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ARCHAEOLOGICAL MONITORING OF THE

ELM FORK RELIEF

INTERCEPTOR PIPELINE,

IRVING, TEXAS

Jesse Todd, MS, MA
Jeff Craver, BA
and
S. Alan Skinner, PhD

Texas Antiquities Permit Number 4220

Prepared for

TRINITY RIVER AUTHORITY OF TEXAS
5300 Collins Road
Dallas, Texas 76018

Prepared by

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Cultural Resources Report Number 2007-53
October 3, 2007

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ABSTRACT

From September 2006 to February 2007, AR Consultants, Inc. monitored the excavation of approximately 12,950 feet of Elm Fork Relief Interceptor pipeline route, which is about 25,000 feet long, for the Trinity River Authority of Texas. Ferring, in 1997, had tested most of the route which included 36 backhoe trenches which were augmented by 25 Geotech boreholes. No archaeological sites were discovered during the survey. However, due to the extensive Late Holocene (ca. 3,500-300 years ago) sediments that are buried under the floodplain of the Trinity River that are regarded as having a high probability for low density archaeological deposits it was recommended that two segments be monitored during construction.

Two segments of the pipeline route were monitored. The southern segment began just northeast of Loop 12 and terminated northeast of the Old Singleton Road while the northern portion began at south of Irving Boulevard in Riverview Park and terminated south of Union Bower Road.

No buried cultural deposits were uncovered while monitoring the construction of the pipeline. The lack of archaeological deposits was similar to Ferring's 1997 original testing of the pipeline route. This could have been due to the distance from the Elm Fork as well as the disturbance and possible removal of deposits when the landfill/golf course and park were constructed.

TABLE OF CONTENTS

Abstract..... i
Table of Contents..... ii
List of Figures..... ii
Introduction..... 1
Natural Environment..... 5
Culture History..... 6
Methodology..... 13
Results..... 15
Conclusions..... 23
References Cited..... 24

LIST OF FIGURES

Figure 1. The Elm Fork Trinity River Relief Interceptor Pipeline Route plotted on a portion of the Irving, Texas 7.5' USGS map. Monitored areas are shown in red and are noted as the Southern and Northern Segments..... 3
Figure 2. The Elm Fork Relief Interceptor Pipeline Route plotted on a portion of the 1920 Dallas County Bureau of Soils Map..... 6
Figure 3. Metal trench box used during excavation of pipeline route. View is to the east..... 13
Figure 4. Landfill site with the Southern Segment pipeline route location in red..... 16
Figure 5. Location of Backhoe Trenches and Geotech Boreholes along the southern segment from the original survey conducted by Reid Ferring, plotted on a portion of the Irving, Texas 7.5' USGS map..... 17
Figure 6. Recent trash in southern segment of the proposed route that crosses the landfill. View is to the northeast..... 18
Figure 7. Typical soil profile from north of railroad track to where the segment terminates. Note the trench box on the left side of the photograph. View is to the northeast..... 20
Figure 8. Location of Backhoe Trenches and Geotech Boreholes along the northern segment from the original survey conducted by Reid Ferring, plotted on a portion of the Irving, Texas 7.5' USGS map..... 21

Rarc: Elm Fork RI

INTRODUCTION

The Trinity River Authority of Texas constructed approximately 25,000 feet of the Elm Fork Trinity River Relief Interceptor sewer pipeline in the floodplain of the Elm Fork and West Fork of the Trinity River in west central Dallas County, Texas. The pipe's diameter is 104 and 110 inches, and the pipe was buried from 18 to 30 feet below the ground surface, depending upon the undulating topography, in a 10 to 15 foot wide ditch. The right-of-way is 50 feet wide. The pipeline was laid on a gravel cushion and covered with geotextile and gravel. During excavation, a metal box was used to prevent the walls from caving. After the pipeline was installed, it was covered with backfill.

The pipeline route began at the Trinity River Authority's waste water plant on Singleton Avenue which is located southwest of the confluence of Mountain Creek and the West Fork of the Trinity River. The pipeline route crosses the river and parallels the West Fork until it encounters Loop 12 where it turns northeast. After turning northeast it turns generally north and parallels the Elm Fork of the Trinity River and the pipeline route terminates at Proctor Road. The pipeline route parallels an existing 72- and 96-inch diameter pipeline.

The initial archaeological survey of the pipeline route was done by Geoarch Consultants (Ferring 2000). Geoarch excavated thirty-six backhoe trenches spaced from 100 to 300 meters apart and approximately 300 centimeters deep along the route to determine the depositional history and if buried archaeological sites were present. No archaeological sites were found during survey. In addition, the soil profiles from 25 boreholes were examined. Based upon the results of the testing, two segments of the pipeline route were selected as containing moderate to high potential for containing archaeological sites (Ferring 2000:11). This was based upon the existence of extensive Late Holocene sediments buried under the floodplain of the Trinity River that are regarded as having a high probability for low density archaeological deposits. Ferring (Ibid) further recommended that during the monitoring, the principal method of investigation should be the examination of the spoil piles instead of the archaeologist getting into the trench due to the possibility of trench collapse. The Texas Historical Commission and the Fort Worth District of the US Army Corps of Engineers agreed with this recommendation. AR Consultants, Inc. monitored the construction of the two segments of the pipeline route except for the last 150 feet of the northern segment by visually examining the floodplain, the trench walls and the trench excavation materials.

The southern segment of the pipeline route is approximately 4,650 feet long and begins about 260 feet east of Loop 12 and approximately 760 feet west of Singleton Boulevard and terminates approximately 885 feet south of East Shady Grove and about 2,410 feet east of Singleton Boulevard (Figure 1). The Northern segment, which is approximately 1.6 miles long, begins about 1,575 feet south of FM 456/Irving Boulevard at the Trinity Riverview Park and terminates approximately 1,610 feet east of North Union Bower Road and about 1,975 feet south of Proctor Road (Figure 1).

Since the pipeline route was constructed for the Trinity River of Texas, the Texas Historical Commission issued Texas Antiquities Permit Number 4220 for the archaeological monitoring. Relevant federal legislation includes the National Historic Preservation Act of 1966, as amended (PL-96-515), the National Environmental Policy Act of 1969 (PL-90-190), and the Archeological and Historical Preservation Act of 1974, as amended (PL-93-291). The Texas Historical Commission will not only review this report as the state review agency but also as the Section 106 review agency.

This report has been written in accordance with the guidelines for reports prepared by the Council of Texas Archeologists (ND). The following report presents a brief description of the natural and cultural environment of the vicinity. This is followed by a description of the methodology. The results of the investigation follow and constitute the body of the report. The last chapter presents conclusions that arise from the study. A list of references cited concludes the report.

