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THE UPPER TIGRIS ARCHAEOLOGICAL RESEARCH PROJECT (UTARP): a Preliminary Report from the 2001 Field Season[1]

Bradley J. Parker, Andrew Creekmore, Lynn Swartz Dodd, Cathryn Meegan, Eleanor Moseman, Richard Paine, Meg Abraham and Peter Cobb[2]

During the summer of 2001 members of the Upper Tigris Archaeological Research Project (UTARP) conducted a second season of archaeological excavations at the site of Kenan Tepe in Diyarbakır Province, southeastern Turkey (figure 1). Kenan Tepe is a large multi-period mound located on a natural terrace on the north bank of the Tigris River about twenty kilometers west of the Tigris-Batman confluence and ten kilometers east of the modern town of Bismil, just off the Diyarbakır to Batman highway (figure 2). During the course of the eight week field season, which took place between June 21st and August 24th, 2001, UTARP team members conducted various operations in seven areas of the site.[3] UTARP team members also positioned the site in the Universal Transverse Mercator

[1] This paper is dedicated to Dr. Toni Cross. We would like to give special thanks to Necdet İnal, the director of the Diyarbakır Museum, Latif Özer our Turkish government representative, and Numan Tuna, the director of TAÇDAM, for their valuable assistance to the UTARP project. UTARP's 2001 field season was conducted thanks to generous support provided by the National Geographic Society, the Office of the Vice President for Research at the University of Utah, the Curtiss T. and Mary G. Brennan Foundation, the University of Southern California, the University of Utah's Dee Council and the University of Utah's International Studies Center.

[2] Our team consisted of Bradley Parker (Director), Andrew Creekmore (Assistant Director), Richard Paine (Osteologist), Lynn Swartz Dodd (Ceramic Specialist), Chiara Cavallo (Zooarchaeologist), Cathryn Meegan (Archaeobotanical Specialist), Peter Cobb (Computer Specialist), Drew McGaraghan (Photographer/Artist), Michaelle Stikich (Videographer), Debbie Dilley (Field Lab Manager), Elvan Baştürk (Translator), Barış Uzel (Draftsman), Chris Moon, Dawnell Moon, Marco Baldi, Brian Bingham, Robert Sinnot, Jonathan Schnereger, Greer Rabiega, Eleanor Moseman, Kathryn Smith, Andrew Ugan, Amy Stevens and Sibel Torpil. Debbie Dilley and Kathryn Smith inked most of the drawings that appear in this article. Jonathan Schnereger was instrumental in preparing the metals, slags and ores for analysis.

[3] In Area A we continued excavation in the 2 by 25 meter step trench begun last year (trench A2) while a team of osteologists from the University of Utah opened a series of 2 by 10 meter trenches to explore the extent of Kenan Tepe's late period cemetery (A3-A7). We opened one new 10 by 10 meter trench in Area B (B4). In Area C we opened two new 10 by 10 meter trenches (C3 and C4) and continued excavation in two 5 by 5 meter trenches begun last year (C1 and C2). Trenches begun last year in Area D were expanded into two 5 by 10 meter units (D4 and D5). We also concentrated research on Area F where we completed the excavation of a 4 by 5 meter trench begun last year (F4), continued excavation in three of last year's 5 by 5 meters trenches (F1, F2 and F3), opened one new 10 by 10 meter trench (F7), one new 5 by 10 meter trench (F8), one 1 by 1 meter sounding (F10), and three section clearings (F6, F11 and F12). Additionally, we opened five 1 by 1 meter soundings in two new areas (Areas G and H).

(UTM) world grid, made a high-resolution topographic map, took nearly 2000 digital photographs, continued to develop a method of making trench maps using digital images, and improved our database, which now contains all of the data collected during the 2000 and 2001 field seasons. What follows is a preliminary report of research conducted during the 2001 field season.

GIS and Topographic Map

One of the goals of UTARP's 2001 field season was to conduct a high-resolution topographic survey of Kenan Tepe and to locate the surveyed area within the Universal Transverse Mercator (UTM) world grid. This survey is intended to aid researchers in examining Kenan Tepe in the larger context of both micro and macro analysis while at the same time creating a context within which to maintain three-dimensional control of finds, features and excavation units within the site.[4] To accomplish these goals, we laid out a network of five permanent survey points whose locations were measured using the Global Positioning System (GPS).[5] Our daily measurements were then tied into the overall grid with a Leica total station. The GPS system returns latitude and longitude polar coordinates at an elevation relative to a elliptical model of the Earth's surface called the World Geodetic System 1984 (WGS 84). The final results of our five measured points in latitude and longitude and UTM are as follows:

GPS:

	Latitude	Longitude	Elevation (WGS84)
TOP1A	37 49 50.11634 N	40 48 47.59917 E	603.724
NSIDE2C	37 49 51.83683 N	40 48 45.49863 E	594.364
SSIDE3T	37 49 47.66069 N	40 48 44.73145 E	580.590
RIVER4F	37 49 53.92375 N	40 48 55.04223 E	570.823
OFF5	37 49 39.27326 N	40 48 43.25381 E	601.367

[4] During the year 2000 off-season, at least one of our cemented iron datums disappeared, presumably pillaged for scrap metal. To avoid loosing our GPS survey points, we used PVC pipes measuring 2.5 by 100 cm in place of metal rods. These pipes were drilled at 5 cm intervals and long nails were inserted through the holes. The pipes were then cemented in a bed of stones leaving about 1 cm of the PVC pipe protruding above ground surface. The protruding plastic cylinder had the added advantage of providing a precise point from which to take further measurements.

