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An Archaeological Survey of the Medio Creek Water Treatment Plant, Bexar County, Texas

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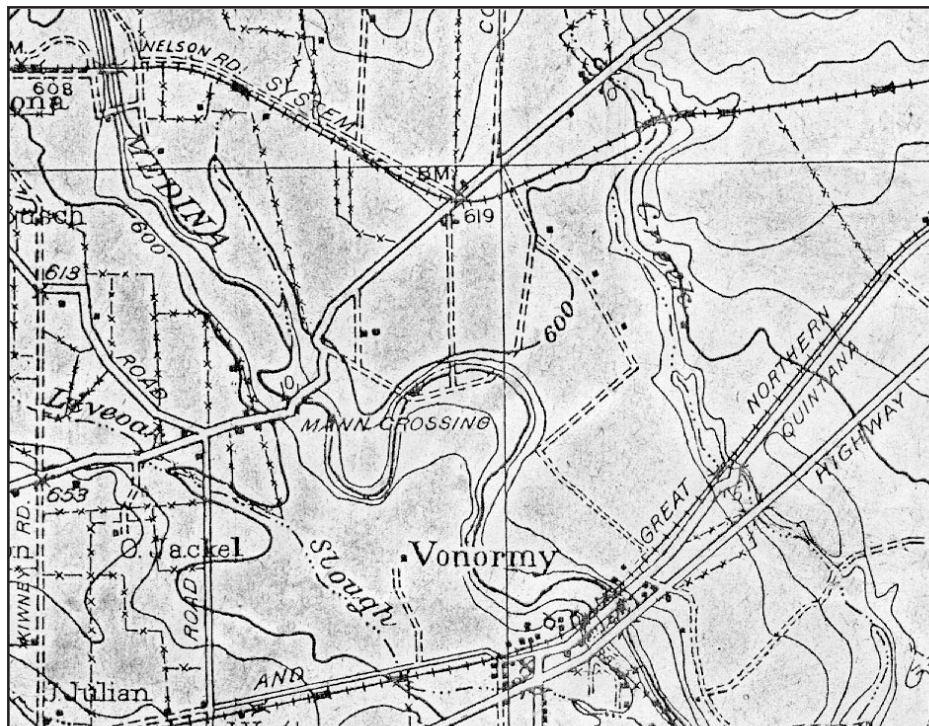
An Archaeological Survey of the Medio Creek Water Treatment Plant, Bexar County, Texas

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An Archaeological Survey of the Medio Creek Water Treatment Plant, Bexar County, Texas



Wilson W. McKinney

with a contribution by
José E. Zapata

Center for Archaeological Research
The University of Texas at San Antonio
Archaeological Survey Report, No. 280
1999



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**Robert J. Hard
C. Britt Bousman
Principal Investigators**

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The University of Texas at San Antonio
Archaeological Survey Report, No. 280

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Abstract

The Center for Archaeological Research (CAR) of The University of Texas at San Antonio conducted a pedestrian survey and subsurface backhoe testing for cultural resources on the raw water pipeline route for the Medio Creek Water Treatment Plant and sites of the treatment plant and the raw water intake on the bank of the Medina River in southwestern Bexar County, Texas. The pipeline route traverses ca. 1.6 km of alluvial terrace associated with the Medina River and Medio Creek, including a crossing of Medio Creek. Limited geomorphological observations also were made. Few cultural remains were encountered, none diagnostic of a particular prehistoric period. One site, 41BX1259, was recorded at the planned location of the treatment plant. CAR determined that no significant cultural resources would be affected by construction of the intake facility or pipeline and therefore recommends that the project sponsor be allowed to proceed as planned.

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Introduction

During the week of October 20–24, 1997, the Center for Archaeological Research (CAR) conducted an archaeological survey of the planned route of a water intake and pipeline for the proposed Medio Creek Water Treatment Plant project to identify and record cultural materials that might be affected by construction and trenching. A survey of the treatment plan footprint itself was surveyed on February 7, 1998 and site 41BX1259 was recorded.

The project includes a raw river-water intake facility with a gravel access road and turnaround on the narrow flood plain of the Medina River, and a 30-in water pipeline with a 3 ft (0.91 m) minimum bury from that point across the first terrace of the Medina River and of Medio Creek (ca. 1 km and 400 m, respectively). The ground surface at virtually every point from the waterline at the Medina River to the water treatment facility site has likely been disturbed to one degree or another by various processes ranging from recent river channel erosion and deposition to oil field activities, plowing, and the laying of a ¾-in water line.

The survey was directed by Wilson W. McKinney, who was assisted by Owen L. A. Ford and C. Britt Bousman. The project was conducted under Antiquities Permit number 1893 issued by the Texas Historical Commission (THC). Robert J. Hard was the principal investigator for the project, and C. Britt Bousman was the co-principal investigator.

Project Area Description

The project area is in southwestern Bexar County west of Interstate Highway 35 near the unincorporated community of Von Ormy, Texas, which is situated on the south bank of the Medina River (Figure 1). This part of the county is now primarily agricultural; however, oil and gas exploration and extraction activities have played an important part in the local economy in years past (McGraw and Hinds 1987:103; Nickels et al. 1997:153, 155). The project area is within the limits of the Medio Creek Ranch and is identified on the current USGS 7.5 minute topographic map, Macdona Quadrangle, 1991 edition (hereinafter 1991 USGS

map) as part of the “Von Ormy Oil Field;” sites of abandoned oil wells and some of the support facilities on both sides of the Medina River are still shown on the map. The bulk of those sites are spread across a narrow 2.5-km ellipse whose long axis parallels IH-35.

Environmental Setting

The Medina River rises in a series of small springs in northwestern Bandera County. Along with its major tributaries such as Medio, Elm, and Leon creeks, it is augmented by stream flows originating from Edwards aquifer discharges at various points along the Balcones Escarpment. A good part of both base flow and seasonal flood flows are lost in the aquifer recharge zone, and riverbed deposits downstream increasingly change to gravel, sandy loam, and heavy black loam (McGraw and Hinds 1987:36).

Medio Creek, a low-order tributary of the Medina River, begins in eastern Medina County and flows through limestone and gravel uplands until reaching the Medina River valley and the Blackland Prairie domain. The geomorphology of the lower Medina River valley is complex. It is bordered on the north and south by rolling uplands, remnants of fossil terraces of a much older and wider river system. North of the modern stream course, including the present project area, the Medina is bordered by blackland soils of an ancient alluvial plain through which Medio Creek flows to its confluence with the Medina, ca. 5 km southeast of the project area (McGraw and Hinds 1987; Nordt 1997; Bureau of Economic Geology [BEG] 1985).

The modern flood plain in the vicinity of the project area is generally less than 500 m wide. It is often quite narrow and bordered by high terraces with unusually steep bluffs that have tended to limit the number of fords and crossing locations. Intensive surveys previously in the Applewhite reservoir area on the Medina River downstream from the project area revealed few practical alternative crossing points to those already known and used, such as the Garza and Applewhite crossing and the various modern highway crossings (McGraw and Hinds 1987:31, Figure 14).