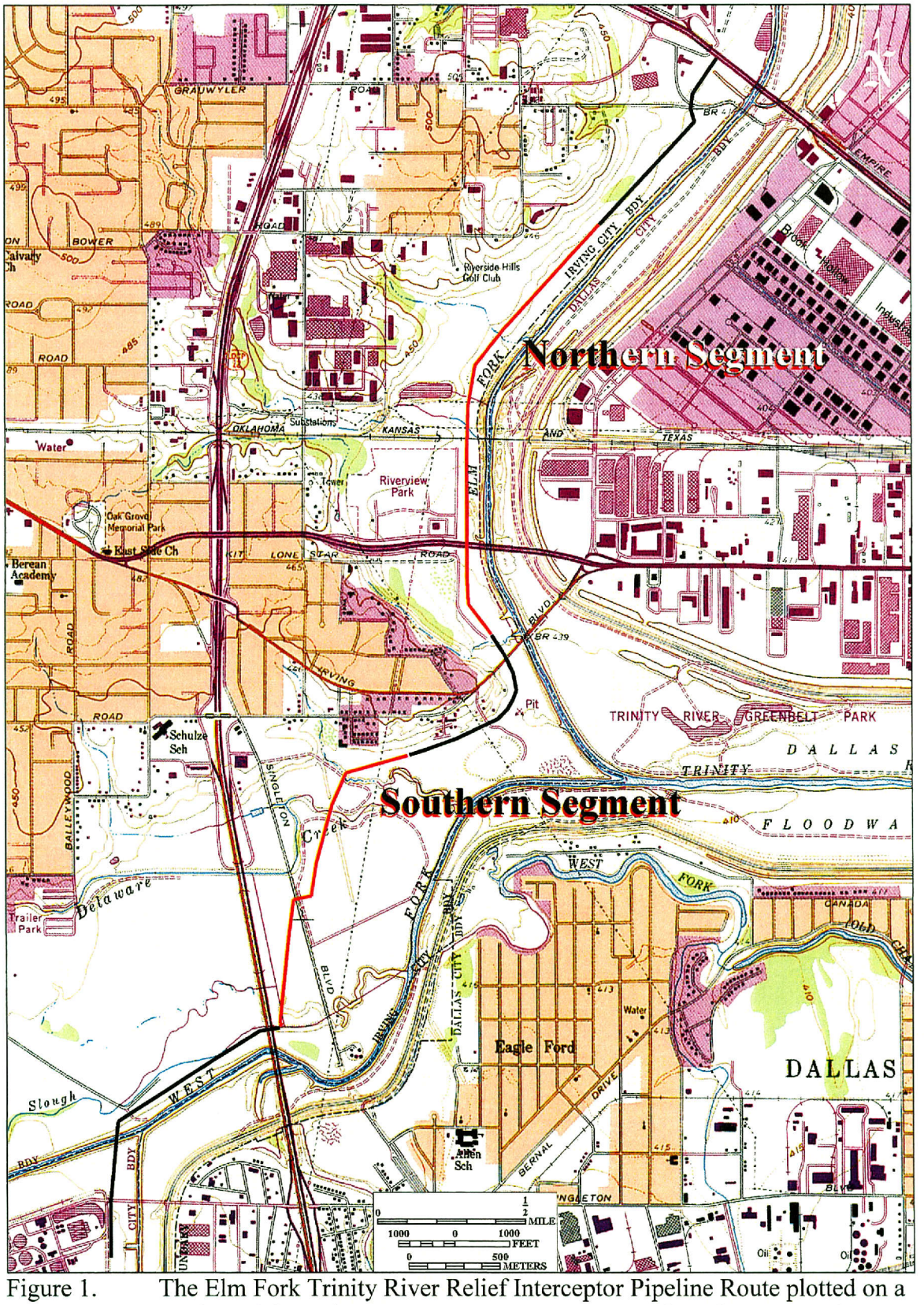

Figure 1. The Elm Fork Trinity River Relief Interceptor Pipeline Route plotted on a portion of the Irving, Texas 7.5' USGS map. Monitored areas are shown in red and are noted as the Southern and Northern Segments.

Administrative Information

Sponsor:	Trinity River Authority of Texas
Review Agency:	Texas Historical Commission, Fort Worth District of the US Army Corps of Engineers
Principal Investigator:	S. Alan Skinner, PhD
Field Crew:	Jeff Craver, Lance K. Trask, Rebecca Chapman, Allison Holyfield, Crystal Lawson, Jesse Todd and Skinner
Dates:	September 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 18, 19, 20 November 1, 2, 3, 4, 7, 9, 13, 14, 15, 16, 17, 20, 21, 22, 27, 28, 29, 30 December 4, 5, 6, 7, 9, 10, 11, 21, 22, 23, 2006 January 2, 3, 4, 5, 6, 7, 8, 22, 23, 24, 25, 27, 29, 31 February 1, 2, 3, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 28, 2007
Acres Evaluated:	approximately 15
Sites Recorded:	None

NATURAL ENVIRONMENT

The floodplain of the Elm Fork and the West Fork of the Trinity River belongs to the Trinity-Frio soil association which consists of nearly level clays (Coffee et al. 1980:General Soils Map). Specific soils that the pipeline crossed consists of undulating Arents loamy clay and hilly Arents loamy clay, frequently flooded Frio silty clay and occasionally and frequently flooded Trinity clay (Coffee et al. 1980:Sheets 23 and 30). The Arents is on elevated areas within the floodplain and is deposited overburden from mining operations (Coffee et al. 1980:11). The C horizon for the Frio series is listed as being 53 inches below the ground surface (Coffee et al. 1980:60), but only A horizons are present in the Trinity series. The deepest A horizon for the Trinity series is described as being 45 to 68 inches below the ground surface (Coffee et al. 1980:68) but Ferring (2000:Appendix B) encountered deeper A horizons. He also encountered C horizons ranging from approximately 175 to 300 cm below the ground surface. The southern portion of the pipeline route was placed in occasionally flooded Trinity clay and gently undulating Arents loamy clay (Coffee et al. 1980:Sheet 30) while the northern portion is in frequently flooded Trinity clay (Coffee et al. 1980:Sheets 23 and 30).

According to the 1920 Dallas County Bureau of Soils Map, the Elm Fork Relief Interceptor Pipeline route is placed in a floodplain setting west of a levee (Figure 2).

According to Ferring (2000:5), the underlying bedrock is the Upper Cretaceous-aged Eagle Ford Formation which mainly consists of shale. The Eagle Ford Formation is the least resistant to erosion; therefore, the floodplain of the Trinity River is widest within the formation. In addition, to the floodplain, there is a Pleistocene terrace, dated to about 20,000 years ago, present in the study area (Ferring 2000:6). Ferring (2000:Appendix B) encountered the Eagle Ford shale at approximately 260 cm below the ground surface west of Loop 12 but did not encounter it northeast of Loop 12 even at depths greater than 300 cm.

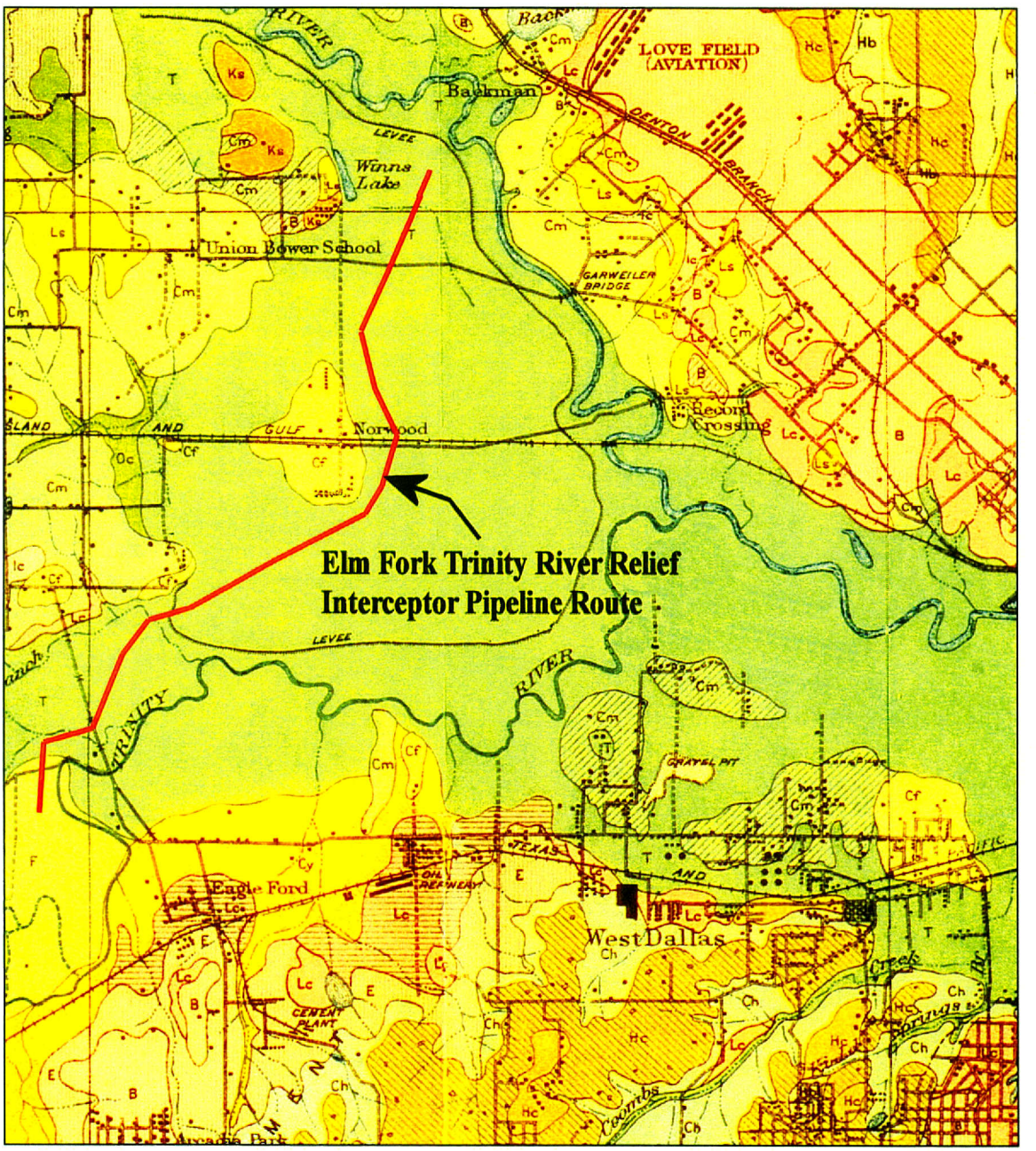

Figure 2. The Elm Fork Relief Interceptor Pipeline Route plotted on a portion of the 1920 Dallas County Bureau of Soils Map.

