of the soil associations known as the Sanger-Somervell which consists of gently sloping to moderately steep upland prairie clays and loams (Ford and Pauls 1980: General Soil Map). A variety of clay soils are present in the study area. The southernmost portion is mapped as occasionally flooded Trinity clay with 0-1 percent slopes and Altoga silty clays with 2-5 percent slopes; the northernmost area is mapped as occasionally flooded Frio silty clay with 0-1 percent slopes. The remaining sections of the project area are mapped as Medlin-Sanger stony clays with 5-15 percent slopes, frequently flooded Frio silty clay, and the undulating Aledo association. The Trinity soil series is characterized by very dark gray clay extending to 190 cm, while the Altoga series consists of light brownish gray/pale brown silty clay extending to almost 170 cm. The Medlin series is characterized by 124 cm of grayish brown silty clay underlain by grayish brown marly silty clay, and the Frio series consists of dark grayish brown silty clay loam extending to 100 cm. The Aledo association consists of 40 cm of dark grayish brown underlain by indurated limestone.

The project area is situated in the floodplain of the intermittent, second-order Rancher Branch, never getting more than 100 m from the meandering creek. This creek drains into perennial Clear Creek approximately 0.45 miles to the south. Clear Creek drains to the Elm Fork of Trinity River approximately eight miles southeast of the project area.

According to various authors, including Lynott (1979), the prairie once supported a cover of tall grasses and was inhabited by now absent herbivores including bison and antelope. Certainly, deer inhabited the floodplain forests, but this environment is not present in the immediate survey area. The regional paleoenvironment has been summarized by Ferring and Yates (1998:27-29). Prior to 11,000 years ago, the climate was warmer and drier, but this changed to being wet and cooler between 11,000 and 7,500 years ago. This was a period of rapid alluviation which did not allow for the preservation of buried occupation surfaces. Alluviation slowed for the ensuing 2,500 years and this drier period resulted in pedogenesis which preserved some stratified Middle Archaic occupation deposits. Regional rainfall increased between 5,000 and 2,500 years ago and this resulted in moderate to rapid alluviation and the preservation of briefly occupied surfaces but not the development of stable soils. Many Late Archaic site deposits have been found in these sediments. Pedogenesis resumed and lasted for the next 1,000 years during the dry climate. The West Fork Paleosol dates to this period. Over the last 1,000 years, the climate has been wetter than the present with moderate alluviation.

CULTURAL HISTORY

A definitive chronological framework for the Upper Trinity River Basin and North Central Texas has been difficult to establish for several reasons. Many sites are not vertically stratified because bioturbation has impacted stratified deposits, and plowing has mixed artifacts in shallowly buried deposits. However, deep Holocene alluviation preserves buried occupation surfaces, both in the Holocene as at the Rough Green (41TR162) and Dalby (41DL350) sites and in the Pleistocene, such as at the Aubrey site (41DN479) (Ferring 2001). Without alluviation, these sites would have remained surface deposits, likely with no contextual integrity. Plowing usually mixes together artifacts that exist within 15 cm of the surface (Lorrain and Hoffrichter 1968:5). For the purpose of this report, a prehistoric chronology, based on Prikryl (1990), with an added historic period and a divided Late Prehistoric, for North Central Texas is presented below to provide the reader with a temporal framework for the culture history of the region.

Table 1. Cultural Chronology.

Period	Dates
Historic European	AD 1800 to present
Protohistoric	AD 1600 to AD 1800 (Historic Native American)
Late Prehistoric	AD 700 to AD 1600
<i>Late</i>	<i>AD 1400 to 1600</i>
<i>Middle</i>	<i>AD 1000 to 1400</i>
<i>Early</i>	<i>AD 700 to 1000</i>
Archaic	6000 BC to AD 700
Paleoindian	ca. 11,000 to 6000 BC

Prehistoric Native American settlement in Denton County began at least 10,000 years ago as attested to by the presence of distinctively shaped dart points (Crook and Harris 1957) and the Aubrey Clovis site. Nevertheless, artifact collectors report the presence of Clovis, Folsom, Scottsbluff and other Paleo-Indian points from the surface of sites in the region. Specifically, four Clovis points have been reported from Denton County (Bever and Meltzer 2007:Table 1). The presence of exotic, i.e., non-local, lithic resources indicates that these early people traveled a territory where higher quality lithics were available or were involved in a system of raw material trading. These early people hunted now extinct large game, but probably also foraged off the land.