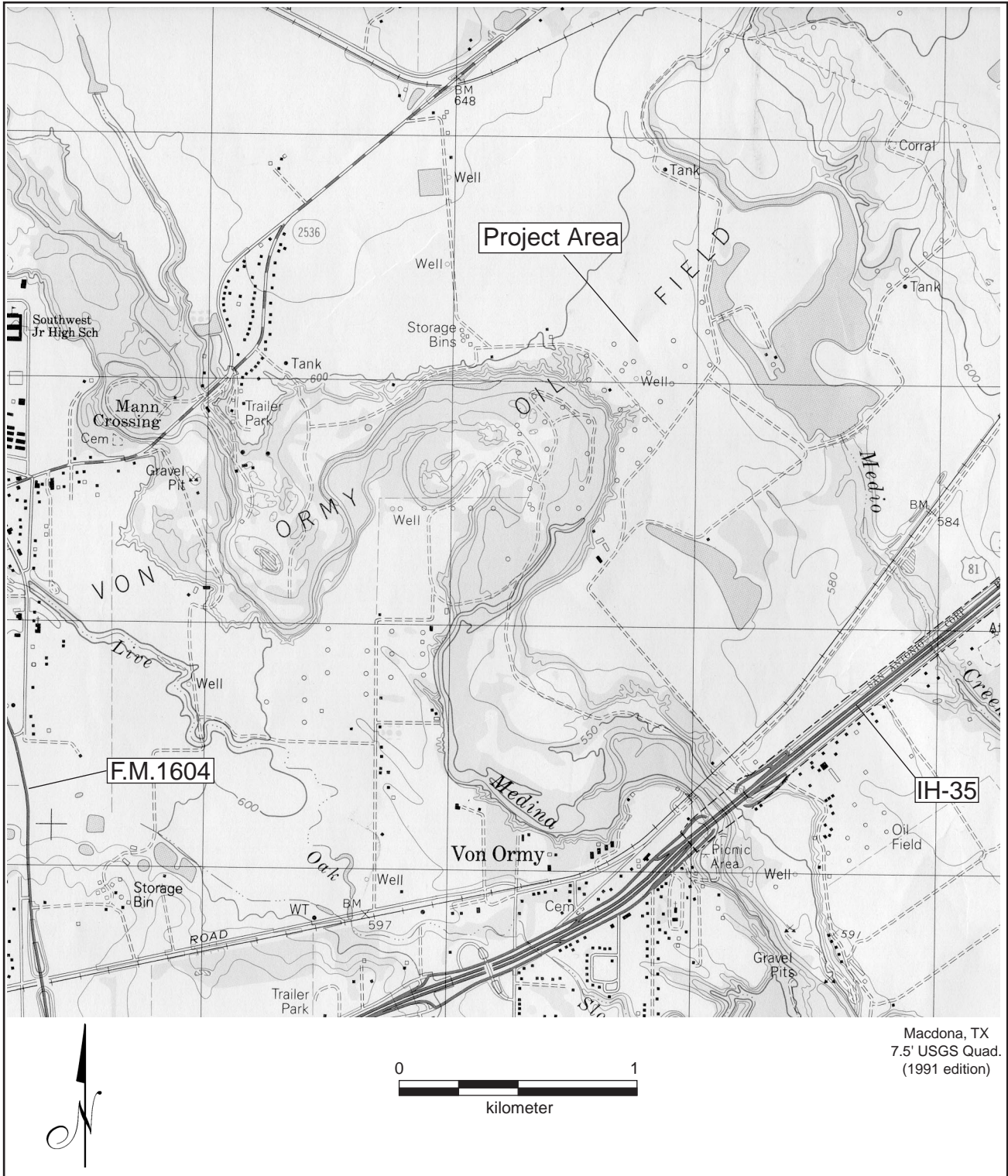


Figure 1. Project location map.

In the immediate vicinity of the project area, the riverbed is at ca. 550 ft above mean sea level (amsl).

The flood plain (T0 terrace) on the north bank is ca. 560 ft amsl, from which a bluff rises abruptly to ap-

proximately 590 ft amsl. Neither the 1903 nor the 1967 USGS topographic map of the area depicts a Medina River bridge or ford between Mann Crossing (Pearsall Road), just upstream from the project area, and the road crossings downstream at Von Ormy (now the Interstate Highway 35 bridge). However, a 1942 U.S. Army tactical topographical map shows a no-longer-existing extension of Covell Road approaching the point on the banks of the Medina River to be occupied by the proposed raw water intake facility (Figure 2). Although the evidence for a crossing at this point can be seen on the ground (see Results section below), a crossing is not clearly indicated on the 1942 map, which shows that the road picks up again on the other side of the river. The map indicates that the road turns west and joins a north-south secondary road that does appear to cross the Medina ca. 200 meters upstream, before re-crossing the Medina to join with Pearsall Road in the vicinity of Mann Crossing. The 1973 photo revision overlay on the 1967 USGS map and the 1991 USGS map both indicate a more recent unimproved road crossing the Medina ca. 700 m downstream from the proposed intake.

The riparian and wetlands aspects of the lower Medina River valley are evident in the large variety of birds, especially waterfowl, that can be observed in the project area, such as egrets, great blue herons, white herons, mudhens, redwing blackbirds, scissortail flycatchers, grackles, field larks, and swallows. Common animals in the region are opossums, guano bats, nine-banded armadillo, pygmy mouse, eastern cottontail, striped skunk, collared peccary (javelina), and white-tailed deer (Cleveland and McLain 1992:Table XI). Representative plants on creek bottoms and low terraces include hackberry and cedar elm, black willow, pecan, live oak, poison ivy, and greenbriar in addition to the grasses (Cleveland and McLain 1992:Table I). The project area has great biotic diversity in both flora and fauna because of its ecotonal, “in between” character, situated as it is at the southwestern end of both the Post Oak Savannah and the Blackland Prairie region, and at the northern limits of the south Texas brush country, a part of the Nueces-Guadalupe Plain (Thoms et al. 1996). The region also lies at the juncture of the Texan and Tamaulipan biotic provinces (Blair 1950).

The flood plain on the north bank of the Medina River at the location of the proposed water intake facility is quite narrow at this point and is classified as “gullied land,” typical of sediments along watercourses in the area, where high alluvial terraces such as the Medina-Medio interfluvial break to flood plains. Gullying and sheet erosion are severe, and deposits commonly do not remain in place long enough to form a soil profile. Soils are grayish-brown, strongly calcareous loam, clay loam, or silty clay derived from alluvium (Taylor et al. 1991:17). The T1 terrace between the streams is “Lewisville silty clay, 0 to 1 percent slopes” and “Lewisville silty clay, 1 to 3 percent slopes” (Taylor et al. 1991:25). Based on analysis of the sediments exposed in the profiles of BHTs 4–17, the majority of the deposits in this interfluvial are probably part of the Medina River terrace system (C. B. Bousman, personal communication 1997). The Medio Creek channel and T0 terrace, inundated in the project area by an artificial pond, are composed of an alluvial soil of the Trinity series classified as “Trinity and Frio soils, frequently flooded, 0 to 1 percent slopes.” These soils are generally flooded at least once a year and may either receive a thin sediment deposition or be scoured (Taylor et al. 1991:31-32). On the north side of Medio Creek, inside the meander loop, the T1 terrace is a plowed field of “Trinity clay, 0 to 1 percent slopes, not subject to water erosion but is flooded occasionally” (Taylor et al. 1991:32). As the field slopes up to the fossil terrace on which the proposed water treatment plant is to be sited, the soil changes to “Houston Black gravelly clay, 1 to 3 percent slopes” (Taylor et al. 1991:21), also characterized as Uvalde Gravel (Barnes 1983).