CULTURAL HISTORY

Prehistoric Native American settlement in North Central Texas began at least 10,000 years ago as attested to by the presence of distinctively shaped dart points (Crook and Harris 1957) at the Lewisville site and the Aubrey Clovis site (Ferring 2001). Moreover, artifact collectors report the presence of Clovis, Folsom, Scottsbluff and other Paleo-Indian points from the surface of sites in the region. 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. Ferring's backhoe trenching of the Aubrey site discovered that the C and Abk horizons are relatively shallow, about 1.0 to 1.5 m below the ground surface (Ferring 2001:38, 40, 43).

The subsequent period, the Archaic, lasted from 7,000 to 6,000 B.C. to possibly as late as A.D. 700 to 800. The Archaic peoples lived throughout the counties 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 common artifacts found on Archaic sites. The earliest Archaic peoples continued 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 (Menzer and Slaughter 1971). Large Archaic sites are generally located on terraces or ridges that overlook the Elm Fork of the Trinity. Smaller 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.

Various authors, including Bruseth and Martin (1987) and Peter and McGregor (1988), have attempted to create a chronology for North Central Texas. The most commonly used chronology was established by Prikryl (1990) which divides the Late Prehistoric, the time from the use of the bow and pottery to the Historic Indian, into two periods: Late Prehistoric I (A.D. 700 to 1200) and Late Prehistoric II (A.D. 1200 to 1700).

During Late Prehistoric I times, normally small amounts of pottery of pottery are found on North Central Texas archaeological sites, but the exception is the Cobb-Pool site (41DL148) where numerous Caddoan-looking sherds were recovered (Prikryl and Perttula 1995:189). Arrowheads appear about this same time and apparently the bow and arrow had been added to the hunting tools. From A.D. 1000 to 1300, pottery appears in North Central Texas that has similarities to Caddoan pottery as well as Caddoan and Jornada Mogollon ceramics occur on sites in North Central Texas (Prikryl and Perttula 1995). In addition houses were found at the Cobb-Pool site, 41DL148, (Peter and McGregor 1988:140) and at Bird Point Island (Bruseth and Martin 1987:182). Prikryl (1990:77) mentions the consumption of corn in North Central Texas during this time and Todd (1999) suggests that the presence of mussel shell hoes in North Central Texas indicates some form of farming.

During Late Prehistoric II times, it is believed that the climate was drier. Possibly bison may have been utilized more than in Late Prehistoric I times. The presence of bison-scapula hoes, especially in northern North Central Texas, suggests an increase in horticulture or, at least, its first appearance although the best evidence for corn consumption is in the Late Prehistoric I times. This concept is supported by the presence of sites along sandy terraces instead of the floodplain area where most Late Prehistoric I sites are found. There is a marked Plains influence in North Central Texas also during this time (Prikryl 1990:80).

At the end of the Late Prehistoric periods, there appears to have been a general abandonment of the North Central Texas area. Along Red River in Montague and Cooke Counties and across Red River in Oklahoma, there is both archaeological and ethnographic evidence of historic Taovayas, Wichitas and Yscanis Indians (Bell, Jelks and Newcomb 1967; John 1992:204; Lorrain 1969) Since the Spanish could not subdue the Indians, they made them their allies with promises of help against the Osage. Bruseth (1992:87-89) has discussed the Honey Springs sites in Dallas County, but Skinner (1988) has argued that very little historic Native American archaeology has been documented in North Central Texas.

There is tantalizing evidence found on the Trinity River in Dallas County of a possible visit by Spanish explorer Hernando de Soto (Bruseth 1992). Artifacts found consist of a chain-mail gauntlet, a halberd and a spur. Current research, however, seems to indicate that Anglo settlers were the first non-Indians to settle in North Central Texas.

The first established European settlement in Dallas County began before the mid-1800 with the establishment of the Peter's Colony after Texas independence. These early settlers were self-sufficient farmers who selected bottomlands along the Elm Fork of the Trinity (Bridges 1978) for farming. Besides domestic plants and animals, wild animals and plants were commonly consumed.

Most historians agree that significant European presence in the area of the Three Forks of the Trinity River began in 1841, when John Neely Bryan arrived with the intention of beginning a trading post. He eventually selected a cabin site on a bluff overlooking the river and near a strategic low-water water crossing. Within a few months, Bryan's location had attracted other settlers, some of whom arrived under the auspices of Peters Colony grants and who established colonies in other parts of Dallas County. By 1842, there were several settlers to the north in the Farmers Branch vicinity. These families and others formed the nucleus of a small settlement which was located along Mustang Creek, which later became known as Farmer's Branch, because these early farmers raised the first crops of wheat, peaches, hogs, and chickens in the Colony (Rogers 1965:64).

In 1846, the first legislature of the new state of Texas created Dallas County out of the much larger Nacogdoches County. Because the designation of a county seat was not made clear by the legislative action, three small hamlets, Hord's Ridge in Oak Cliff, Cedar Springs, and Bryan's Dallas, vied for the honor. Finally, in 1850 after two elections, the bluff-site town of Dallas officially became the county seat.

The coming of the Houston & Texas Central railroad in 1872 changed the face and economy of Dallas County. The following year the Texas & Pacific Railway effected a rail crossroads only one mile from the original town site and assured a booming future for the young town. As William L. McDonald (1978:19) has written,

> Within a few months after the arrival of the railroads, Dallas had been transformed from a largely agrarian village of less than 2,000 people into a bustling commercial and industrial center with a population of over 7,000.

Dreams of navigating the Trinity from the coast to Dallas had always interested the city's business leaders. After the excitement of the iron horse had calmed, the Trinity River Navigation Company was formed and a snag-puller and steamboat, the *H.A. Harvey, Jr.*, were purchased (Payne 1982:109). The *Harvey* finally made the coast-to-Dallas trip in over two months, but the greatest use of the upper Trinity seems to have been in short pleasure trips from the city. World War I intervened and brought to a halt efforts to navigate the river.

The river continued to shape the destiny of Dallas. The disastrous flood of 1908 completely cut off Oak Cliff from the City of Dallas and precipitated action at city hall. In 1910, the City of Dallas hired George Kessler, a Kansas City landscape architect, to draw up a master plan for comprehensive city development. City planning had not been a priority but with the devastating 1908 flood and none too complimentary comparisons to cities like Atlanta and St. Louis, it became apparent that planning was indeed a necessity. Among his far-reaching recommendations, Kessler suggested consolidating the several small railroad stations into a central depot, creating a levee system, and channelizing the Trinity (McDonald 1978:205; Payne 1982:151). The resulting changes streamlined transportation in the city and provided additional impetus of a new vision of the Trinity near the Central Business District.

What today is the City of Irving was known as a settlement named Gorbit at least by 1889. By 1894, the town's name was changed to Kit. Kit's location was changed in anticipation of the construction of a railroad route. However, the railroad line did not follow the original plan; therefore a third townsite was found and named Irving, possibly after Washington Irving, the favorite author of Mrs. Brown whose husband helped promote the townsite. The population of the town decreased in the middle 1910s but recovered in the 1920s and by the 1940s was the center of a consolidated school district. Today, Irving is a growing city based on commuters to Dallas and Fort Worth as well as its own national and regional businesses and commercial developments. The North Lake Campus of the Dallas County College District as well as the headquarters of the Boy Scouts of America is located in Irving (Welch 2006:1).

Previous Archaeological Investigations

In truth, very little archaeology has been conducted in the immediate study areas of the Trinity River pipeline route, although numerous studies in the surrounding area, particularly downstream, demonstrate the presence of potentially significant historic and

prehistoric site deposits in some settings which are similar to those included within the study area corridors. Virtually no substantive archaeological investigations occurred in the floodplain of the Trinity River between the junction of the West Fork and the Elm Fork and the eastern edge of Dallas County before 1980. Although limited in scope, most investigations in the area have been conducted in the last ten years.