The subsequent period, the Archaic, lasted from 7000 to 6000 BC to possibly as late as AD 700-800. The Archaic peoples lived throughout the area but particularly along the major and minor stream valleys where they were able to hunt and gather native foods. Dart points, grinding stones, fire-cracked rock, and scrapers are commonly found at Archaic sites. The earliest Archaic peoples continued making and using exotic cherts for dart points, but as time passed, there was a shift toward the use of local lithics for chipped stone tools. These local materials are described as Uvalde Gravels (Byrd 1971; Menzer and Slaughter 1971). Small lithic scatters have been recorded in upland areas throughout the county. These sites appear to be Archaic in age, but none have been thoroughly studied.

About AD 700-800, a major change is found in the artifacts and settlement patterning of the prehistoric sites. Most sites from this period are found along the main stem of the Elm Fork of the Trinity River. This is attributed to the drying up of the smaller tributaries (Prikryl 1990). During this period, which is known as the Late Prehistoric, Caddoan pottery from East Texas appears as trade material along with the indigenous Nocona Plain pottery. It has been suggested that farming may have been practiced. Arrowheads appear about this same time and apparently, the bow and arrow had been added to the hunting tools.

At the end of the Late Prehistoric period, there appears to have been a general abandonment of the north-central Texas area based on an absence of sites with trade goods that might have been obtained from French, Spanish or English traders (Skinner 1988). This simplistic interpretation is tied to a general drying trend and attempts to factor in negative information generated by professional and avocational archaeologists who have conducted numerous site surveys throughout the region (Peter et al. 1996:2). There is very little evidence of historic-era Native American occupation anywhere in the region although historic accounts indicate that groups were present in the early 1800s.

The history of European presence in North Central Texas continues with the first written accounts by the French and Spanish explorers. There is tantalizing evidence to the south in Dallas County of possible visits by Spanish explorers (Bruseth 1992:81-82; Crook 1988:109). Current research, however, seems to indicate that Anglo settlers in the 1800s were the first non-Indians to visit the survey area.

Established European settlement in Denton County began in the mid-1800s with the establishment of the Peter's Colony after Texas independence. These early settlers were farmers who selected bottomland along the Elm Fork of the Trinity in the county. The town of Little Elm was established with a post office in 1845 (Bridges 1978). Commercial farming was not important until after the Civil War, and the early settlers were essentially self-sufficient. Besides the plants and animals they raised, wild animals and plants were commonly consumed. Denton became the county seat in 1856. By 1875, cotton, corn, and wheat were the main cash crops. Up to half of these crops were grown by tenant farmers who either paid rent to the landowner for their house, tools, and seed or by tenants who gave the landowner a third of the grain and a quarter of the cotton or other cash crops.

Sanger was founded in 1886 as a stop on the Santa Fe Railroad. The Topeka and Santa Fe Railroad spans hundreds of miles across the country and is still actively running today as the Burlington Northern Santa Fe Railroad. This railroad cuts through and parallels the project area. By the turn of the century, all the major communities had been established and some had passed away. Educational institutions have always been important to growth, and the North Texas State College, now known as the University of North Texas, was established in Denton in the 1890s, while the school now known as Texas Woman's University opened for classes in 1903 (Odom 2016). Though these schools are in Denton, their influence has spread to the surrounding areas including Sanger.

Previous Investigations

A search of TASA (2018) did not locate any historical markers, cemeteries, National Register of Historic Places (NRHP) properties, State Antiquities Landmarks (SALs), or archaeological sites within the survey area. However, Sanger Cemetery is approximately .5 mi to the north, with burials dating from the early 19th century to the present. Additionally, several historical markers are within the City of Sanger including: The Galilee Missionary Baptist Church; Sanger and the Gulf, Colorado, and Santa Fe Railway; and the Sanger Presbyterian Church.

While six archaeological surveys have been conducted within a mile of the project area, only one recorded an archaeological site has been reported. In 2004, Geomarine, Inc. conducted a survey for TxDOT located 0.9 mi southeast of the current project area. The survey resulted in the historic Nicholson bridge being recorded as site 41DN534. The bridge is still in use today. Negative surveys within 1-mi consist of: a 1981 survey by the United States Environmental Protection Agency, which intersects the northernmost section of the current project area; a 1987 survey by the Soil Conservation Service located approximately 0.25 mi to the west of the current project area; a 1997 linear survey by Geoarch Consultants (Ferring 1997) approximately one mile to the west; a 2008 survey by ARC (Todd 2008) of the Clear Creek Wastewater Treatment Plan project area, which overlaps portions of the current project area; and a 2017 survey by ARC for the City of Sanger located 0.5 mi west of the current project area (Davis and Tatem 2017).