Historic and Prehistoric Background

Evidence of human occupation in the Medina River valley extends back almost 9,000 years (Thoms et al. 1996). The Native Americans of that time, which is known as the Paleoindian Period, lived in highly mobile groups and followed big game such as mammoths and giant bison although they probably made a substantial part of their living from hunting smaller prey and gathering plant foods (Black 1989). Stone tool technology in the lower Medina River valley seems to have produced a tool kit well suited for woodwork-



Figure 2. U.S. Army Corps of Engineers 1942 map of the project area.

ing (Thoms, personal communication 1995). This period, from 11,200–7950 years before present (B.P.) in south Texas (Hester 1995), was followed, after the disappearance of the big game, by a long period known as the Archaic stage.

The Archaic adaptation was apparently a very conservative one, but it can be divided into three or four periods based on changes in the forms of projectile points and other stone tools, and on other evidence in the archaeological record indicating alterations in climate, economy, population size, and settlement pattern. People of the Early Archaic period, from 7950–4450 B.P., may well have followed a highly mobile lifestyle very similar to their predecessors. There is evidence of participation in widespread lithic technologies and projectile point horizons shared with other parts of south-central North America (Hester 1995:436–437). Although Middle Archaic inhabitants of the Nueces-Guadalupe Plain from 4450–2350 B.P. may have had a narrower horizon than their predecessors, they apparently shared many cultural traits, including projectile point styles, with their contemporaries a few kilometers to the north living in the Balcones Canyonlands—the well-known Texas Hill Country—and on the Edwards Plateau. Preferred camp sites during this time seem to have been along current or former stream channels, sometimes on floodplains and low terraces (Hester 1995:438–439). Formal cemeteries came into use in the south Texas Middle Archaic, a trait that continued into the Late Archaic (2350–1350 or 1250 B.P.). Increased trade with central Texas seems to have occurred during this time (Hester 1995:441–442). A decrease in size of projectile points toward the end of the Late Archaic has led some scholars to suggest a transitional or Terminal Archaic period, although Hester (1995) has assigned no dates to it.

Although the arrival of bow-and-arrow technology in south Texas supposedly signaled the beginning of what is called the Late Prehistoric period somewhere around 1300 B.P., it is not clear whether this innovation in hunting and warfare technology made much difference in the economy. Pottery, another trait of the Late Prehistoric elsewhere in Texas, apparently did not find its way into the interior southern Texas plains until rather late. Recent studies indicate that a

more realistic date for the start of the Late Prehistoric in south Texas is between 1090 B.P. and 700 B.P. (Hester 1995:443).

The Historic Period begins in northern south Texas near the end of the seventeenth century with the arrival of Europeans and written records of their journeys. At least five indigenous aboriginal linguistic stocks were represented among the Indian groups in the area at the time of European contact, the most common of which appear to have been the Coahuilteco stock. Coahuiltecan bands inhabiting parts of the lower Medina/upper San Antonio River valleys included the Payaya, Pampopa, Pastia, and Sulujam (McGraw and Hinder 1987:49). These and other groups, some from as far away as northern Mexico, were drawn into the San Antonio missions beginning in 1718 with the establishment of Mission San Antonio de Valero (McGraw and Hinder 1987:66–67). Crossing points on the lower Medina River played an important part in the Spanish exploration of Texas and many *entradas* passed through the area. For example, the expedition of the newly appointed governor of the province of Texas, Martín de Alarcón, crossed the Medina River in April 1718, either at Mann's Crossing (Pearsall Road) just upstream from the project area, or at Garza's Crossing (Somerset Road) downstream (McGraw and Hinder 1987:65). During Spanish colonial times and later, the area was a center of ranching and agriculture, and it remains so even after the effects of twentieth-century highway construction and oil and gas exploration (McGraw and Hinder 1987:72, 102, Figure 15).

Previous Archaeological Research

Concerted archaeological study in southwestern Bexar County began slowly in the mid-1970s with a preliminary reconnaissance of parts of the proposed Applewhite reservoir (Hester 1975) and a survey of some segments of Medio Creek upstream and downstream from the project area (McGraw 1977). Although the part of McGraw's survey upstream on Medio Creek two decades ago was not complete, it indicates that, at least in certain areas, site density is not high. One 8-km stretch of the creek north of U.S. Highway 90 West had only four sites. However, the map of recorded

sites does not indicate how much of that part of the creek was actually surveyed. McGraw notes that access to some of the land was not possible (McGraw 1977:1; Figure 1).

A CAR survey project at the Lackland Air Force Base Medina Annex, through which Medio Creek flows for ca. 7.4 km, documented 24 sites with prehistoric components along the Medio Creek terrace system, with a mean site density of 3.34 sites per km. These sites are estimated to range from Early Archaic to Late Prehistoric in age. Another 24 prehistoric components were documented in the upland areas of the base not far from the Medio Creek channel (Nickels et al. 1997:Table 10-4). Medio Creek exits the base perimeter at a point ca. 3.9 km straight-line distance north-northwest of the project area.

Potter (1990) recorded a probable prehistoric chert procurement and reduction locality (41BX873) on the T1 terrace ca. 750 m west of the Medio Creek channel upstream in the Covell Gardens Landfill area. Projectile points collected by a previous owner of the site included Gower, Hoxie, Uvalde, Kinney, Pedernales, and Darl types.

Downstream from the project area on Medio Creek, between Interstate Highway 35 and the confluence of the creek with the Medina River, McGraw (1977; McGraw and Hindes 1987) documented seven prehistoric sites of various ages, all on high ground although not far from the present stream or from a fossil channel. One site, 41BX 459, consisted of a small, crescent-shaped midden and an extensive lithic scatter with artifact diagnostic of the Early and Late Archaic and the Late Prehistoric.

The extensive survey and study of cultural resources in the area of the defunct Applewhite Reservoir during 1981 and 1984 resulted in the documentation of 78 archaeological sites in addition to seven previously recorded (McGraw 1977; McGraw and Hindes 1987). In summary, these investigations showed that prehistoric sites in the reservoir area were typically large, with extensive scatters of burned limestone rock and moderate to dense scatters of lithic debris. Deeply buried deposits are frequent. Occupation zones tend

to cluster at confluences of modern or fossil drainages (McGraw and Hindes 1987:363).

The Richard Beene Site, discovered during pre-construction phases at the dam site for the abandoned reservoir project, demonstrated the potential for deeply buried cultural materials in the terraces of the Medina River (Thoms 1992; Thoms et al. 1996). A well-defined occupation zone with Angostura projectile points (ca. 8700 B.P.) was found more than 10 m below the surface of the Applewhite (T2) terrace. Later components were dated at 7000 B.P., 4100–4500 B.P., and 3000 B.P., with the youngest cultural component dated ca. 1000–400 B.P. (Thoms et al. 1996:8, Figure 2)

An intensive CAR survey of 5,600 meters of right-of-way along Watson, Howard, Fisher, and Quintana roads in the uplands northeast of Medio Creek near its confluence with the Medina River did not encounter any cultural materials on the surface or during limited subsurface backhoe and shovel testing (Ford and Houk 1997).