This paucity of information, as well as the discovery of a few buried sites in the Elm Fork of the Trinity, led to the prediction that the floodplain of the Trinity River in Dallas had a "high" potential for containing prehistoric archaeological sites (Skinner, Richner, and Johnston 1978: Figure 23). At the time, it was believed that the river terraces had an even higher potential for archaeological sites and that the tributaries and the uplands had medium and low potential, respectively. Although a more careful review of historic maps would have highlighted the fact that the current river alignment in the study area was not the pre-levee channel, we had no appreciation of the geomorphological variability within the floodplain, and thus equated the floodplain with similar settings on other river tributaries. This understanding was further supported by the reported discovery of buried sites, or apparently buried sites, in the vicinity of the Central Wastewater Treatment Plant. Skinner (2001) believes the Trinity River floodplain in Dallas should not be considered a monolithic "high probability" area.

As part of planning for developments in the Upper Trinity River Basin, C. Reid Ferring and a team from North Texas State University (Yates and Ferring 1986) inventoried cultural resources in the immediate river area [up to the 500 year flood elevation] primarily within Dallas, Denton, and Tarrant Counties. This investigation was conducted for the Fort Worth District of the US Army Corps of Engineers. A reconnaissance and inventory of archaeological sites within the area were conducted and significant emphasis was placed on reconstructing the Late Quaternary geology and environments of the region. Of particular interest is the compilation of boring logs from the White Rock Creek area which show deeply buried Late Quaternary deposits which have the potential for containing prehistoric archaeological deposits. This investigation and interest in the area resulted in the expansion of a chapter on historic archaeology that included descriptions of sites, including Lock and Dam No. 1, downstream from the Trinity Parkway study area (Reese, Pegues, and Yates 1988).

In the winter of 1993, a pedestrian survey of two tracts making up the proposed Little Lemmon Lake Park was done for the Dallas County Park and Open Space Program (Skinner and Whorton 1993). The survey found no evidence of prehistoric deposits on the surface of the floodplain and was unable to relocate a previously recorded site located near the south end of Little Lemmon Lake. This site had been reported as having been in one of the numerous gravel borrow pits that are present in this part of the floodplain. A previously unrecorded buried prehistoric archaeological site consisting of what appeared to be parts of a possibly articulated bison skeleton was found in the river bank. The second site was the historic Wulschleger Farm which was a truck farm that provided vegetables to the Dallas Farmers Market after World War II.

In 1995 and 1996, AR Consultants monitored the Phase I widening of the channelized Trinity River channel extending upstream from the DART bridge to the Interstate 35E crossing of the river (Skinner, Whorton, and Trask 1996). No evidence of prehistoric occupation was uncovered in the four meters of floodplain sediments, but two historic sites were discovered and recorded. Neither site would have been located by pedestrian survey and standard shovel testing. The first site, 41DL370, was a hand-dug and brick-lined well associated with trash dated approximately 1940. The second site was also an early 1900s trash accumulation containing an abundance of marine oyster shells

In 1995, AR Consultants conducted deep testing using a trackhoe upstream from the axis of the DART bridge over the Trinity River floodplain (Skinner et al. 1996:140-174). As with the construction monitoring previously done by the Archaeology Research Program, no buried cultural materials were found in the profiles of the eleven trenches and two profiles that were investigated. The C horizon was encountered at approximately 300 cm below the ground surface in the trenches and some of the trenches were excavated to about 500 cm below the ground surface. Although the possibility of buried archaeological deposits was recognized by the geomorphologists (Caran and Dillon 1996), none were isolated. It was noted that deep testing in floodplain sediments in the Trinity River floodplain poses limitations due to sediment instability.

In 1997, Geo-Marine, Inc. reevaluated 41 archaeological sites previously located within or adjacent to the Dallas Floodway APE between Corinth Street and Interstate Highway 20 (Cliff et al. 1998); fourteen of these sites are within the floodway footprint. Six of the fourteen sites were considered ineligible for inclusion in the NRHP due to heavy disturbance. The remaining eight sites are recommended to be considered eligible for NRHP inclusion pending further investigations. Several of these buried prehistoric sites are recommended for inclusion as macro-sites or site clusters. It is also recommended that an abandoned City of Dallas dump, site 41DL320, retains some research potential. Forty-nine architectural resources were recorded within the APE, and it was recommended that three require assessment by an architectural historian and three others will require this assessment when they become fifty years old. The remaining 43 resources did not warrant further investigation.

In the summer of 1999, AR Consultants monitored Phase 2 of the Trinity Widening which extends from east of the Interstate Highway 35E bridge to west of the Continental Avenue bridge (Skinner 2001). No in-place prehistoric or historic archaeological sites were found from exposures or excavated trenches ranging from 3 to 4 m below the groundsurface. Regular inspection revealed that the top of the pre-levee floodplain is located from one to three meters below the present ground surface. Furthermore, this upper sediment contains historic materials, particularly fill dirt along with various construction materials that was deposited over the floodplain, probably since levee construction. Monitoring recorded the presence of a buffalo or cow skeleton and recovered a cluster of weak-side broken fresh-water mussel shells. The age of the animal skeleton is uncertain. Due to the breakage of the mussel shells, it was concluded that they were opened prehistorically.

In 1999, Geo-Marine, Inc. did a reconnaissance and deep probe testing in the floodplains of the East Fork, West Fork and with this project area (Cliff et al. 1999). Although no buried cultural resources were found during their testing they recognized there was strong potential along the remnant channel of the West Fork between Inwood and Westmoreland Roads. The backhoe trenches were excavated to approximately 4 m below the ground surface but no C horizons were encountered, only the A and B.

The Dalby site (41DL350), which is located on the Trinity River bank east of Loop 12, was investigated by AR Consultants, Inc. in 2005 (Skinner et al. 2005). The site consists of a small artifact assemblage consisting of lithic debris, fire-cracked rock, bone fragments, mussel shells and a single Gary dart point. The site dates from AD 460 to 780 and is Late Archaic in age. Although the artifact assemblage is limited, AR Consultants, Inc. recommended that the entire site is eligible for consideration as a State Archeological Landmark and for nomination to the National Register of Historic Places. In addition to the archaeological investigation, approximately 550 cm of cutbank was examined and dates from the cutbank were stratified. The dates range from 2170±40 BP (Beta-208106) to 1520±50 BP (Beta-20814).

In 2006, AR Consultants, Inc. (Frederick et al. 2006), excavated 41 backhoe trenches in the Trinity River Greenbelt Park for the North Texas Tollway Authority (NTTA). The NTTA intends to place fill from road construction within the park. The trenches are located east and southeast of the Elm Fork Relief Interceptor pipeline route. Trench depths averaged about 300 cm and matrices ranging from the Pilot Point Alluvium to recent were encountered. In addition, fill from previous disturbances was abundant. Two sites were recorded. Site 41DL440 is a historic trash scatter and site 41DL441 is a Protohistoric hearth. Two charcoal samples from the hearth dated to 230±40 B.P. (Beta-216209) and 170±40 B.P (Beta-216210). Further testing was recommended for site 41DL441.

Past investigations in the study area have shown the presence of historic and prehistoric archaeological sites buried in floodplain sediments and on the adjacent terraces. Prehistoric floodplain sites have been found buried in sediments adjacent to the present channel of the Trinity River and possibly along old river channels as well as channels of tributaries including Dallas Branch, Mill Creek, Elam Creek, Five Mile Creek, Cedar Creek and White Rock Creek. In the study area, post-levee fill sediments and earlier overbank flooding deposits have changed the contours of the ground and obscured most evidence of the pre-levee floodplain topography. Testing of these sites has either been unproductive due to the disturbed nature of the sediments or the small extent of site deposits.

METHODOLOGY

Monitors were present during the excavation by the trackhoes and recorded generalized soil profiles at approximately 30 feet intervals. Soil samples for inspection were taken from the trench excavation materials. Monitors had to stand on the bank opposite of where the back dirt was placed because once the excavated material was placed on the ground, bulldozers removed the excavated material. However, the bulldozer operators were gracious and allowed the monitors to retrieve the back dirt on occasion for inspection. After the pipe was placed in the trench, it was backfilled.

A large steel trench box (Figure 3) was utilized to help keep the side walls of the trench from caving in. The trench box consists of a box-shaped metal construct that is about 15 feet wide and 30 feet long and deep. One end contained metal bars for grasping across it so that the trackhoe could move it. The trench box, however, obstructed the view of the trench walls as they were being excavated. Unfortunately the fill was immediately backfilled behind the steel trench box, so monitors were forced to pay extra attention to the fill coming out of the trench before being backfilled.