[5] To place Kenan Tepe on the Universal Transverse Mercator (UTM) world grid we rented a Trimble GPS system from the British Institute of Archaeology at Ankara. UTARP would like to thank Dr. Roger Matthews and the staff of the B.I.A.A. for their generosity in allowing us access to this equipment. In order to increase the accuracy of our measurements, we placed our survey points over a very wide area. One point was laid at the top of the mound (TOP1A), while three more were placed in the far corners of the site (NSIDE2C, SSIDE3T and RIVER4F). For extra perspective, we also laid in a point on the top of a distant ridge (OFF5). Using the Trimble GPS system, data is collected with two receivers placed over separate points for a period of one hour. Since there are no trees, mountains or buildings around the site to obstruct the horizon, we had plenty of time when at least five satellites were in view of both receivers. We thus recorded each pair of points over a period that totaled ten hours.

UTM (Zone 37):

	Northing	Easting	Elevation (WGS84)
TOP1A	4188567.553	659568.237	603.724
NSIDE2C	4188619.586	659515.855	594.364
SSIDE3T	4188490.501	659499.598	580.590
RIVER4F	4188688.443	659747.918	570.823
OFF5	4188231.275	659468.490	601.367

Once our datum points were tied into the UTM world grid, we then produced a high-resolution topographic map of the site using a Leica total station (figure 3). We experimented with different resolutions on various types of terrain and determined that it was most efficient to shoot points every 2-4 meters. The resulting map contains a total of 7731 points. In conducting the topographic survey we determined the following information: the total area of visible mounding at the site is approximately 6 hectares, the maximum extent of the site on its long axis is 350 meters, while at its widest point the site is about 225 meters across, the highest point on the main mound is 604.2 meters above the WGS84 datum, the elevation change from the modern level of the Tigris River to this highest point of the main mound is 56.3 meters and the highest point of the main mound is 32.9 meters above ground surface in Area F.

AREA SUMMARIES

Area A

Trench A1

In our report of the year 2000 field season (Parker et al. 2002a) we described the discovery of nine individual burials in a single 5 by 5 meter trench (trench A1, figure 3) at the top of Kenan Tepe's main mound. During the 2001 field season Professor Richard Paine (University of Utah) led a small team of osteologists in the exploration of this cemetery. To determine the extent of Kenan Tepe's cemetery, UTARP team members laid out a series of 2 by 10 meter trenches (trenches A3 through A7) radiating out from trench A1 (figure 3). These trenches were excavated to the level of the shallowest burials discovered in trench A1 (approximately 40cm below ground surface). Using this method, UTARP team members discovered a total of twenty-three burials in an area measuring approximately 80 square meters. The locations of individual burials were mapped as soon as the existence of burial pits or human remains were discovered. Ten burials were chosen for excavation. A complete analysis of these remains is ongoing. Our preliminary estimates suggest that the excavated area represents slightly less than 10% of the total cemetery which could be as large as 800 square meters.

Excavation based on probabilistic sampling would have provided a more statistically sound estimate of the total number of burials at Kenan Tepe. However, we made a conscious decision to sacrifice statistical analysis of cemetery size for the greater protecti-

on of the human remains. Since radiating trenches gave us continuous stratigraphic control, we could better anticipate the depths and locations of skeletons. This enabled us to identify burials with minimum exposure and to minimize damage to the bones. Nevertheless, if we assume that the current sample is representative, then the Kenan Tepe cemetery could include more than 100 skeletons. The biggest variable affecting this estimate is the decrease in burial density from east to west. This was evident in our east-west running trenches, but the excavations were not sufficient in extent to assess, with security, its impact on total cemetery size.

The summer 2001 excavations revealed excellent preservation of burials of all ages, including a high proportion of subadults. Age and sex markers are present and readable. Though a large percentage of bones have been broken, many are available for measurement and morphometric analyses.

We encountered two distinctive burial patterns in the Kenan Tepe cemetery. In the most prevalent the individuals are extended, with their feet to the east, and arms crossed over their chest or pelvis (figure 4). The occipital portion of the cranium is placed on a small stone or potsherd. These burials are found at different levels, between 40cm and 80cm below ground surface. This may reflect a tradition in which different burial depths are utilized for males, females, and children, or it may reflect multiple burial phases. In the second burial pattern individuals are interred in a stone lined burial chamber (figure 5). Orientation is less precise than among the extended burials.

At this point dating of the cemetery is still extremely problematic since none of the graves excavated thus far have contained grave goods. Nevertheless, the orientation and treatment of the extended burials supports the hypothesis that these burials date to the Islamic period. UTARP team members are currently seeking permission to export small fragments of bone for carbon-14 analysis.

Trench A2

Trench A2 is a 2 by 30 meter step trench located on the north slope of Kenan Tepe's main mound. The goal of this operation is to illuminate the stratigraphic sequence of the site by excavating this trench in several large steps from the top to the bottom of the main mound. To reach this goal, we laid trench A2 according to the natural slope of the tell, rather than the cardinal directions (figure 3). Trench A2 is thus far divided into three steps: Step 1 between the 0m and 5m markers, Step 2 between the 5m and 10m markers, and Step 3 between the 10m and 25m markers (this third step will eventually be further subdivided).

During the year 2000 field season, UTARP team members exposed a series of walls (L2006, L2010, L2036) [6] running roughly east-west through Step 1 of this trench (Parker et al. 2002a). These walls were abutted on the south by a series of cobblestone

[6] Archaeological features and contexts will be referred to in this article by their locus number, which is expressed by the letter "L" followed by a four digit number. On some occasions the locus number will be followed by a "+" which means that this context was excavated using more than one locus. Artifacts will be referred to by their find number which is expressed by the letters "KT" followed by a four digit number.

surfaces (L2009+). At the close of the 2000 season, we left an east-west oriented mud brick wall (L2042) *in situ*. We renamed this wall L2066 for the 2001 season. Contrary to our original hypothesis (Parker et al. 2002a, 2002b), we now believe that these remains date to the early second millennium B.C.