In the immediate vicinity of the project area, a CAR survey with subsurface backhoe and shovel testing documented a lithic surface scatter with a quarry blank, a non-diagnostic biface fragment, debitage, and fire-cracked rock before construction of a new spillway at the O. R. Mitchell Dam (Nickels and Kertis 1995) on Medio Creek. This site (41BX1131) is ca. 1.1 km straight-line distance downstream from the raw water pipeline crossing over Medio Creek.

Local artifact collectors are not known to engage in collecting activities in the immediate vicinity of the project area due to the reputed absence of sites with projectile points and other collectible artifacts (Mike Fulghum, personal communication 1997). Most of them reportedly do their collecting along other segments of the Medina River or other of its tributaries such as Leon Creek to the northeast or Elm Creek and other drainages south of the project area.

Field Methodology

A 100-percent pedestrian survey was conducted at the site of the proposed raw river-water intake and along

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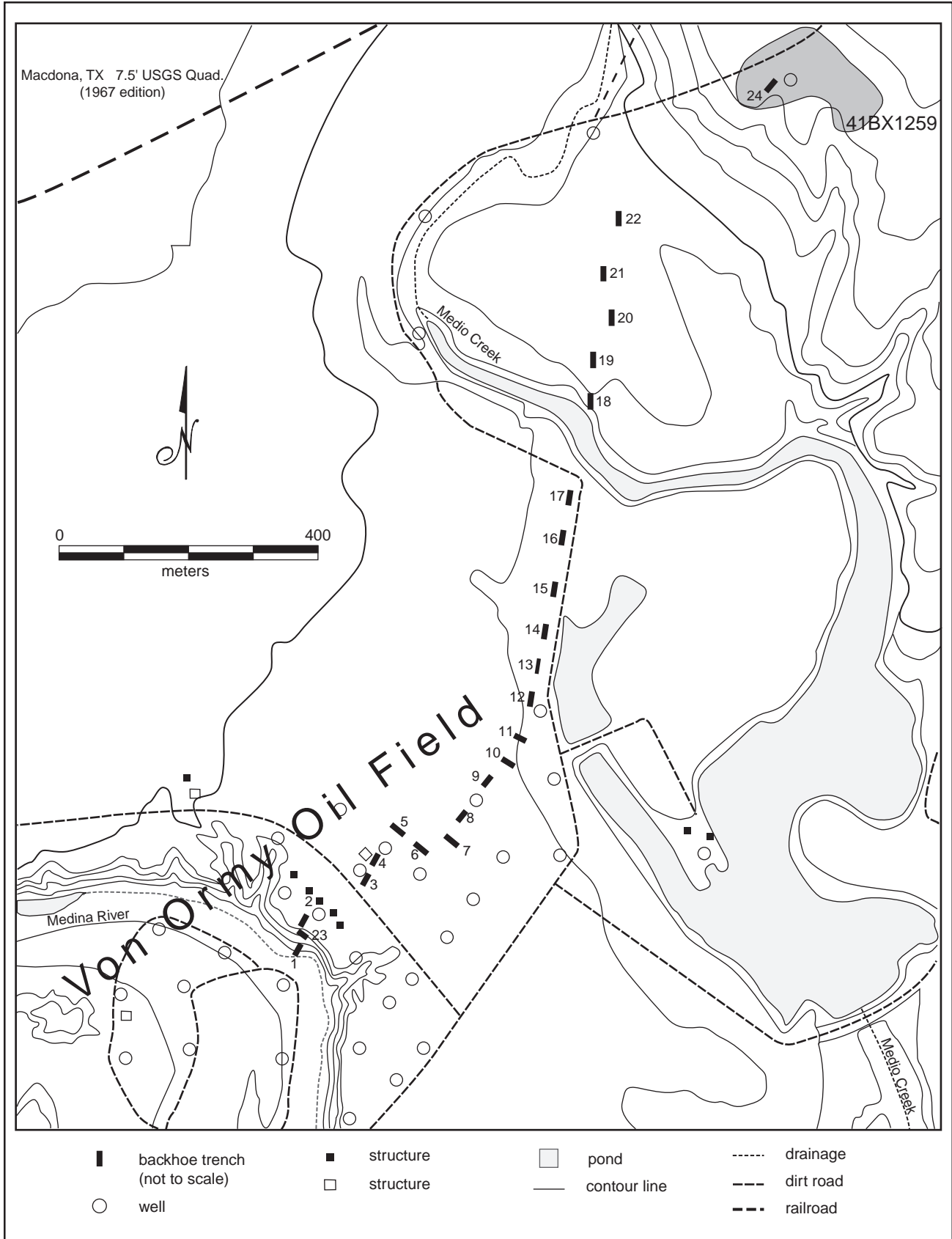


Figure 3. Locations of backhoe trenches excavated during the survey.