Figure 3. Metal trench box used during excavation of pipeline route. View is to the east.

The construction of the sewer line had to be done in segments. This was because the golf course and park were being used by sport teams during certain months of a year. This meant that the monitoring was sporadic, stopping and starting based upon access and weather conditions. Several times during the course of the monitoring rain water filled

the bottom of the trench and would have to be pumped out before construction could continue. Normally Dallas County receives 36 inches of rain (Coffee et al. 1980:2), but 16 inches of rain fell within about two to three months in intervals of two or three days (City of Dallas 2007). During the construction of the pipeline unmapped cable lines and pipelines were encountered which had to be cut through or avoided. It was during these times that we asked to be contacted once construction continued. Poor communication between the construction company and us made it difficult to be at the site the moment construction began again.

The archeologists looked for mussel shell concentrations, animal bones, fire-cracked rock concentrations and very intensely for burials in the trench walls since this what was expected to occur if a site was present.

RESULTS

The Results section is divided into three parts. The southern segment of the route is described first and is followed by northern segment. Conclusions are at the end of the chapter. The monitored southern segment begins just northeast of Loop 12 and runs northeast crossing Old Singleton Road and terminates south of Shady Oaks Road. The northern segment begins south of Irving Boulevard (Hwy 356) in Riverview Park and continues north and northeast and terminates south Union Bower Road.

Southern Segment (Figure 1)

The monitored southern segment of the pipeline route began about 300 feet east of Loop 12 and ran generally northeast for approximately 4,800 feet. Monitoring ceased approximately 750 feet south of Shady Grove Road. Northeast of Old Singleton Boulevard, the pipeline crossed the Twin Wells municipal golf course. According to the 1971 records at the Irving City Hall, the area was a landfill (Figure 4). Some time after 1980, fill was added to the landfill and a golf course was constructed on the landfill.

In backhoe trench 35 (Figure 5) which was located west of Loop 12, Ferring uncovered mixed fill and debris to 270 cm below the ground surface. Also, borehole No. 7 encountered concrete and rocks in dark grayish-brown (10YR4/2) clay to 55 cm below the ground surface. From 55 to 120 cm, the bore hole encountered very dark grayish-brown (10YR3/2) clay containing abundant slickensides with strong, coarse angular blocky structure. Dark grayish-brown (10YR4/2) clay ranged from 120 to 200 cm. The structure was similar to the previous zone but calcium carbonate filaments and slickensides were common. From 200 to 310+ cm below the ground surface, the dark grayish-brown clay was similar to the previous zone but also contained many krotovina containing dark fill. The Eagle Ford shale was encountered at 265 cm below the ground surface in borehole 8 which is located at Old Singleton Road. Soil descriptions made during the monitoring from east of Loop 12 to Old Singleton Road were similar to that of borehole 7, but the Eagle Ford shale was not encountered in any of the excavated trench, possibly due to a fault that lies under Loop 12. At Old Singleton Road, the area was greatly disturbed from installation of previous pipelines.

As previously mentioned, northeast of Old Singleton Boulevard is the Twin Wells municipal golf course. Ferring (2000:21) states that deep deposits are present under the golf course. The trench was excavated to approximately 30 feet below the ground surface. However, the upper 3 to 4 m of the trench encountered clothing, wooden boxes, plastic pipe, cans and other debris and above that was fill (Figure 6). Although trash was present, the entire trench was monitored, but special attention was paid to soil layers from 4 to 10 m below the ground surface and a generalized description follows.

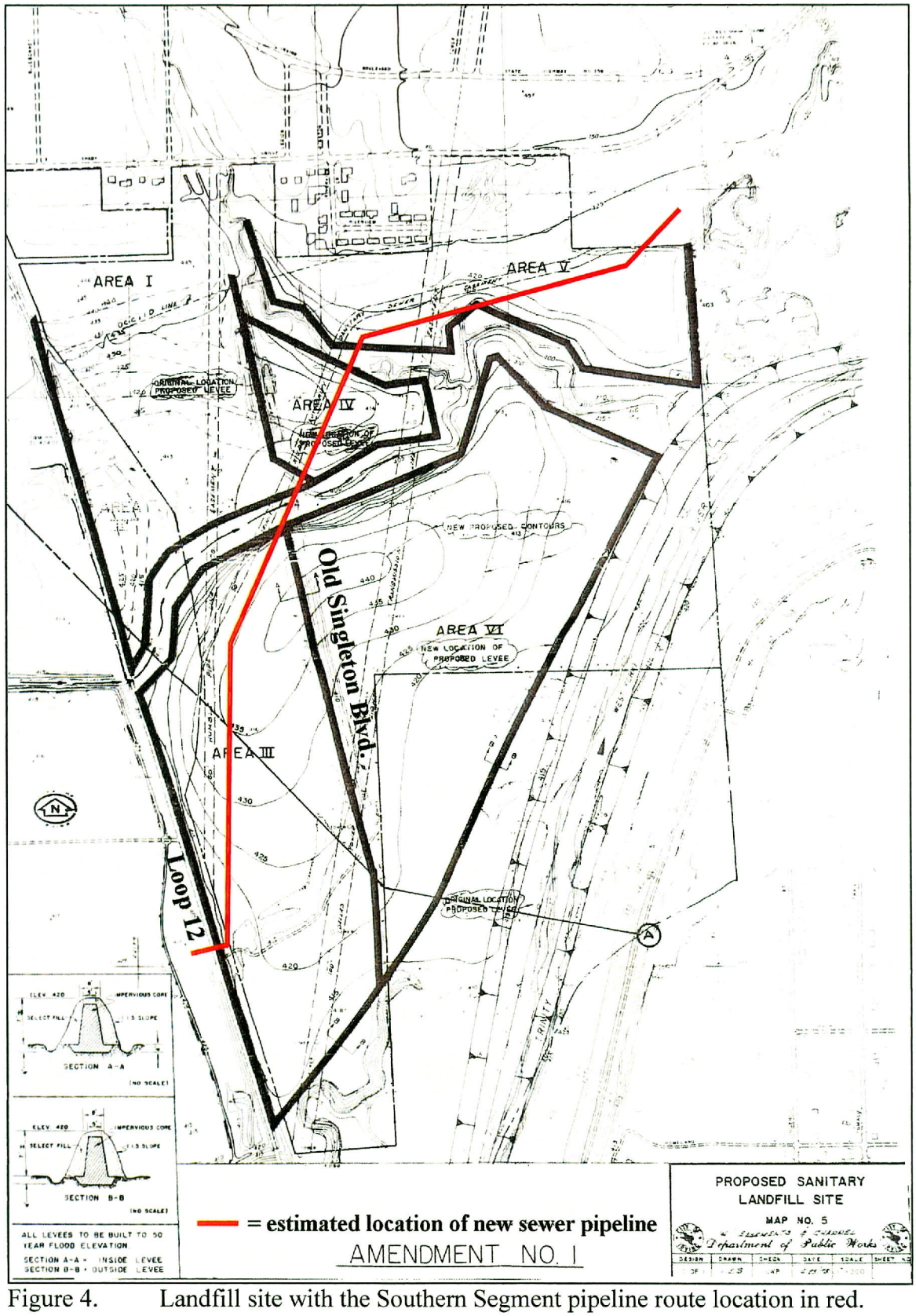

Figure 4. Landfill site with the Southern Segment pipeline route location in red.