Historic Map & Aerial Review

Four historic maps were examined prior to field work; these include the 1918 USDA Denton County Soils Map, the 1936 and 1959 General Highway Maps (GHMs) of Denton County, and the 1960 Sanger, TX 7.5' USGS map. All four maps show that no structures were present in or adjacent to the study area. However, aerial photographs from 1952, 1969, and 1995 show two structures present within the alternative pipeline route (Figure 2). Recent aerial photography shows that by 1995 these were no longer present, and in 2015 a larger barn with a green roof is the only structure present in the study area. Aside from demonstrating a near absence of structures, these aerial photographs show land use in the study area from the mid-20th century onward. In general, the fertile land adjacent to Ranger Branch has been kept as a patchwork of plowed fields, which have been terraced on the slopes adjacent to the floodplain.

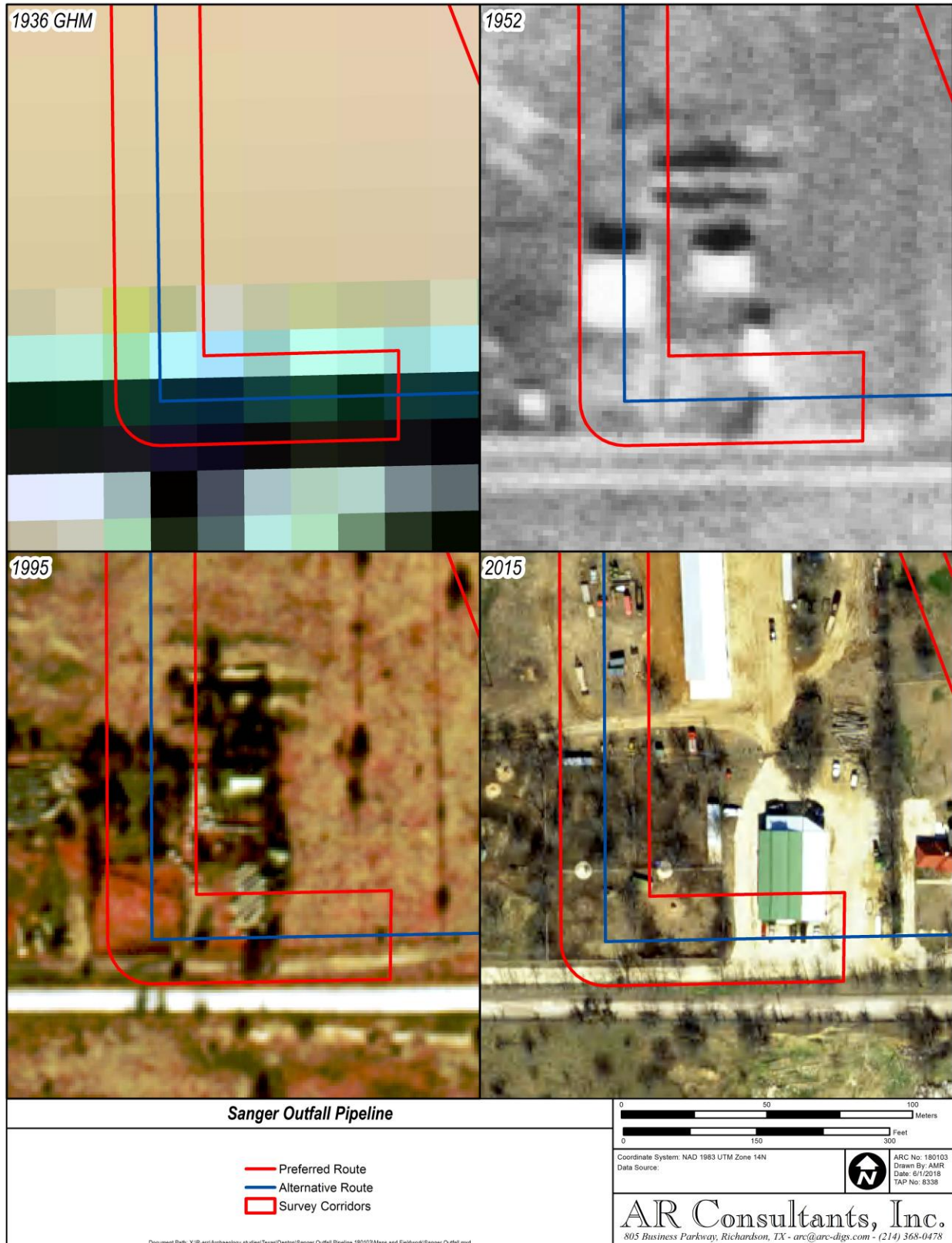


Figure 2. The Sanger Outfall Pipeline routes and survey corridors shown on the 1936 GHM, and 1952, 1995, and 2015 aerial photographs.

RESEARCH DESIGN AND METHODOLOGY

Research Design

Based on the research conducted prior to survey, two hypotheses were developed. First, it was hypothesized that there was low potential for encountering prehistoric sites. This is primarily based on the fact that the narrow Ranger Branch floodplain would not have been an ideal place to live. Several previous archaeological surveys along Ranger Branch and Clear Creek also found no cultural resources, supporting this argument. The survey and site data reviewed does not show many sites being found in the area around Rogers Branch and Clear Creek.

The second hypothesis stated that there was low potential for encountering historic sites within the project area. A few structures are shown on aerials around the project area in recent decades, but historic maps suggest few in the area. While historic maps and aerials demonstrate that mapped structures are not likely to be found, historic trash scatters and features such as foundations, cisterns, wells, and trash associated with the former historic structures may be present within the survey area.

Methodology