During the course of the 2001 excavation, we exposed the eastern edge of a well-preserved north-south running wall that was faced with plaster in the west baulk (L2056); this wall continues into the south baulk. L2056 was associated with a series of surfaces including a thin, hard-packed, charred surface (L2065) with a well-preserved lens used as a rest for a (cooking?) pot with a round base. Around the perimeter of this charred surface, we discovered fragments of a plaster surface (L2061) which was bonded to and served as a foundation for wall L2056. The plaster surface L2061 also served as the foundation for walls L2066 and L2067, which were bonded to each other. Directly below the charred surface (L2065) we uncovered a circle of heavily burned cobblestones (L2073) arranged in a circle directly beneath the position of the pot-rest lens (in L2065). The burned cobblestones were integrated with a ring of hard packed red mud brick-like matrix containing consistently dispersed bits of charcoal. An earlier hearth (L2093) was later excavated under and slightly south of hearth L2073.

The circular cobblestone and hard-packed red matrix hearth L2073 cut a well-preserved coarse red surface (L2063) that was in turn cut by a fragment of a coarse yellow surface (L2072) in the southeast corner of the trench. The join between L2063 and L2072 formed a smooth lip indicating that the two surfaces were contemporary. Mud brick wall L2084 underlying yellow surface L2072 remained pedestalled at the end of the 2001 season. The red surface (L2063) abutted a mud brick wall running roughly east-west (L2076) to the north of the hearth (L2068 + L2065); this abutment (L2076-2063) is preserved in both east and west baulks. The fill (L2078) below red surface L2063 produced a significant cache of lithics between the hearth L2073 and the east baulk. Underlying subsurface fill L2078 was a beaten earth surface L2081, which was cut by an ash pit L2091 in the SW corner as well as ring of pottery sherds (L2090); L2091 and L2090 were left *in situ*. Surface L2081 abuts three walls underlying L2078: north-south oriented mud brick wall L2089 adjacent to east baulk just north of L2090, east-west oriented mud brick wall L2087 abutting wall L2089 to the north; east-west oriented mud brick wall L2088 parallel to the north but not abutting wall L2087. Wall L2087 abuts wall L2076 to its north in a clean line. All of these new walls, as well as L2076 remain *in situ*.

To the north of wall L2076 was a system of ash pits (L2044, L2058) containing a toy ceramic wagon wheel or spindle whorl KT2438 (figure 16 T). Underlying these ash pits we found an impression of a straw or reed basket (L2085), resting on a beaten earth surface L2092 and associated with an ash surface (L2102/L2103). Underneath ash surface L2102/L2103 we found a plaster surface L2106 in the east which is bonded to the north face of wall L2076 and a mud brick pavement L2107 in the west founded on cobblestone wall fragment L2109. A wall fragment L2110 makes a corner with wall L2076.

At the 7-8m peg we excavated a series of poorly preserved surfaces (L2045, L2047, L2048). Alternating pink and grey-green mud brick bands (L2086) in the section at

the 7m marker never revealed brick lines in plan. Underlying this series of surfaces we found several fugitive ash lenses (L2095 and 2096) constituting a layer of ash-filled occupational debris above a surface (L2100) spread out all over the east half and into the west half of the 5m - 10m step. Surface L2100 had a flat-lying basalt doorpost resting on it at the east baulk. The baulk and section at the 8m marker showed lots of ash layers; these layers remain unexcavated. Below a layer of hard-packed soil (L2097), we exposed a pebble surface (L2098) that extends between the 9m and 10m markers. This pebble surface remains *in situ*.

Between the 12m and 25m markers we removed topsoil as L2043. We also excavated sub-topsoil as L2064 at the 16m, 17m, and 19m markers. We found one interesting feature at the 13m marker: a row of large cobbles terminating at the east with a large flagstone (L2055). We believe this may be the remnant of a wall foundation. The stones remain *in situ*.

Area B

During the year 2000 field season UTARP team members opened two 5 by 5 meter trenches in Area B (Parker et al. 2002a). Trench B1 yielded an impressive collapse layer (Parker 2002a) that contained a sizable corpus of Early Iron Age ceramics, some of which are presented here as figure 6. In order to achieve a wider exposure of this layer, we expanded trench B1 in 2001 into a 10 by 10 meter unit by opening an L-shaped unit (B4) bordering the original 5 by 5 meter trench on its north and east.

Trench B4

Our findings in B4 are characterized by two levels of stones scattered across the entire northern and eastern parts of the trench (L4008 and L4027). These stones, which overlay a soft ashy fill (L4025), do not appear to form a coherent structure or foundation course. Our working hypothesis is that the stones may have toppled from a once-coherent structure or large wall that lies at least partially outside the trench. A stone wall (L4014) was also discovered running roughly north-south across the northeastern quadrant of the trench. The relationship between this wall and the stone features discussed above has yet to be determined. A well preserved oven (L4013, L4017), securely dated by numerous examples of Early Iron Age corrugated ware, was discovered in the center of the trench, west of the stone features, resting on the same ashy fill (L4025).

Area C

During the year 2000 field season UTARP team members began two 5 by 5 meter trenches in Area C (trenches C1 and C2). Trench C2 initially produced architecture dated to the Early Iron Age by an abundance of Early Iron Age corrugated ceramics. These remains overlay mud brick walls, surfaces, and fills that contained remains of slag- and ash-producing activities. The lower levels of this trench are dated to the Middle Bronze

Age by ceramics belonging to the Red-Brown Wash Ware assemblage and by three carbon-14 dates (see below). Trench C1 also produced architecture dated by these ceramics (Parker et al. 2002a). These findings led us to open two new 10 by 10 meter trenches in Area C (trenches C3 and C4 [see figure 3]) and to continue work in the 5 by 5 meter trench C2 begun during the 2001 field season.

Trench C2

Excavation during the 2000 and 2001 field seasons revealed that trench C2 contains the northeastern corner of a large structure. This structure, whose walls were built on stone foundations, was rebuilt several times during the Middle Bronze Age. The structure abuts layers of outside surfaces that show clear evidence of fire-related activities. Pottery from the structure belongs to the "Red-Brown Wash Ware" assemblage dated to the early second millennium by three carbon-14 dates extracted from this trench (see below).