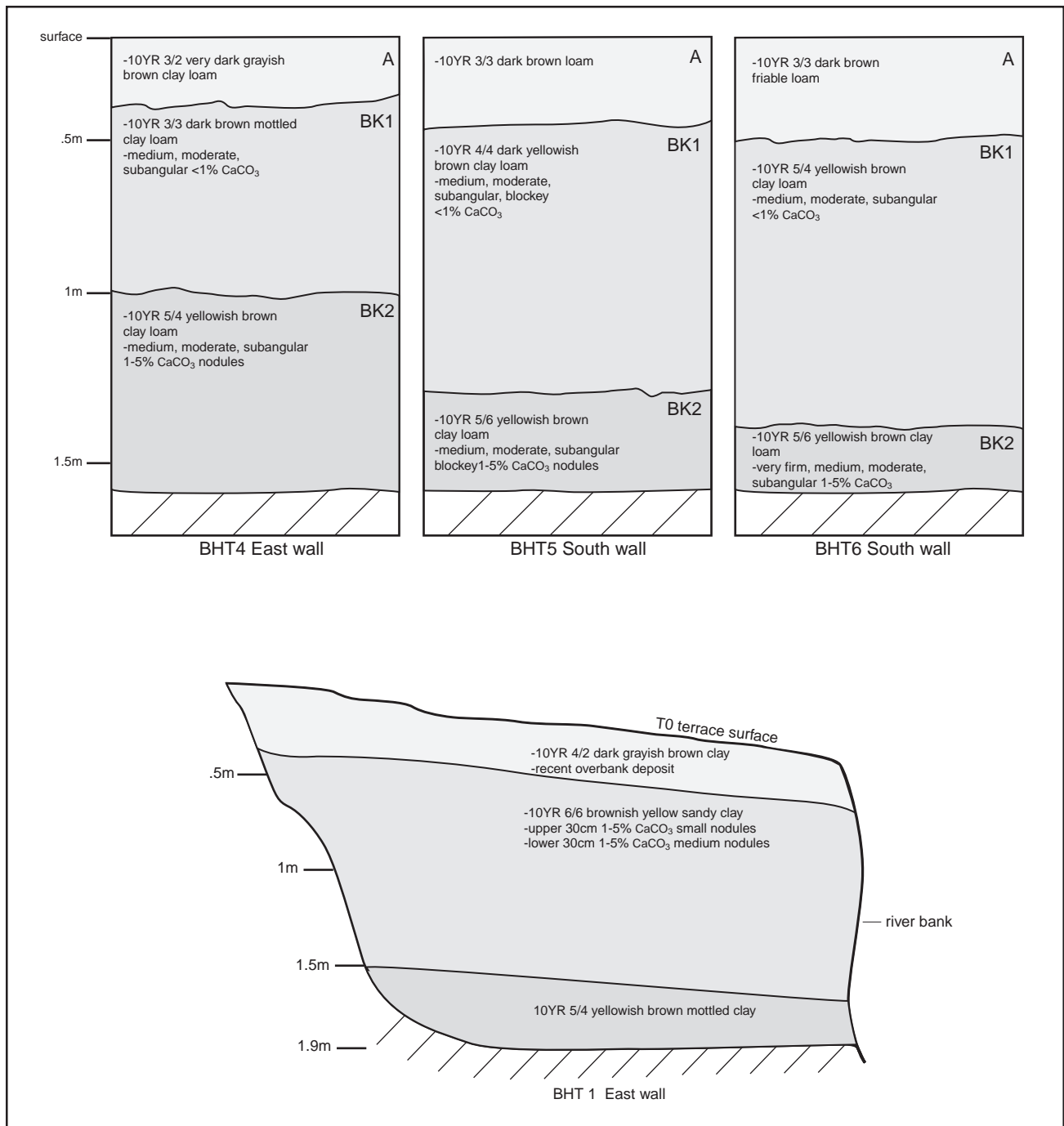


Figure 4. Profiles of BHTs 1, 4-6.

hand excavation, and is not described. However, to approximate a continuous profile BHT 2 was excavated in the T1 terrace as near to the edge of the bluff as feasible. This trench was 4 m long, 0.75 m wide, and 1.6 m deep. The 15-cm surface layer is a dark grayish-brown loam. Underlying layers of silt loam become more yellow downward with increasing per-

centages of CaCO₃. Continuing downward on the scarp face, the silt loam layers are interrupted between 4 m and 6.5 m below surface (bs) by a stratum of yellow to reddish-yellow clayey silt with gray mottles and a diminished amount of calcium carbonate. This layer and those below are very firmly cemented with CaCO₃. The next two strata of reddish yellow to very pale

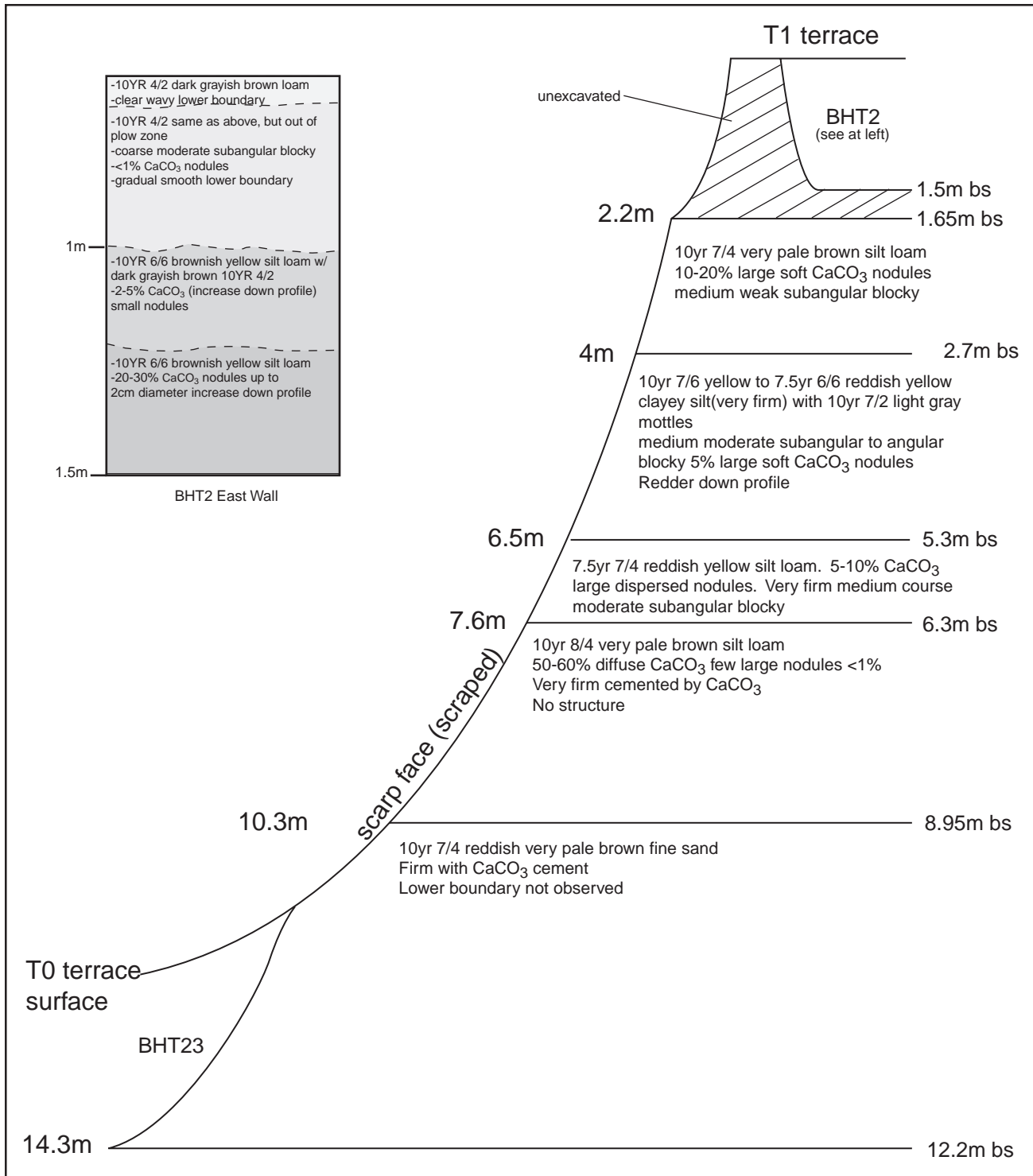


Figure 5. Profile of BHT 2 and “window” on scarp above the T0 terrace of the Medina River.

brown silt loam contain increasing amounts of CaCO₃. The lowest layer observed, from 10.4–14.3 m, is a reddish, very pale brown, fine sand which extends into BHT 23 in the T0 terrace at the foot of the scarp.

BHT 3, the first in a line of trenches across the high T1 terrace, was terminated at 80 cm bs because of the pervasive disturbance from early twentieth-century oil

field activities, including a yellow, sandy clay brick encountered at that level. BHT 4, just outside the disturbed area, had a 20-cm A Horizon of very dark brown clay loam over layers of dark brown and yellowish brown clay loam with increasing CaCO_3 (Figure 4). Trenches 5 and 6 have similar profiles, with 30-cm surface layers of dark brown loam over yellowish brown or dark yellowish brown clay loam, with yellowish brown clay loam on the bottom. One small chert flake was recovered from BHT 6 (Figure 4). Also very similar to each other are BHTs 7–12, each of which has a very deep (ca. 1.4 m) A Horizon of dark grayish brown clay over a stratum of yellowish brown clay changing progressively into a brownish yellow clay as the Medio Creek drainage is approached (Figure 6).