Survey was conducted in accordance with the standards set forth by the THC (n.d.). Portions of the proposed route that fall within 100 m of the route surveyed by ARC in 2008, were not resurveyed. Field personnel walked a transect along the centerline of the survey area. Shovel tests were placed where ground visibility was less than 30-percent and the ground surface was not heavily disturbed. Shovel tests averaged 30 cm in diameter. Sandy loam from the shovel tests was screened through ¼-inch mesh hardware cloth. When clay fill was encountered, it was inspected visually and broken into smaller chunks in order to determine if cultural materials were present. Shovel test matrices were described on the basis of composition, texture, and color. The clay fill was inspected visually and broken into smaller chunks to determine if cultural materials were present. The Munsell Soil Color Chart (2009) was used to identify soil colors. The authors made notes about the ground exposure, drainages, soil types, and disturbed areas where subsoil was exposed. Photographs were taken during the survey using a GPS-equipped, digital camera. Shovel test and project boundary locations were marked with a handheld GPS unit.

RESULTS

This chapter is divided into two sections. The first describes the project area's setting along with results of the pedestrian survey, broken into subsections outlining the preferred and alternative routes. Conclusions derived from the investigation end the chapter. Although shovel tests are described generally within the text, more detailed descriptions are provided at the end of the survey results.

Survey Results

Preferred Route

Starting at the south end of the preferred Sanger Outfall Pipeline route, the pipeline begins at Ranger Branch, south of Paddock Lake. Traveling west, the pipeline route runs across a manicured lawn (Figure 3), over a gravel driveway and behind a house, before turning north alongside a construction yard and west through an overgrown pasture. Vegetation consists primarily of mowed grasses and deciduous trees, resulting in a ground visibility of approximately 20-40 percent. Six shovel tests (ST 1-6) were excavated in this segment of the preferred route (Figure 4). Shovel tests were generally shallow, consisting of 8-20 cm of brown silt overtop either a darker silt clay or impenetrable rock. No cultural resources were found in this portion of the survey area.



Figure 3. South end of the preferred Sanger Outfall Pipeline route, taken from ST 2. View is to the east.