A thin mud brick wall (L2037, L2038, L2047) of two to three courses was uncovered during the year 2000 field season. The wall runs along the northeast baulk and turns south to traverse the trench. This wall forms a stratigraphic cap for a series of stone walls (L2048, L2046) and their associated surfaces (L2048, L2072, L2063, L2089) that represent rebuilding episodes for a multi-room structure(figure 7).

The stratigraphy of the rooms and outside surfaces outlined by these walls (L2048 and L2088) is as follows: both walls (L2048/L2072 and L2046/L2088) appear to have been founded on a surface (L2099). This surface runs under the stone wall foundation L2046/L2088 and has so far only been exposed in a small sounding created during clearance of a later pit. Surface L2089, to the east of wall foundation L2048/L2072, may be related to this structure. The fact that walls L2048/L2072 and L2046/L2088 were founded on the same surface suggests that they were in use at the same time. Subsequently surface L2095 built up to the south of and within wall L2046/L2088 so that it eventually covered the southern end of wall L2048/L2072. This suggests that the southern portion of that wall foundation fell out of use sometime during the life of the building. If the plaster line visible in the pit/fill feature L2096 can be related to the end of the large stone wall foundation (L2048/L2072), then that wall may have been originally plastered. Otherwise, the large stone wall (L2048/L2072) was cut by a pit (L2096) in which a clear plaster line is preserved, for reasons that remain to be determined, and then surface L2095 subsequently covered over this stone wall's (L2048/L2072) southern end.

A work area (L2079) was excavated south of the plaster line in L2096. This area showed evidence of fire related activities, including finds such as a clay andiron (KT2529), burned earth (KT2531), bluish crust on soil (KT2702), and metal or slag (KT2527). These may be related to metal processing activities.

In the central southern section of the trench, in an area bounded on its northern side by wall foundation L2046/L2088, UTARP team members excavated a dense accumulation of artifacts (pottery, ground basalt and bone). The surfaces associated with these walls include L2095 and L2099. A circular pit (L2084) cut into surface L2095. This pit contained, among other things (pottery, bone, lithics and slag), a carbon sample (KT2576) which

yielded a 2-sigma calibrated carbon-14 date of 1840 +/-100 B.C. (table 1). Pottery within this pit (L2084) included KT Type 28 "Red-Brown Wash Ware", KT Type 83 "Carinated Bowls", KT Type 120 "Flaring Lip Jars" and several examples of large neckless jars.[7] A second carbon sample (KT2614), yielding a date of 1810 +/-140 B.C., came from the fill (L2087) surrounding pit L2084 (table 1). Another sealed pit (L2082) was discovered within the structure. A carbon sample (KT2584) from this context yielded a 2-sigma calibrated date of 1800 +/-120 B.C. This pit and the surrounding loci contained more examples of ceramics from the Red-Brown Wash Ware corpus.

Table 1: Carbon 14 data from trench C2.

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 165446	3500 +/- 50 BP	-26.5 o/oo	3480 +/- 50 BP
SAMPLE : L2082 KT 2584			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 1920 to 1680 (Cal BP 3870 to 3630)		
Beta - 165447	3520 +/- 60 BP	-26.8 o/oo	3490 +/- 60 BP
SAMPLE : L2087 KT 2614			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 1950 to 1670 (Cal BP 3900 to 3620)		
Beta - 165448	3520 +/- 40 BP	-25.2 o/oo	3520 +/- 40 BP
SAMPLE : L2084 KT 2576			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 1940 to 1740 (Cal BP 3900 to 3690)		

Trench C3

This trench was excavated as two large units that roughly correspond to the eastern and western halves of the trench. The west half of the unit did not generate any significant architectural remains in part because of its proximity to the modern ground surface. There was, however, a fairly large bone cluster (L3010, [perhaps the remains of a butchering incident?]) in its southwestern corner. A north-south running row of stones (L3005) was not substantial enough to be considered a wall foundation, unless it was subsequently

[7] A preliminary report that includes a discussion of the Kenan Tepe ceramic typology of this period is currently in preparation.

robbed out. The northwestern quarter of the trench is characterized by a series of downward sloping (to the west) hard, silty earthen surfaces. An arc of mud brick (one brick thick at maximum [L3016]) was noted to the south side of these layers. To the north of these surfaces the remains of two clay ovens (L3006 and L3023) were discovered. Trench C2 is located north of these ovens and the associated levels were dug during the 2000 field season. The western area of the C3 trench, although not well understood, may have been a multi-use work area which included ovens and exterior surfaces open to drainage of rainwater or some other liquid effluent that compacted the built-up surfaces. These surfaces were bounded on their southern side by a thin mud brick feature that might have separated or shielded the space to the south from the wind or smoke from ovens.

In the eastern half of the trench there was a greater depth of soil covering the ancient, *in situ* materials. A clay tanoor type oven was located in the south east baulk of C3 (L3003, L3004 [contents], L3027 [associated surface]). North of this oven were a series of rocks groups that included the bottoms of large pots, ovens, or more generally, some sort of pyrotechnic installation (such as L3008 and L3009) containing rock conglomerate concretions (L3007). Two metal pieces KT3045 and KT3046 were found in this area. Below these features in the east portion of the trench is a rectangular mud brick feature (L3030) that seems to have contained an oven or an area in which burning of some sort occurred (L3031 and L3058). The area bounded by the low mud brick structure contained ash, plaster lenses, carbon and other debris. A substantial stone wall foundation (L3037) that traverses the entire 10 by 10 meter unit was discovered below the mud brick feature L3030. This wall foundation is more than ten meters long and is about one meter wide. The fact that a crossing wall was not discovered in trench C2 during the 2000 season indicates either that the wall is more than 15 meters long and turns west between trenches C2 and C4 or that the wall turns east and runs into an uphill structure. If the structure is located uphill, to the east of C3, then it will probably be fairly well-preserved by covering soil, and may have been excavated in part in Area B.