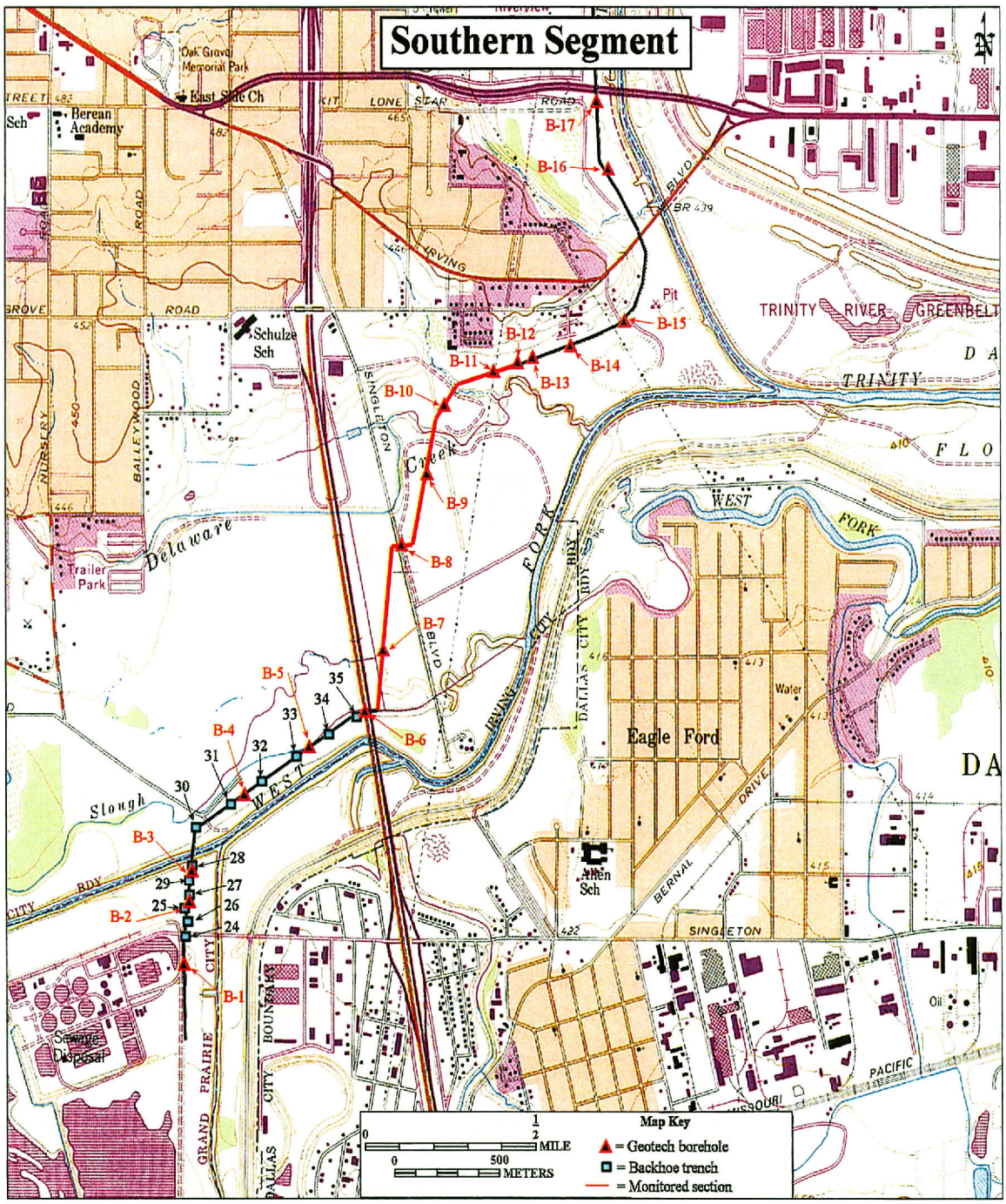

Figure 5. Location of Backhoe Trenches and Geotech Boreholes along the southern segment from the original survey conducted by Reid Ferring, plotted on a portion of the Irving, Texas 7.5' USGS map.

Figure 6. Recent trash in southern segment of the proposed route that crosses the landfill. View is to the northeast.

Depth (mbs)	Description
4–8	yellowish-brown (10YR5/6) clay; medium; moderate; fine subangular blocky; no clay films; smooth and abrupt boundary
8–10	yellowish brown clay, but contains gray (10YR5/1) krotovina.

No cultural materials older than 50 years were seen in the trackhoe trench walls or found in the excavated material. Interestingly, no trees, no mussel shells or evidence of the Delaware Creek channel were noted.

Northern Segment (Figure 1)

The monitored northern segment of the pipeline route began about 1,564 feet south of Irving Blvd (Hwy 356) within Riverview Park and continued north crossing under Hwy 356 and the Burlington Northern Railroad. The monitoring ceased approximately 1.197 miles northeast of Hwy 356 following the curvature of the Elm Fork. The trench ranged from about 22 to 30 feet within the Riverview Park due to the undulating land surface.

The upper meter of soil matrix from Riverview Park to the Burlington Northern Railroad consists mainly of fill containing plastic pipes and an unmapped underground telephone line was encountered on the south side of Irving Boulevard at about 2 m below the ground surface. A typical profile follows.

Depth (mbs)	Description
0-1	sandy clay fill
1-2.5	very dark gray (10YR3/1) clay
2.5-3.5	yellow (10YR7/6) clay; structureless, essentially laminae; various colors of yellow (90% of matrix); abrupt smooth boundary
3.5-4.5	dark grayish-brown (10YR5/6) clay; strong, moderate; fine subangular blocky; few clay films, clear and abrupt boundary
4.5-8+	laminae of yellowish-brown (10YR5/6) clay, gray (10YR5/1) and black (10YR3/1) clay; the layers are mixed in that the gray and yellowish-brown are in layers with smaller pockets of black; clearly alluvial deposition

The first 150 feet of the pipeline route north of the Burlington Northern Railroad were not inspected because AR Consultants, Inc. was not informed that excavation was ongoing.

The pipeline route was fairly consistent in its soil types. Although minor variations were present such as the presence or absence of sand in the upper meter and occasionally a dark grayish-brown (10YR4/2) matrix which did not contain calcium carbonate nodules or slickensides, the soil types were consistent. A typical soil profile is described below and shown in Figure 7.

Depth (cmbs)	Description
0-40	brown (10YR4/3) clay; strong; very hard to extremely hard; very coarse wedge; no clay films; abundant roots; abrupt smooth boundary
40-170	yellowish-brown (10YR5/6) slightly clayey fine sand; structureless, essentially laminae; various colors of yellowish-brown (90% of matrix) and brown (10YR4/3) clay; abrupt smooth boundary
170-320	very dark gray (10YR3/2) clay with calcium carbonate filaments and nodules; strong; extremely hard; very coarse prismatic; few clay films which are thin on ped faces; abrupt smooth boundary; occasional lenses of very fine subangular to rounded yellowish-brown (10YR5/4) sand
320-1,000+	laminae of yellowish-brown (10YR5/6) clay, gray (10YR5/1) and black (10YR3/1) clay; the layers are mixed in that the gray and yellowish-brown are in layers with smaller pockets of black; clearly alluvial deposition

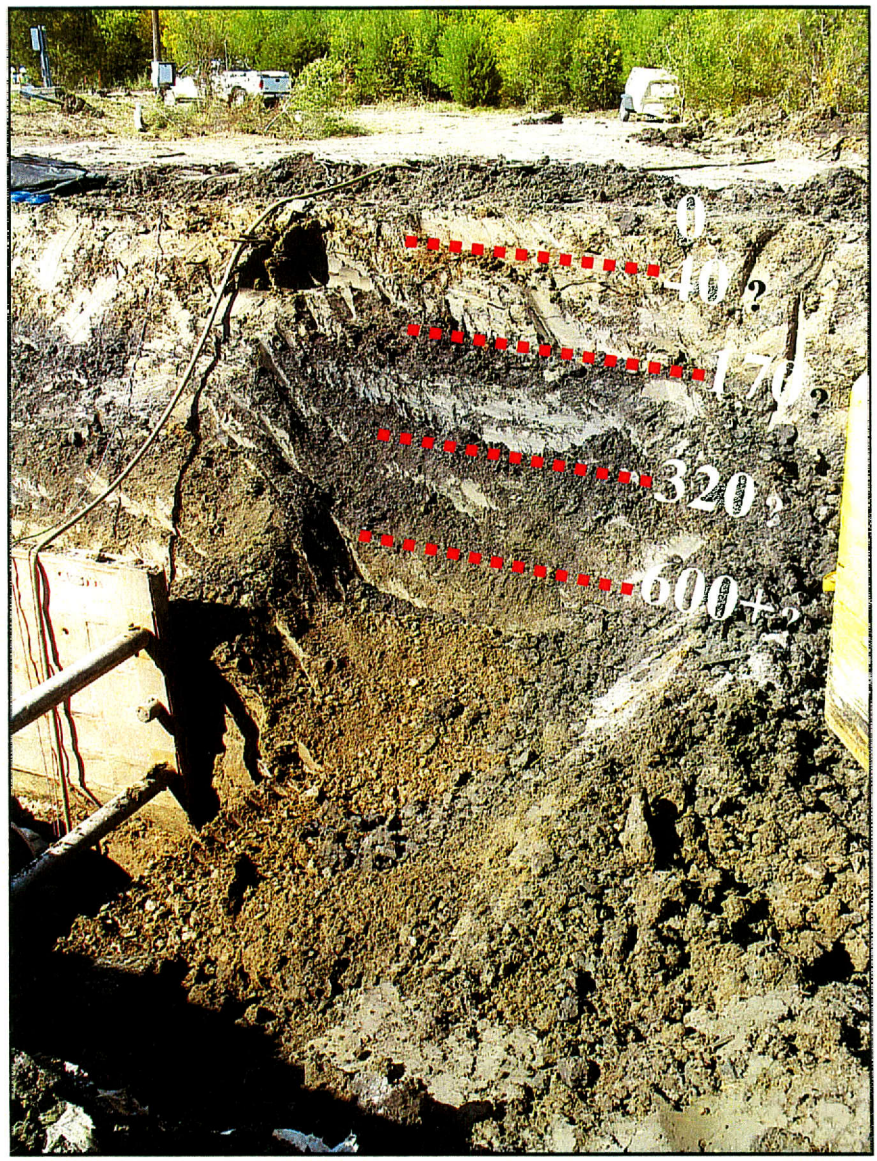

Figure 7. Typical soil profile from north of railroad track to where the segment terminates. Note the trench box on the left side of the photograph. View is to the northeast.