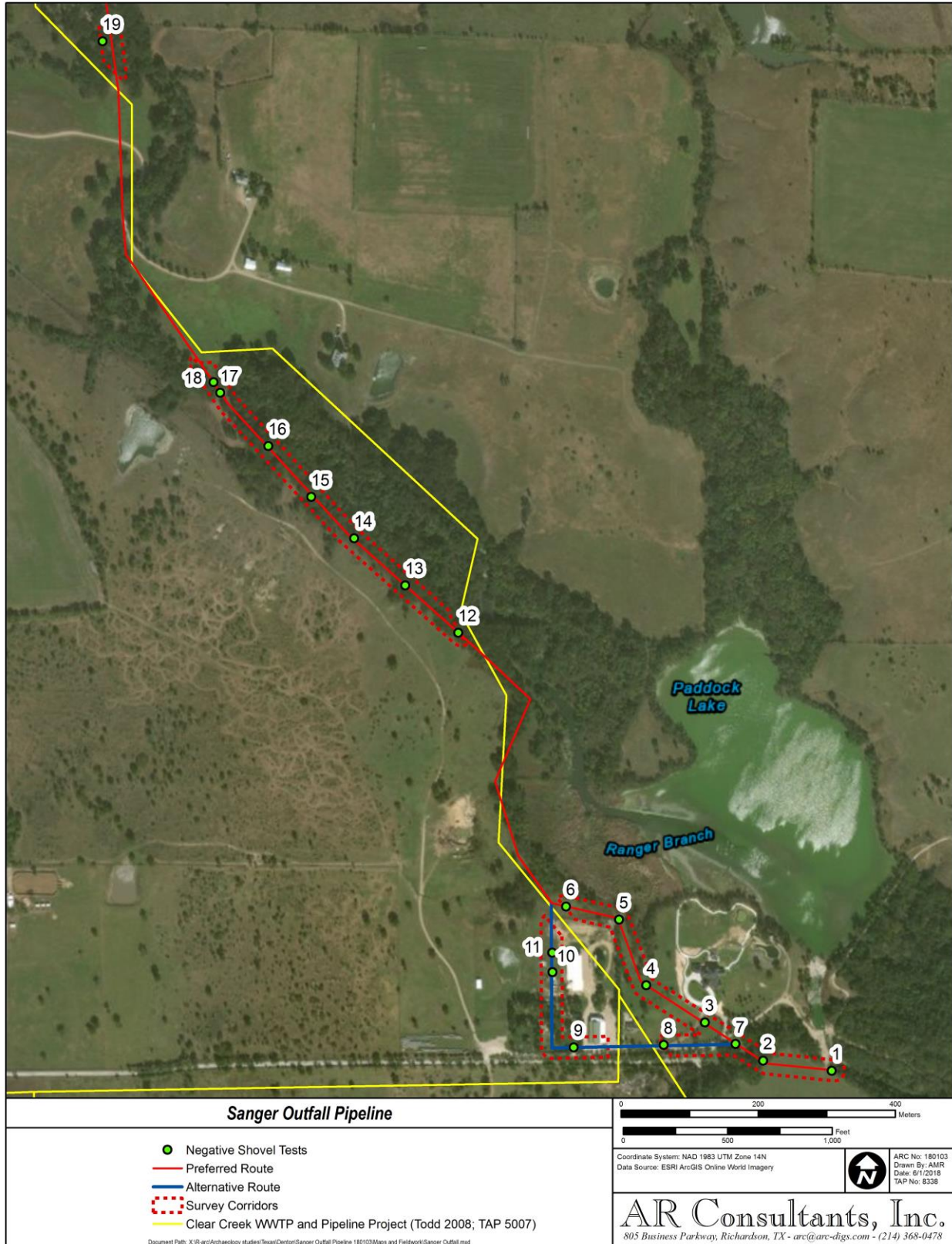


Figure 4. The Sanger Outfall Pipeline shovel test locations shown on a recent aerial photograph.

Moving north along the preferred route, the setting becomes more wooded as the underlying geology transitions from Quaternary alluvium and Quaternary terrace deposits to the undivided Fort Worth Limestone and Duck Creek Formation. The survey area is positioned to the west of Ranger Branch with a drainage crossing located between ST17-18. Vegetation consisted of deciduous trees, ferns, and Greenbriar, with ground visibility ranging from 0 to 25 percent. A total of eight STs (ST12-19) were excavated in this area. Overall, STs were deeper here and typically consisted of 20-50 cm of dark brown silt clay overtop black or dark brown clay. No cultural resources were found.



Figure 5. General environment in the north end of the preferred Sanger Outfall Pipeline route. View is to the north.

Alternative Route

The alternative route is located on the south end of the proposed pipeline. Starting from the east end, the route runs from a manicured lawn, across a driveway and through segmented livestock pens before turning north towards the construction yard. Vegetation was like that of the south end of the preferred route, consisting primarily of mowed grasses (Figure 6). Ground visibility reached 100 percent in the livestock pens.