Trench C4

As with trench C3, Trench C4 is more deeply excavated on its eastern uphill side. The proximity of loci excavated in the western half of the trench to ground surface means that preservation in this part of the unit is fairly poor. Until the structure (L4030, L4041 and L4058) was reached, the finds in C4 consisted of two types: (1) a series of poorly coordinated artifact groups (such as L4015, L4016, L4017, L4018 and L4049 among others) with no stratigraphic continuity between them. These artifact groups are similar to those also noted in trenches C1 and C3 and often show signs of burning. In the case of L4049, there appear to be pot sherds "melted" into a possible concretion. (2) The second sort of find includes ovens such as L4031. The only substantial architecture identified is a mud brick structure comprised of three walls: a SW-NE running wall (L4030) which is bounded on its north end by a crossing wall (L4041) that runs W/SW, and another wall (L4058) which is parallel to L4041 and meets wall L4030 at the south baulk. L4058 is poorly preserved and fragmentary. To the west of wall L4030, a surface (L4061) with large

amounts of Early Iron Age pottery appears to be associated with the wall. The surface is located at the point where the wall has apparently been cut by pit L4047.

Three interesting artifacts were discovered in Trench C4: A ceramic scepter or finial, or door-closing knob (KT4168 L4033), and two round stone weights or tokens (KT4075 L4010 and KT4231 L4026).

Area D

During the year 2000 field season UTARP team members opened two 5 by 5 meter trenches (D1 and D2) and one 2 by 2 meter sounding (D3) on a small protrusion on the steep eastern slope of Kenan Tepe's main mound (Parker et al. 2002a [see figure 3]). During the 2001 field season the two 5 by 5 meter trenches (D1 and D2) were combined into one 5 by 10 meter trench (renamed D5). In addition, the 2 by 2 meter sounding (D3) was expanded into a 5 by 10 meter trench (renamed D4). Analysis of the remains excavated in trench D5 is still ongoing. For this reason this report will concentrate on trench D4.

Trench D4

During the year 2000 field season UTARP team members began a 2 by 2 meter sounding east and upslope from our other Area D trenches. This sounding immediately yielded extraordinarily well preserved wall foundations and associated surfaces. These finds prompted us to expand this excavation unit into a 5 by 10 meter trench during the 2001 field season. This operation yielded well preserved architecture and large amounts of ceramics belonging to the Red-Brown Wash Ware assemblage (figures 9 and 10). Carbon-14 samples taken from contexts yielding identical ceramics in trench C2 show that this assemblage and its associated architecture dates to the early second millennium B.C. (see above).

After clearing the topsoil and sub-topsoil we immediately came upon a surface (L4012+) that covered nearly the entire southern two-thirds of the trench. This and the succeeding surfaces were cut in the north by a large pit (L4028+) that contained a number of well-preserved whole mud bricks and other debris. Two more surfaces (L4023+ and L4030+) were discovered directly beneath and sealed by surface L4012+.Surface L4023+ also extended across the majority of the trench although the eastern portion, which, due to the slope in the mound, came very close to ground surface, was separated to ensure that no intrusive material contaminated this otherwise sealed context.

The removal of surface L4023+ revealed an interesting set of architectural features (figure 10). To begin with, this level was divided laterally by a narrow wall (L4038) made up of a single course of stones. The floor on the east (L4030+) was clearly bonded to this wall and contained an extraordinary set of ceramics crushed in to the matrix of the floor (figure 9). Three features were bonded to the east side of wall L4038. The first is a surface or pavement consisting of very large stones (L4037). Bordering this feature on the north was a single course of mud bricks (L4035) forming a wall perpendicular to wall L4038. These bricks were roughly square measuring approximately 40 by 40cm. North of and

bonded to wall L4035 was a narrow pavement of upstanding river cobbles (L4040). The pavement is approximately 0.65cm wide (north-south) and extends for 1.4m east-west before entering the east baulk of the trench. An area of fill (L4039) directly north of the cobble surface (L4040) yielded another assemblage of ceramics. Removal of fill L4039 revealed a stone feature (L4043) that appears to be the foundation of another wall. Wall L4043 runs east-west parallel to the upstanding cobble surface (L4040) and mud brick wall (L4035). This feature is cut on the east by the large pit (L4028+) mentioned above. Our working hypothesis is that this wall originally joined wall L4038 and the wall discovered in the sounding (D3) excavated during the year 2000 field season. North of wall L4043, in the narrow corridor formed between the east baulk of the trench and the baulk left around the original sounding (trench D3), we uncovered a fill layer rich in ceramics and containing two small pits (L4033 and L4044) one of which (L4033) yielded a slag sample (KT 4157 see below).

A third surface (L4041+) was discovered sealed beneath floor L4030+ and wall L4035. Again this surface yielded large amounts of ceramics that were pressed into the hard matrix of the locus. Removal of wall L4035 revealed that this wall rested on top of surface L4041+ and that surface L4041+ was bonded to the large stone pavement (L4037), the mud brick wall (L4035) and the upstanding cobble pavement (L4040).

The nature of the deposits in trench D4 suggests that all of these remains belong to a single large structure. The series of floors L4030+ are probably the remains of inside surfaces indicating that the east outside wall of this structure has been lost to erosion. The fact that wall L4038 stood on top of the last floor levels within this structure (L4040+) suggests that this was a dividing wall rather than a load-bearing wall. In contrast, wall L4035 appears to be a structural feature that marks the divide between the hallway (L4040) and the boulder surface (L4037). We can be less certain about the stratigraphic relationship between these features and the pits discovered in the northwestern corner of the trench, although the ceramics recovered in both areas indicate that these pits certainly belong to the same general period as the building discussed above.

Area F

Area F is located northeast of the main mound on a flat terrace approximately 23 meters above the Tigris River (figure 11). During the 2001 field season UTARP team members opened two new trenches (F7 [10 by 10 meters] and F8 [5 by 10 meters]) and continued work on four existing trenches (F1, F2, F4, and F9 [formerly F3]).