BHTs 13–17, which parallel an unimproved road along an artificial pond on a short Medio Creek tributary in this area, have the same deep A Horizon of dark grayish brown clay, but with the lower boundary below the 1.6 m maximum depth of each trench (Figure 6). The profile of BHT 13 is interrupted by a 5-cm-thick brown silt channel deposit ca. 50 cm bs. One chert flake was recovered from this trench ca. 1 m bs. BHT 14 also has a zone of bedding deposits between 80 cm and 1.1 m bs, composed of dark grayish brown clay loam mottled with iron-stained sand, gravel and broken snail shells. Trenches 15 and 17 have a small amount of gravel at this depth, although none was noted in the intervening trench. One chert core was recovered from BHT 17, and one chert flake was recovered on the surface within 10 m of the north end of this trench. An apparently disused $\frac{3}{4}$ -in metal water line was encountered 5–10 cm bs in BHTs 15–17, requiring each of those trenches to be slightly realigned. Although this pipe line was not found in every trench, it is evident that surface deposits along this segment of the ROW are thoroughly disturbed.

No trenches were placed in the first (T0) terrace of Medio Creek, which at this point is inundated by the upper reaches of a small lake formed by the O. R. Mitchell dam. The T1 terrace is very low on both sides of the creek. BHT 18 was the first trench excavated north of the creek, ca. 15 m from the bank where the low and very recent T1 terrace deposits rise over the truncated T2 terrace, producing a slight scarp less

than 50 cm in elevation (Figure 7). Maximum depth of the trench off the scarp is 1.5 m, while maximum depth measured from the top of the scarp is 2 m. The surface layer of very dark, grayish brown, friable silt loam ranges in thickness from 55 cm at the scarp end to 75 cm at the low terrace end, where the lower boundary plunges abruptly. A lense of brown silt ca. 10 cm thick intrudes 1 m from the north end of the trench at a depth of 60 cm below the upper terrace surface. Beneath both the silt lense and surface layer lies a very dark grayish brown clay loam. One small chert chip was found in this trench. The same very dark grayish brown clay loam was found in BHT 19, which also had a layer of dispersed, sub-rounded gravels from 50–75 cm bs, and a 10-cm lense of small gravels dipping south to north from 90 cm bs to 1.1 m bs (Figure 7). A non-diagnostic late-stage biface fragment was recovered from the west wall of the trench at 40 cm bs, where it apparently had stuck after having been carried upward by the side of the backhoe bucket. A chert flake was found *in situ* in the west wall at 75 cm bs, 1.5 m south of the biface fragment.

BHTs 20 and 21 were excavated in a dark brown clay. Each had a layer of heavy gravels ca. 60 cm bs. This layer, which is up to 30 cm thick in BHT 20, lenses out in BHT 21. BHT 22 was excavated into a surface layer of Houston Black clay and to a depth of 3.2 m, where the water table was encountered in a stratum of light olive brown silt loam with snail shells. Intermediate strata of clay loam range from very dark brown near the surface to dark grayish brown to olive brown (Figure 7).

For purposes of geomorphological comparison with other investigations in the region, BHT 24 was excavated within the planned limits of the proposed water treatment plant, on an upland terrace 630–640 ft amsl and ca. 500 m north-northwest of the Medio Creek pipeline crossing (Figure 7). This area is mapped as “Lewisville silty clay, 0 to 1 percent slopes” (Taylor et al. 1991:25), the same soil classification as the T2 interfluvial terrace discussed above. It lies uphill and adjacent to a soil unit mapped as Uvalde Gravels (Barnes 1983) noted in an outcrop below the crest of the hill. It was expected that the trench would intersect the stratum of Uvalde Gravels. However, when BHT 24 was dug to a depth of 1.5 m, the gravels still had

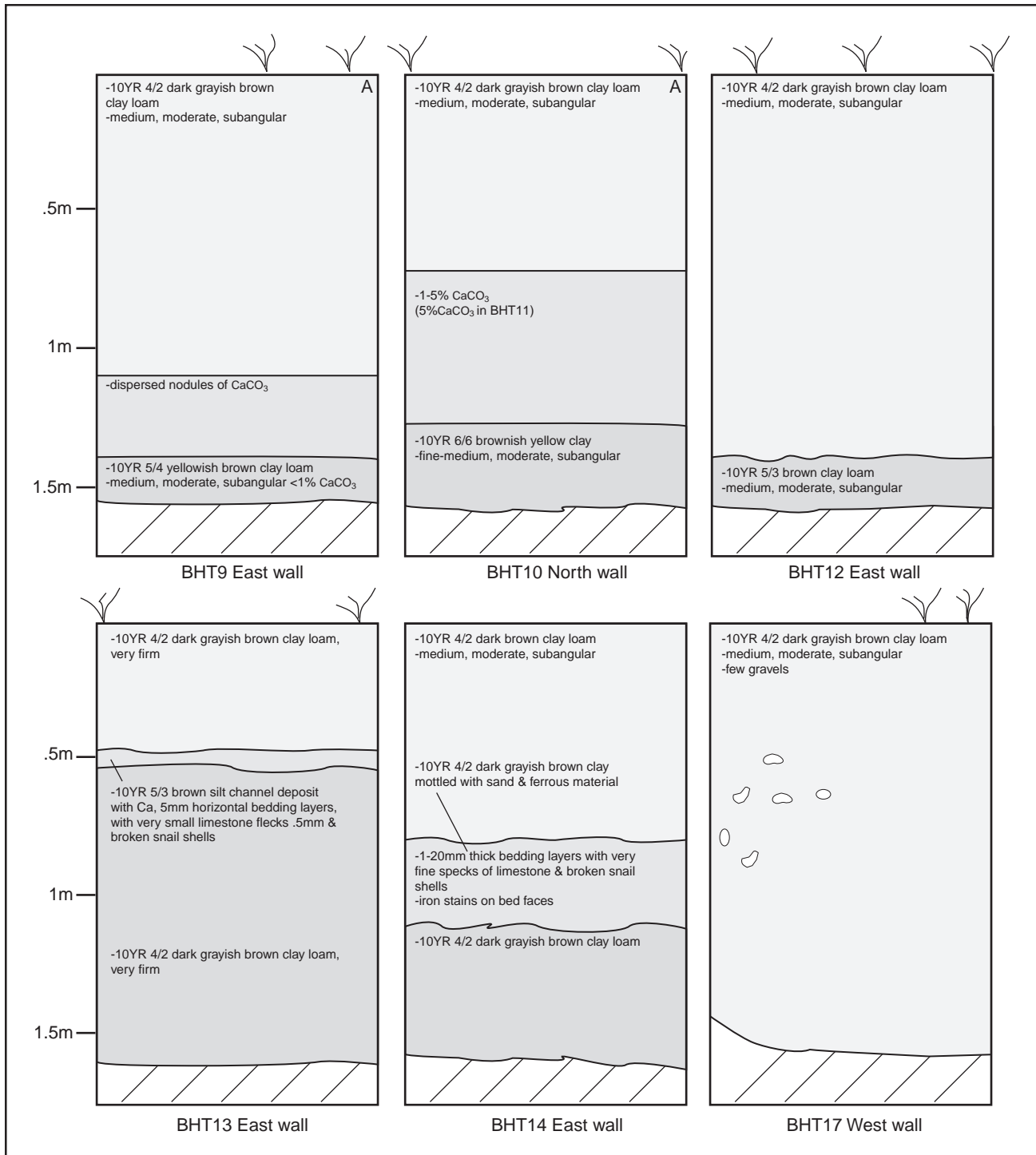


Figure 6. Profiles of BHTs 9, 10, 12, 13, 14, and 17.