Ferring's (2000) soil description for Backhoe trench 23 (Figure 8) which the pipeline route crosses is,

Depth (cmbs)	Description
0-50	spoil
40-110	Ab horizon; very dark gray (10YR3/1) loam; strong; medium; subangular blocky
110-170	Akb horizon; very dark grayish-brown (10YR3/2) loam and sandy clay loam; strong; medium; subangular; fine calcium carbonate filaments

170-260 Ak2b horizon; very dark grayish-brown (10YR3/2) sandy clay loam; fine; medium; subangular; few moderate mottles

260-310+ ABkcb horizon; yellowish-brown (10YR5/6) loam; strong; moderate; angular blocky; few fine iron/magnesium concretions; common fine calcium carbonate concretions

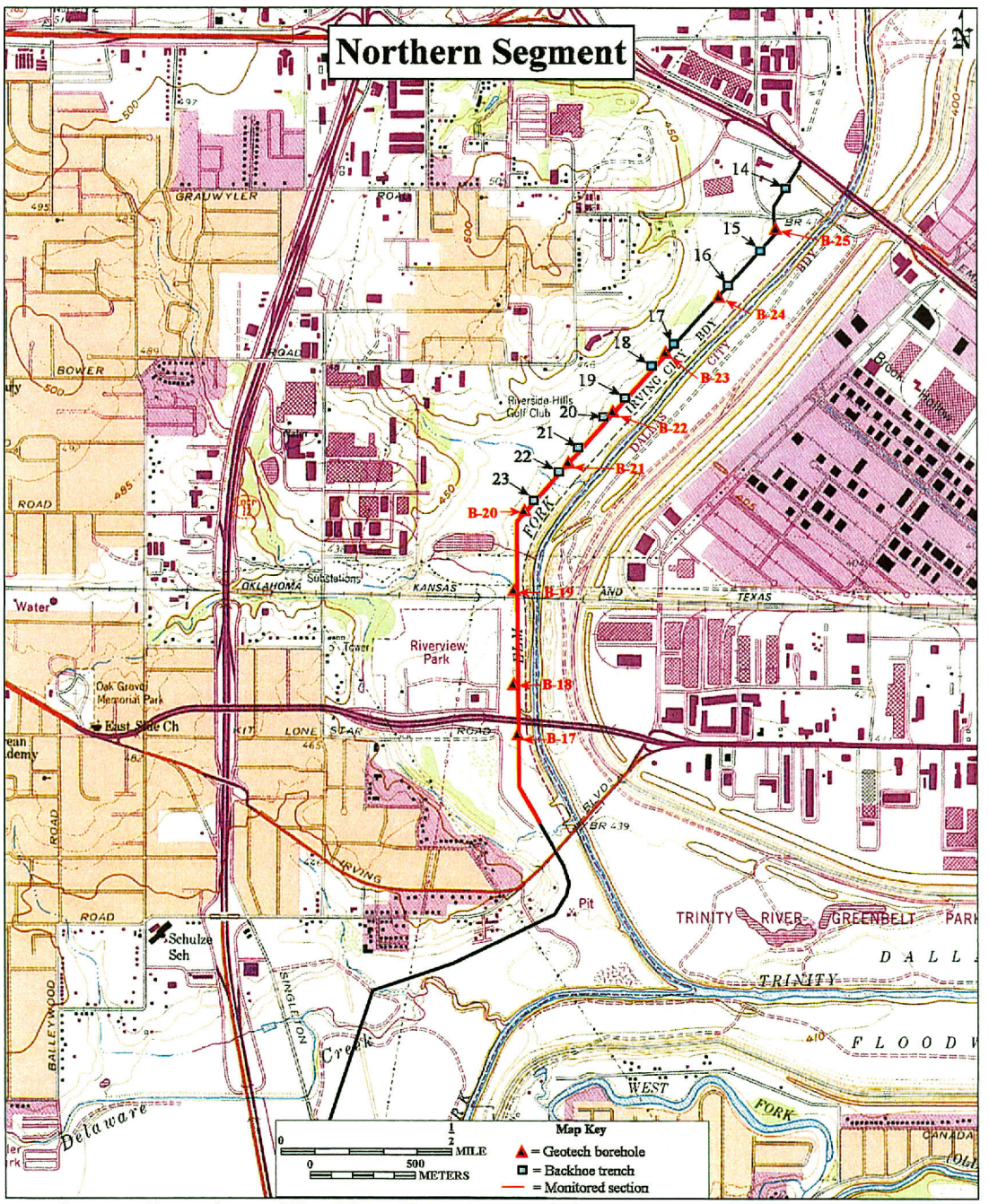

Figure 8. Location of Backhoe Trenches and Geotech Boreholes along the northern segment from the original survey conducted by Reid Ferring, plotted on a portion of the Irving, Texas 7.5' USGS map.

AR Consultants, Inc.'s soil description varies in slight detail from Ferring's although Zone IV is quite similar. As stated above, none of the soil descriptions fit Ferring's discussion of the West Fork Paleosol. Although Ferring's Akb horizon contains calcium carbonates, the other characteristics of the Paleosol are not present.

Ferring (2001:12) places Backhoe trench 23 (as shown in Figure 6) in a floodplain/alluvial fan setting. The soils uncovered during the pipeline excavation also appear to be in a floodplain and alluvial setting.

Concrete and limestone rock debris as well as cloth lining were encountered when old drainage channels were crossed. No cultural materials older than 50 years were seen in the trench or drainage channel walls or contained in the excavated fill from the pipeline from the railroad bridge to where the route terminates.

CONCLUSIONS

No archaeological sites were uncovered during the trenching from northeast of Singleton Boulevard to north of the railroad bridge north of Irving Boulevard which is similar to Ferring's results during his testing along the pipeline route.

At Lake Ray Roberts, Ferring and Yates (1997:285) describe the West Fork Paleosol as containing thin clay films and carbonates in the upper part of the A and C horizons and that the shrink-swell process is common. The soil was formed within about 2,000 years. Based upon the soils analyzed during the deep trenching done in the Trinity River Greenbelt Parks, AR Consultants, Inc. (Frederick et al. 2006) concurs with Ferring and Yate's description of the West Fork Paleosol. The paleosol is characterized by a large number of pedogenic features including well developed structure, pressure facies, slickensides and secondary carbonates.

Only the soil matrix from 170 to 320 cm below the ground surface from the railroad bridge north contained any calcium carbonate nodules. This was the least disturbed portion of the pipeline route. Essentially, this zone was either missing or had been scraped away south of the railroad bridge. This may be the West Fork paleosol, although the lack of well-developed clay films suggests that it is not. This zone also contained sand lenses which may be point bars or channel fill (Ferring 2000:5).

Based upon Ferring's (2000:5) description of the low terraces which contain sands and loams with a red B horizon, no terrace deposits were present in the study area.

Cliff and others (1999:78) believe, based upon their excavation of backhoe trenches within the Dallas Floodway Project, that the highest probability areas for containing archaeological sites is within an 800 to 1,000 m wide band centered on the pre-1932 channel of not only the West Fork but the Elm Fork. Since the pipeline route was further than a km away from the river, prehistoric sites should not be expected. The exception is at the beginning of the pipeline route at the TRA plant. However, the area has been disturbed due to the construction of the plant, channelization of the river and construction of Singleton Boulevard; therefore, any prehistoric site probably has been destroyed.