For ease of discussion, we have organized our excavated contexts in Area F into seven levels. These levels generally correspond to contemporaneous stratigraphic layers, but since we have yet to fully connect many of these layers horizontally or by chronometric dating, we must emphasize that the current grouping is tentative and may change in subsequent reports. Level one consists of numerous burials cutting earlier contexts. These burials are difficult to date and may range anywhere from the Early Bronze Age to the

Islamic Period. Levels two through seven are tentatively dated to the late fourth and early third millennium by five carbon-14 dates and several diagnostic ceramic forms.

To give a firm date range at this time is premature, but we tentatively believe that levels two through seven fall between 3700 and 2500 B.C. The earliest deposits examined so far, just above virgin soil in an oven/kiln L4009/L4027 in trench F4, contain a variety of Late Chalcolithic ceramic forms (figure 12). Three carbon dates from the bottom of this oven/kiln yielded two sigma calibrated dates of 3360-3030 B.C. (KT4157), 3630-3570 B.C. and 3540-3360 B.C. (KT4229), and 3660-3620 B.C. and 3600-3520 B.C. (KT 4253 [table 2]). A carbon-14 date obtained during the 2000 season from the upper layers of ash and debris in the same oven/kiln yielded a two sigma-calibrated range of 3350 to 2910 B.C. (KT 4061 [table 2]). Late Chalcolithic vessel fragments found inside this feature and in other loci include a range of wheel-made indigenous forms familiar from adjacent regions, including simple-rim open cooking bowls (usually relatively large), incurved rim bowls (relatively small), a variety of hammerhead rim open bowls, cooking jars, squat carinated casseroles, and storage jars with bent necks (figure 12 and compare Algaze et al. 1990; Pearce 2000:117; Pollock and Coursey 1995). These forms are usually chaff tempered and not infrequently burnished. "Fineware" examples of bowls have also been identified, both in grit and chaff temper, often burnished. These various types have been recovered from trenches F1, F4, F5, F6, H1, and also F10 and G4.

The latest remains in Area F, excluding intrusive burials, are the level two cobblestone surfaces in F1, F2, F7, and F8 (and possibly F4). Numerous sherds of pedestalled bowls, alternatively called "chalice ware" (Spesier 1932:5-10) or "fruit stands," have been recovered on these surfaces and in the fill around them. These forms occur in the Chalcolithic, but not in the variety that we find at Kenan Tepe. The Kenan Tepe examples are chaff-faced fine wares, red slipped and vertically burnished (see "small finds" and figure 17 Y). These forms proliferate in the Ninevite V period (3100 – 2500 B.C. [Ay 2001:723; Rova 1988]). Pedestaled bowls and other Ninevite V forms, including 'beakers' and pierced lugs, have been found throughout Area F, but so far are concentrated in trenches F2, F7, F8 and F9.

Although we have not yet quantified the ceramics, and many contexts await analysis, our initial impression is that there are few, if any, classic Uruk types. Bevelled-rim bowls, conical and band-rim bowls, as well as double-mouthed jars are notably absent. No drooping spout vessels have been identified absolutely although vessels with straight spouts and vessels with spout attachment scars have been found (Pearce 2000; Sürenhagen 1975 [figure 17 X]). Additionally, painted, incised or excised vessels are rare in any form or period. For example, no Ninevite V style incision or excision patterns have been identified so far (for Ninevite incised and excised designs see Numoto 1993). We must emphasize, however, that analysis is just beginning, and these patterns may change significantly.

Table 2: Carbon 14 data from Trench F4.

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 155572	4430 +/- 60 BP	-24.4 o/oo	4440 +/- 60 BP
SAMPLE : KT#4061			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 3350 to 2910 (Cal BP 5300 to 4860)		
Beta - 166341	4510 +/- 40 BP	-25.9 o/oo	4500 +/- 40 BP
SAMPLE : KT#4157 F4.4023.4157			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 3360 to 3030 (Cal BP 5310 to 4980)		
Beta - 166342	4700 +/- 40 BP	-25.5 o/oo	4690 +/- 40 BP
SAMPLE : KT#4229 F4.4023.4229			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(organic material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 3630 to 3570 (Cal BP 5580 to 5520) AND Cal BC 3540 to 3360 (Cal BP 5480 to 5310)		
Beta - 166343	4820 +/- 40 BP	-24.9 o/oo	4820 +/- 40 BP
SAMPLE : KT#4253 F4.4023.4253			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(organic material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 3660 to 3620 (Cal BP 5610 to 5570) AND Cal BC 3600 to 3520 (Cal BP 5540 to 5470)		

Level 1

The first level in Area F consists of several simple pit burials that cut the cobblestone surfaces and other loci of level two. In most cases, preservation is too poor to determine sex or age, but analysis is ongoing. These burials, and consequently this level, are difficult to date. These burials include several excavated during the 2000 season (in trench F1: L1004, L1008, L1011, L1017) and five new burials uncovered during the 2001 season (in trench F1: L1021; in F6: L6004, L6011; in F7: L7006, L7028).

Of the burials preserved well enough for their orientation to be determined, all but L7006 were adult, extended, oriented west-east, with the head to the west, but the orientation of the face could not be determined. In trench F7 L7006 we discovered a child burial oriented west-east with the head to the west facing north. Only L1011 and L1021 contained grave goods, including a spindle whorl that may be a grave good (L1011), a miniature

vessel (L1021 KT1087 [figure 15 L]), and a small juglet that was found cradled in the person's arms (L1021 KT 1118 [figure 15 M]). Loci L1011 and L1021 were found directly on top of each other, but we were unable to determine if they shared the same pit or were separate interments. Although we have yet to find any direct parallels, the juglet found with L1021 is perhaps Early Bronze Age in date. Another feature that likely belongs to this level is a large pit discovered in the baulk of trench F4 (figure 13: 2, 15, 16). Although this pit is not a burial, it appears to be cut from approximately the same level and may therefore be contemporaneous with these burials.