not been encountered. The top 25 cm of the trench consisted of a dark brown blocky silt loam with a few CaCO_3 nodules and flecks. This was underlain by a 15-cm-thick stratum of dark yellowish brown silt loam with 1–29 percent CaCO_3 nodules and increas-

ing calcium carbonate films. One heavily patinated chert flake was found at 30 cm bs in this layer. On a later visit to the project area, a second flake was found within this stratum at 26 cm bs. The next stratum was composed of the same soil but was separated from the

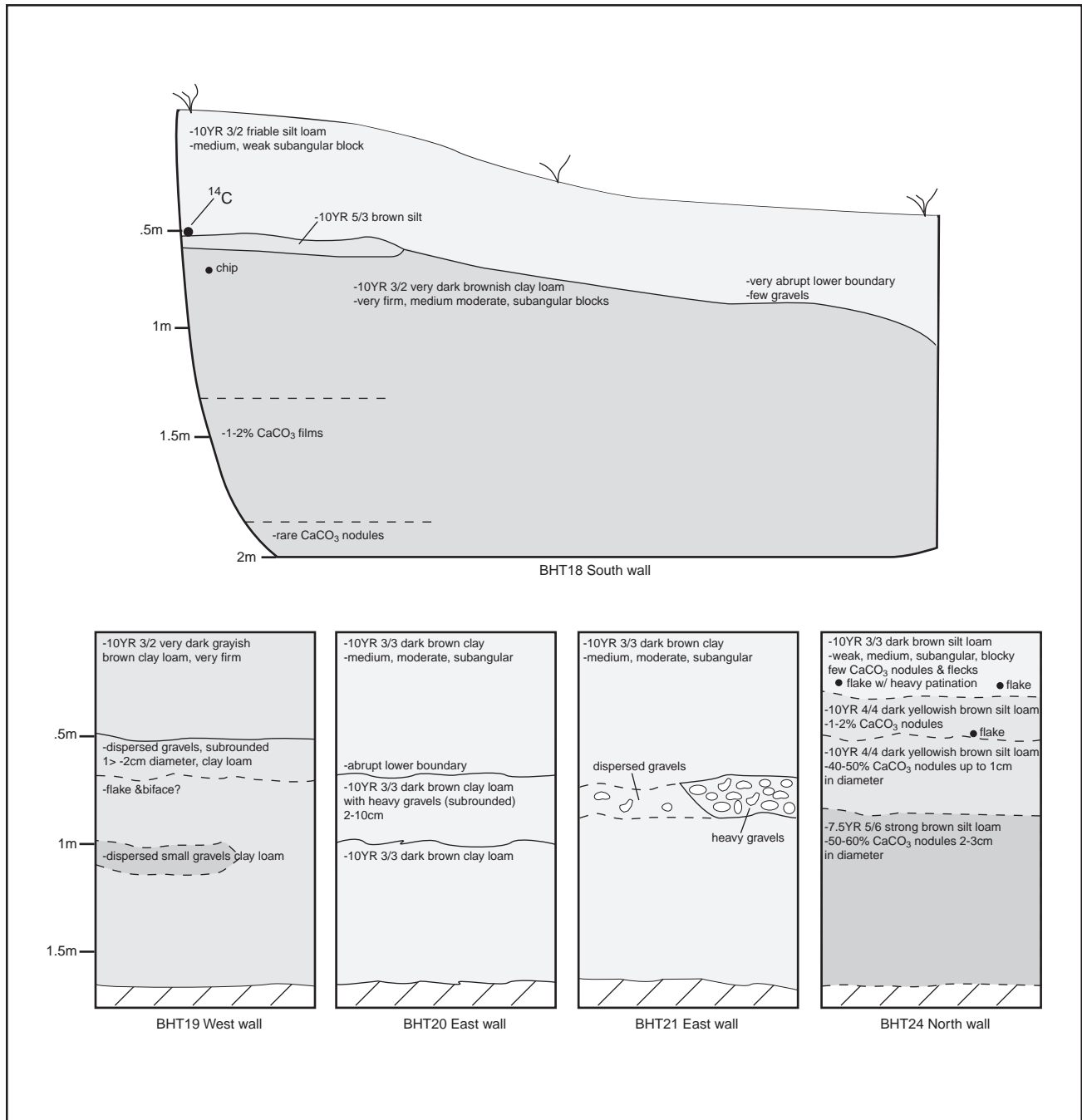


Figure 7. Profiles of BHTs 18–21.

layer above by a smooth, clearly defined boundary. It contained 40–50 percent CaCO₃ nodules up to 1 cm in diameter. A third flake was found in this stratum at 44 cm bs during the return visit to this trench. The bottom 65 cm of this trench comprised a strong brown silt loam with 50–60 percent CaCO₃ nodules 2–3 cm in diameter. The area at the top of the terrace is mapped as “black soil alluvial plain, dominantly limestone

clasts, slope less than 2 percent, expansive silty or clayey loam soils” (B.E.G. 1985). From the evidence, this landform appears to be a fossil T2 terrace of the Medina River drainage system (C. B. Bousman, personal communication 1997).

Site 41BX1259

Prior to the archaeological survey, the surface of the T2 terrace in the vicinity of BHT24 had been mechanically cleared. During the initial survey, a light scatter of lithics was observed for several meters around the trench. This lithic scatter was recorded as 41BX1259 during a later visit to the project area (Figure 8). At that time, the two additional chert flakes were noted in the eroded walls of BHT 24 (left open at the request of the Bexar Metropolitan Development Corporation's construction manager) at depths of 26 cm and 44 cm. Six transects ca. 25 m apart were walked along the north-south (long) axis of the plant site parallel to the major fence lines. Cultural materials were encountered in clusters on the surface, essentially above the 640 ft contour line. They included debitage, cores, and two late stage bifaces. The bifaces and one of the cores, which appeared to have been used as a battering tool, were collected. One chopper was collected below the crest of the terrace within the outcropping of Uvalde gravels. Although a number of fractured cobbles were seen in this area, most were clearly the result of encounters with heavy machinery.

The site is a small lithic scatter with maximum dimensions of approximately 275 m long by 125 m wide. Geomorphologically, the site is situated on an ancient surface—the T2 terrace of the Medina River. The surface is too old to contain buried cultural material in a primary context. The three flakes found in BHT 24 have presumably been transported from the surface through natural processes. Similar sites, referred to as turbated palimpsests by Houk et al. (1997), were documented at Lackland Air Force Base in comparable geomorphological settings. Such sites are in secondary geological context and lack good surface or subsurface integrity (Houk et al. 1997). The surface of 41BX1259 has been further disturbed by mechanical clearing.