Based upon Frederick, Trask and Skinner (2006:34), the sediments found throughout the project were primarily Recent alluvial deposits due to the lack of slickensides. Slickensides were rarely observed in Recent alluvium along the West Fork of the Trinity but were prominent in the West Fork paleosol. The lack of prehistoric sites might also be attributed to the gilgai micro-relief that makes this area a kind of rolling wetland with areas of ponded water when wet. This type of ponded, wet area was not a preferred settlement area in the prehistoric period. However according to Fredrick et al. (2006:44-45), Late Holocene meanderbelts have a high sedimentation rate and coarser sediment that helps prevent the formation of gilgai which in turn is a better location for settlement areas. The absence of historical sites is probably due to the seasonal flooding.

REFERENCES CITED

Bell, R. E., Edward B. Jelks and W. W. Newcomb, Jr.
1967 *A Pilot Study of Wichita Indian Archaeology and Ethnohistory.* Final Report for Grant GS-964. National Science Foundation, Washington, D. C.

Bridges, C. A.
1978 *History of Denton, Texas: From Its Beginning to 1960.* Texian Press, Waco.

Bruseth, James E.
1992 Artifacts of the de Soto Expedition: The Evidence from Texas. *Bulletin of the Texas Archeological Society* 63:67 – 98.

Bruseth, James E. and William A. Martin, editors
1987 *Bird Point Island and Adam Ranch Sites: Methodological and Theoretical Contributions to North Central Texas Archaeology.* Richland Creek Technical Series, Volume II. Institute for the Study of Earth and Man, Archaeology Research Program, Southern Methodist University, Dallas.

Caran, S. Chris and Jeremy S. Dillon
1996 Geomorphological Investigations of the Trinity River Crossing. In *Archaeological Investigations of the South Oak Cliff Line and DART Cultural Resources Management*, by S. Alan Skinner et. al, AR Consultants, Cultural Resources Report 95-1, Volume I, pp. 140-174.

City of Dallas
2007 ALERT Historical Data. http:www.ci.dallas.tx.us/sts/html/archive.html#start.

Cliff, Maynard B., Steven M Hunt, Marsha Prior, Steve Gaither, and Whitney Austin,
1998 *Archeological, Architectural, Archival, and Geoarcheological Investigations of the Proposed Dallas Floodway Extension Project, Dallas County, Texas.* Miscellaneous Report of Investigations No. 152, Geo-Marine Inc., Plano, Texas.

Cliff, Maynard B., David Shannabrook, Steven M Hunt, Whitney Autin, and Marsha Prior
1999 *Buried Site Potential in the Dallas Floodway Extension Project, Dallas County, Texas.* Miscellaneous Report of Investigations No. 187, Geo-Marine Inc., Plano, Texas.

Coffee, Daniel R, Ralph H. and Dennis D. Ressel
1980 *Soil Survey of Dallas County, Texas.* USDA Soil Conservation Service in cooperation with Texas Agricultural Experiment Station.

Council of Texas Archeologists
ND Guidelines for the Content of Cultural Resource Management Reports. Manuscript on file with the membership.

Crook, Wilson W., Jr. and R. King Harris
1957 Hearths and Artifacts of Early Man near Lewisville, Texas and Associated Faunal Material. *Bulletin of the Texas Archeological Society* 28:7-79.

Ferring, C. Reid
1993 *Late Quaternary Geology of the Upper Trinity River Basin, Texas.* Unpublished PhD Dissertation, Department of Geology, University of Texas at Dallas.
2000 *An Archaeological Survey of the Elm Fork Trinity River Relief Interceptor Pipeline, Dallas County, Texas.* Geoarch Consultants, Denton.
2001 *The Archaeology and Paleoecology of the Aubrey Clovis Site (41DN479), Denton County, Texas.* University of North Texas, Department of Geography, Center for Environmental Archaeology.

Ferring, C. Reid and Bonnie C. Yates
1997 *Holocene Geoarchaeology and Prehistory of the Ray Roberts Lake Area, North Central Texas.* Institute of Applied Sciences, University of North Texas, Denton, Texas.

Frederick, Charles D., Lance K. Trask and S. Alan Skinner
2006 *Archaeological Testing for the Trinity Parkway.* AR Consultants, Inc. Cultural Resources Report 2006-32.

McDonald, William L.
1978 *Rediscovered: A Photographic Chronicle of Urban Expansion, 1870-1925.* Dallas Historical Society, Dallas, TX.

Menzer, F. J. and Bob H. Slaughter
1971 Upland Gravels in Dallas County and Their Bearing on the Former Extent of the High Plains Physiographic Province. *Texas Journal of Science* 22(2-3):217-222.

Payne, Darwin
1982 *Dallas: An Illustrated* History. Windsor Publications, Inc., Woodland Hills, California.
Peter, Duane E. and Daniel E. McGregor, editors
1988 *Late Holocene Prehistory of the Mountain Creek Drainage.* Joe Pool Pond Archaeological Project, Volume I. Institute for the Study of Earth and Man, Southern Methodist University, Dallas.
Prikryl, Daniel J.
1990 *Lower Elm Fork Prehistory: A Redefinition of Cultural Concepts and Chronologies along the Trinity River, North-Central Texas.* Texas Historical Commission, Office of the State Archeologist, Report 37.
1993 Regional Preservation Plan for Archeological Resources, Prairie-Savanna Archeological Region. Section 3 In *Archeology in the Eastern Planning Region, Texas: A Planning Document,* edited by Nancy A. Kenmotsu and Timothy K. Perttula, pp. 189-204, Texas Historical Commission, Department of Antiquities Protection, Cultural Resource Management Report 3.
Prikryl, Daniel J. and Timothy K. Perttula
1995 North Central Texas. In Prehistoric and Historic Aboriginal Ceramics in Texas. by Timothy K. Perttula, Myles R. Miller, Robert A. Ricklis, Daniel J. Prikryl and Christopher Lintz. *Bulletin of the Texas Archeological Society* 66:175 – 235.
Reese, Nancy G., Cecily A. Pegues, and Bonnie C. Yates
1988 Historical Archaeology in the Metroplex: Floodplain Sites. *The Record* 43(2):179-201.
Rogers, John William
1965 *The Lusty Texans of Dallas: Their First Hundred and Twenty-Five Years.* E.P. Dutton & Co., Inc., New York.
Skinner, S. Alan
1988 Where Did All the Indians Go? *The Record,* Fiftieth Anniversary Edition, 42(3):101-104.
2001 *The Trinity River Channel in Downtown Dallas.* AR Consultants, Cultural Resources Report 2001-24.
Skinner, S. Alan and Brenda B. Whorton
1993 *Archaeological Survey of the Little Lemmon Lake Project.* AR Consultants, Cultural Resources Report 93-3.
Skinner, S. Alan, Jeffrey J. Richner and Mary R. Johnston
1978 *Archaeological Potential, Procedures for Locating and Evaluating Prehistoric Resources.*, Southern Methodist University, Archaeology Research Program, Research Report Number 111.
Skinner, S. Alan, Brenda B Whorton, and Lance K. Trask
1994 *The Archaeological Monitoring of the Dallas Floodway Channel Modifications and Levee Fill Modifications Phase I.* AR Consultants, Cultural Resources 96-19.
Skinner, S. Alan, Brenda B. Whorton, Lance K. Trask, Robert Scott, S. Chris Caran, and Jeremy S. Dillon
1996 *Archaeological Investigations of the South Oak Cliff Line and DART Cultural Resources Management.* AR Consultants, Cultural Resources Report 95-1, Volume I.
Skinner, S. Alan, C. Britt Bousman, Jesse Todd, Jeff Craver, Thomas A. Jennings, Leslie Bush and Art Tawater
2005 *Archaeological Investigation at the Dalby Site (41DL350), Dallas, Texas.* AR Consultants, Inc., Cultural Resources Report 2005-35.
Texas Archeological Sites Atlas
2006 Search for recorded sites in proposed study area on the Irving, Texas 7.5 USGS map. Texas Historical Commission internet site.
Todd, Jesse
1999 Shell Hoes: Toward a Definition. Paper presented at the 70th Annual Texas Archeological Society Meeting, Fort Worth.
Welch, June Rayfield
2006 *Handbook of Texas Online*, s.v.Irving, Texas," (accessed September 19, 2006) http://www.tsha.utexas.edu/handbook/online/articles/II/hid.1.html
Yates, Bonnie C. and C. Reid Ferring (editors)
1986 *An Assessment of the Cultural Resources in the Trinity Basin, Dallas, Tarrant, and Denton Counties, Texas.* North Texas State University, Institute of Applied Sciences.