Level 2

This level consists of contemporaneous cobblestone surfaces, found in trenches F1, F2, and F7, small ovens or kilns, found in trenches F2 and F8, and stone installations, found in trench F8. The finds recovered from trenches F7 and F8 during the 2001 season are consistent with previous discoveries in the same area and reinforce our interpretation of this part of Area F as the location of outdoor activity areas. It is also likely that the cobbles encountered in F4 (figure 13: 5) also belong to this level.

We found a fragmentary cobblestone surface covered in pottery and animal bones in F2 (L2003+) and F7 (L7005+) that is at least 6-7m E-W by 2-4m N-S, and continues into the northern baulks. During the 2000 season, an oven/kiln (L2002) was found directly adjacent to this surface in F2. This feature is identical in dimensions and elevation to the oven/kiln (L8002) found during the 2001 season just 4m to the south in trench F8. The cobblestone surface (F2-F7), two ovens/kilns (F2, F8), and three 0.50m diameter stone installations, which may be potstands, (F8) are indicative of an outdoor activity area occupying a space roughly 8m E-W by 10m N-S. If the cobblestone surface (L1006/1009) uncovered during the 2000 season in F1, located 5m west and 5m south of F8, is contemporary with the surfaces in F2 and F8, then this activity area covers 450m sq.[8]

Level 3

Level three consists of several perfectly round pits in trenches F7 and F8, a mud brick wall in trench F7, thick ash deposits in trench F9 (formerly F3), and layers of fill in trench F1. Excavations beneath the level 2 cobblestone surface in trench F1 yielded layers of fill but no features that can be associated with the pits and walls in trenches F7 and F8. Excavations of contemporary levels in trench F9 uncovered ash layers but no architecture, surfaces, pits or burials.

As we removed portions of the cobblestone surface in trench F7, we uncovered two perfectly circular pits, each 1m in diameter, one (L7042) located partially beneath L7029 in the north-central portion of the trench, and the other (L7043), located beneath L7038 in the east-central portion of the trench. These pits were not excavated, so their contents are unknown. Beneath the stone installations and the oven in trench F8, we uncovered two

[8] This number would be quite a bit larger if we included the cobble feature discovered in the baulk of trench F4 (figure 11).

additional round pits. One pit (L8023) was located directly beneath the oven and was adjacent to another pit (L8022), 0.60m in diameter. Both pits were less than 0.30m deep and contained a mixture of soil, ash and animal bones.

In the western half of trench F7, we uncovered the top of a wall (L7033), which runs NW-SE for 4m, cornering seamlessly at both ends with W-E walls continuing east for 1.50m – 2m. The walls are uniformly 0.40m wide, apparently constructed of a single row of mud bricks, although no individual bricks could be identified. We did not excavate further in F7 during the 2001 season and thus cannot describe the number of courses of L7033 that may be preserved, nor is it clear if the walls continue further east.

Levels 4 and 5

Levels 4 and 5 have only been reached in F1 and F4. Level 4 contains a mud brick pavement and an associated square structure, which is probably an oven or kiln. Level 5 contains a round oven/kiln, a pit, and ash deposits. These levels are tentatively dated to the turn of the fourth – third millennium but additional study of artifacts and forthcoming carbon-14 dating is necessary before definitive statements can be made about the chronology.

Level 4

Hoping to reach the Late Chalcolithic layers of F4 from above, we opened trench F1 during the year 2000 field season just a few meters from F4 on the top of the hill. In 2000 we excavated the level 2 cobblestone surface (L1006), about 0.75m below the ground surface, and several intrusive level 1 burials (see above).

Beneath the cobblestone surface and burials, we encountered layers of fill (level 3) that overlay a mud brick pavement, a mud brick structure, and an area of baked clay. The pavement (F1 L1033) consisted of 0.20m – 0.40m by 0.10m bricks laid with the narrow or 'stretcher' side up, oriented E-W in a single course dozens of rows wide, covering nearly the entire northeastern 2/3 of the trench in a 3.5 by 3 meter area. This pavement abutted a 1.25 by 1.25m square brick structure (F1 L1035) with single brick-row walls located just south of the center of the trench. This structure is likely the base of an oven or kiln. Both the interior and exterior of its walls were literally baked into a 0.02 meter thick black, pie-crust-like layer.

The western quarter of the trench at this level consisted of baked clay layers covering the area where the pavement failed to continue. In the southwestern quadrant of the trench, a 1.0 meter N-S by 2.0 meter E-W area of baked clay, ash and smashed pots appears to have cut into both the brick structure (L1035) and the bit of pavement in the southwestern corner (L1032). Taken together, the brick pavement, brick structure and area of ash and baked clay indicate that this space was the locus of oven or kiln work and associated activities, although we did not uncover any specific remains, such as slag or wasters, that would indicate how the ovens/kilns were used.

Level 5

Beneath the pavement, probable oven/kiln and baked clay area, we uncovered the base of yet another oven/kiln (L1054) in the center of the trench, and a small pit in the southeastern corner of the trench. The oven/kiln was round, 1.60m in diameter, with thin, 0.10m wide brick walls preserved only one course (0.10m) high. A large clay stand (KT1246) was found inside this feature. This rectangular stand, essentially a large mud brick with dimensions 0.64m by 0.30m wide and 0.09m high, is located towards the eastern side of the feature. The stand had carefully formed sides, apparently smoothed with a spatula or similar tool. The center of the oven/kiln consisted of baked clay turned bright orange from heating, while the entire area of the trench surrounding this feature was covered with about 0.10m of dark black ash and some patches of yellow clay (similar to the clay discovered in F4, L4043, level 6 [see below]). A few bits of light weight, porous, greenish yellow slag were found in this ash in the northwest corner of the trench, but no other debris or tools were found that might indicate the function of this feature. The slag samples are currently being analyzed.