Summary and Recommendations

Surface and subsurface investigations in the project area located very few prehistoric artifacts at the raw water intake site and along the pipeline route, and those were primarily on the surface or within 80 cm bs in the low terraces adjacent to the Medio Creek crossing of the

pipeline. Site 41BX1259 was recorded at the site of the planned water treatment plant. Subsurface testing extended to the depth of planned impact. Given the geomorphological setting of the site and the disturbance to the surface by mechanical clearing, CAR recommends that 41BX1259 is not significant and is not eligible for nomination to the Natural Register of Historic Places.

Historic materials present in the project area do not appear significant, and warrant neither further study nor preservation. It is concluded that the construction of the proposed raw water intake facility, water treatment plant, and pipeline will have no adverse affect on the known cultural resources. However, undiscovered but yet significant cultural resources could be found. CAR recommends that a professional archaeologists monitor the excavation of the pipeline trench for at least 100 m on each side of Medio Creek.

Addendum

Monitoring of Pipeline Installation

by José E. Zapata

In accordance with the site report recommendations (see above), the excavation of water-line trenches was monitored (100 m on either side of Medio Creek). In reviewing the site plan (Figure 3), it was noted that the area to be monitored would lie between BHT 16 and BHT 19. The monitoring was accomplished within three days, and over a two-week period (March 17 and March 24, 1999).

The construction crew used a tractor-hoe to excavate a trench that was approximately 4 ft. wide by 6 ft. deep, in order to lay sections of 30-in concrete water lines. A plastic pipeline was used to traverse the creek, and this line protruded about 12 m on either side of the creek. Since the CAR fieldwork of 1997 did not get close enough to the south side of the creek, particular attention was paid to the depositional episodes of this area. The strata along the south bank were comprised of a thick layer of river cobbles and sandy soils (see description below). The strata along the north side of the creek were typical of that described for BHT 18 and BHT 19. With the exception of a few beer bottle

fragments, errant scrap metal, and a section of $\frac{3}{4}$ -in water line, no other cultural manifestations and/or material was noted along either side of Medio Creek.

Description of Strata: East Wall

Layer 1 is located between 0 cm and 50 cm below surface. This layer is comprised of a dark brown, friable soil with 10 percent gravels and 20 percent roots (tree and shrub).

Layer 2 is located between 30 cm and 50 cm below surface. This layer is comprised of a light brown sandy loam, with cobbles comprising about 5 percent of this zone.

Layer 3 is located between 50 cm and 90 cm below surface. This layer is almost similar to Layer 4, especially in color, except that it is not compacted, lacks cobble density, and the cobbles are somewhat larger. This zone is comprised of loose, sandy soils—20 percent to 80 percent gravels—cobble size varies, between 3 cm and 10 cm.

Layer 4 is located between 90 cm and 183 cm below surface. This layer is comprised of hard-packed caliche gravels. Cobble size varies, between 3 cm and 6 cm, and composition is 10 percent clayey soils, pale yellow, and 90 percent gravels.

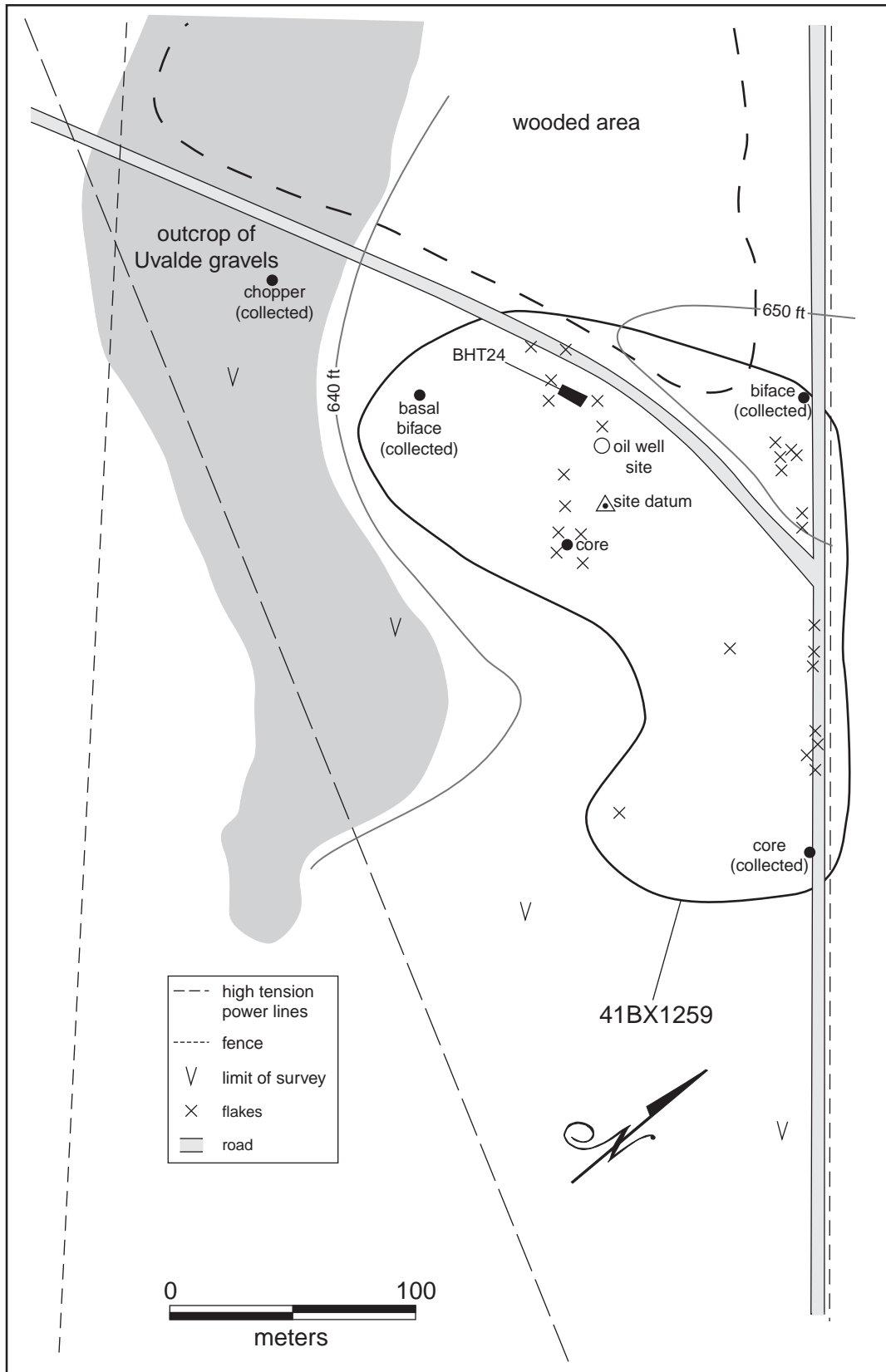


Figure 8. Map of 41BX1259.

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