A total of five STs were excavated along the alternative route (STs 7-11). STs were the shallowest in this portion of the study area, generally with 7-9 cm of light yellowish brown silt loam overtop angular gravels. No cultural resources were found and as expected, the only structure within the survey area was the modern green roofed barn (Figure 7).



Figure 6. Alternative Sanger Outfall Pipeline route, taken from ST 9. View is to the west.



Figure 7. Barn located within the alternative route survey area. View is to the north.

Table 2. Shovel Test Descriptions

ST#	Route	Depth (cm)	Description	Comments/Artifacts
1	Preferred	0-30 30+	Black (7.5YR2.5/1) clay Impenetrable rock	Terminated due to impenetrable rock
2	Preferred	0-16 16-32	Brown (7.5YR4/3) silty clay Dark brown (7.5YR3/2) clay	None
3	Preferred	0-8 8-20 20-25	Brown (10YR4/3) silt Dark yellowish brown (10YR4/4) silt Dark grayish brown (10YR4/2) silt	None
4	Preferred	0-20 20-30	Brown (10YR4/3) silt Very dark grayish brown (10YR3/2) silty clay	None
5	Preferred	0-14 14+	Brown (10YR4/3) silt Impenetrable rock	Terminated due to impenetrable rock
6	Preferred	0-10 10+	Brown (10YR4/3) silt Impenetrable rock	Terminated due to impenetrable rock
7	Alternative	0-8 8+	Light yellowish brown (10YR6/4) silt loam w/angular gravel >5mm Angular gravels up to 10mm	None
8	Alternative	0-20	Yellowish brown (10YR5/4) silt clay w/calcium carbonate	None
9	Alternative	0-9 9-30	Brown (10YR5/3) silt clay w/calcium carbonate Brown (10YR4/3) silt clay	None
10	Alternative	0-7 7+	Light yellowish brown (10YR6/4) silt loam w/angular gravel >10mm Angular gravel	None
11	Alternative	0-8 8+	Light yellowish brown (10YR6/4) silt loam w/angular gravel >10mm Angular gravel	None
12	Preferred	0-30 30-40	Dark brown (7.5YR3/2) silty clay Black (7.5YR2.5/1) clay	None
13	Preferred	0-30 30-35 35+	Dark brown (7.5YR3/2) silty clay Black (7.5YR2.5/1) clay Impenetrable root	None
14	Preferred	0-20 20+	Dark brown (7.5YR3/2) compact silt Impenetrable rock	Terminated due to impenetrable rock
15	Preferred	0-40 40-45	Brown (10YR4/3) silt clay Dark brown (10YR3/3) silty clay	None
16	Preferred	0-22 22-35	Dark brown (10YR3/3) silty clay Light yellowish brown (10YR6/4) clay	None
17	Preferred	0-50 50-110	Dark brown (10YR3/3) silt clay Very dark gray (10YR3/1) rodent hole	None
18	Preferred	0-28 28-42 42-80	Dark brown (10YR3/3) silt clay Dark brown (10YR3/3) silt clay w/limestone gravel >5mm Dark brown (10YR3/3) silt clay w/limestone gravel >10mm	None
19	Preferred	0-13 13-25	Brown (10YR4/3) silt Dark brown (7.5YR3/2) compact silt	None

Conclusions

No archaeological sites, features, or artifacts were identified during the survey. This was expected based on the lack of prehistoric sites found during previous archaeological surveys in the area. It was predicted that prehistoric deposits could be found in the floodplain, although none were identified. Concerning the potential for historic archaeological sites, a review of historic maps and aerial photographs found that few structures were present in the proposed project area, and they were all removed prior to 1995. It was anticipated that historic trash scatters, or other features might be found in association with the removed structures; however, none were identified.

RECOMMENDATIONS

The purpose of this investigation was to determine if significant cultural resources are present in the proposed Sanger Outfall Pipeline route in Denton County, Texas. No cultural resources were found in the project area. Based on the results of the survey, AR Consultants, Inc. concludes that further cultural resource investigations are unwarranted and recommends that the Texas Historical Commission concur with this assessment. It should be noted, if buried cultural materials are discovered during construction, the Archeology Division of the Texas Historical Commission should be notified.

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