Levels 6-7

Levels 6-7 have only been reached in F4 and F5, and consist of remains dated to the Late Chalcolithic by ceramics and four carbon-14 samples (only F4 is discussed here, F5 is discussed in the 2000 report [Parker et al 2002a, 2002b]). Level 6 consists of ash-filled pits, fill, and the ash and debris layers found in and around a large oven or kiln (L4009, L4027). Level 7 is the oven/kiln itself, which is the earliest structure thus far excavated in Area F. When we excavate deeper in F1, we may be able to connect the layers in F1 and F4, and in the process identify more levels between 6 and 7. In the following discussion, levels 6 and 7 are discussed together.

Late Chalcolithic remains eroding from the steep eastern slopes of Area F above the Tigris River were first explored during the 2000 season. Slope erosion was removed to create a trench, F4, approximately 3.25m by 3.50m (figure 11 and 13). At approximately 4.3m below ground surface (near the 567m contour line) we discovered a nearly complete whole pot (L4000 KT4027) in a matrix of ashy soil on a packed mud surface (see "Small Finds" figure 17 X and see Parker et al. 2002b). Although the spout of this pot is missing, our original suspicion was that this is an example of a Late Chalcolithic "Drooping Spout" vessel. The extent to which this ceramic type represents the Uruk culture of southern Mesopotamia is a topic of some debate. Nevertheless, this is the only ceramic example excavated thus far that might fall into this category.

Further excavation in trench F4 revealed a large mud brick oven/kiln (L4009, L4027) approximately 2.0m in diameter, half buried in the western baulk 2.60m below the ground surface. The material inside this feature (L4007, L4023+) was partially excavated during the 2000 season and the remainder was removed during the 2001 season. A carbon sample (KT4061) excavated from locus 4004 near the top of the debris accumulated in the oven/kiln yielded a 2 sigma calibrated carbon-14 date of 3350 to 2910 B.C. (table 2). In total, 1.3m of debris was excavated from this feature. This debris consisted of numerous

layers of black, gray and white ash, with occasional lenses of clay numerous animal bones and ceramics (figure 13). These layers curved up against the walls of the oven/kiln, which were composed of 0.15m by 0.7m mud bricks laid lengthwise in two rows and stacked at least twelve courses high. Figure 12 illustrates a sample of the ceramics recovered from within this feature. Note that the above mentioned carbon-14 date provides a *terminus post quem* for this material. The earliest layer of debris (L4023) yielded both a reasonably large corpus of ceramics and three more carbon samples. These samples yielded 2 sigma calibrated dates of 3360-3030 B.C. (KT4157), 3630-3570 B.C. and 3540-3360 B.C. (KT4229), and 3660-3620 B.C. and 3600-3520 B.C. (table 2). The walls of the oven/kiln were sunk into virgin clay, and a 0.40m thick layer of clay loam filled a depression at the base of the kiln, which continued beneath the foundations of the wall. Additionally, the walls of the oven/kiln curved slightly inward, suggesting that the structure originally had a domed roof.

The material recovered from this feature yielded few clues to its function. Instead we interpret this debris as secondary trash deposits. These deposits were rich in artifacts, such as spindle whorls or loom weights made from bored pot sherds, a 12.4 by 2.8cm chert blade (L4007 KT4088 [see "Small Finds" figure 17 Z]), and an andiron or kiln stand (L4023 KT 4225 [see "Small Finds" figure 16 S]). Animal bones were the most common material found inside the kiln. These bones, many of which were burnt, represented a variety of animals including pig and wild sheep (a complete analysis of this material will be undertaken during the 2002 field season). The material found outside the oven/kiln also gave us few clues to its function. The two notable features were pits. Pit L4022/L4033 was excavated directly adjacent to the south side of the oven/kiln at the southern and western baulks. This pit contained a series of ash and clay layers deposited against the outer wall of the kiln, and it appears that these layers derived from the same source that deposited nearly parallel layers inside the oven/kiln. The base of this pit terminated in virgin clay.

Another pit was found just east of the oven/kiln, against the northern baulk. This pit was actually two nested pits (L4034, L4043) that themselves seem to be part of a much larger trench or pit cut into the earth, previously identified as L4026 and L4028. This large cut begins at the same level as the preserved height of the oven/kiln, suggesting that these pits, like the pit south of the oven/kiln, were also cut after the oven/kiln went out of use. This large cut contained layers of clay, ash, and a bright yellow clay not previously noted elsewhere at the site.

Aside from the oven/kiln and pits, F4 contained layers of mixed fill and one possible living surface (L4000). Virgin clay was reached 4.0m to 4.50m below the ground surface. This finding mirrors the depth of deposits found during the 2000 season in sounding F5, located about 15m north of trench F4. The lowest elevation in trench F1, the base of pit L1046, is 0.75m higher than the top of the oven/kiln (L4027) in adjacent trench F4. Since trench F4 was excavated by removing slope erosion until we reached a good context – the top of the oven/kiln – the upper layers were not excavated under close stratigraphic control. Thus, we cannot definitively connect the stratigraphy of F1 and F4 until we remove another meter of material from F1. Nevertheless, it is clear that the two trenches share a similar character, each being the locus of pyrotechnic activities. The oven/kiln in

trench F4 was filled with burned garbage, while similar features in F1 were leveled to their foundations and consequently did not accommodate refuse. The function of the pyrotechnic facilities in these two trenches is still unclear. Our hope is that additional horizontal exposure in coming seasons will connect the trenches, provide a larger context in which to situate the features unearthed so far and clarify the function of these features.

Area F, G, H Soundings

We investigated the depth and extent of the deposits in Kenan Tepe's lower town by excavating several new soundings in Area F and in two newly defined adjacent areas. The first is Area G. Located directly west of Area F (figure 3), Area G is approximately 100 by 150 meters. The second new area, Area H, is located across the drainage to the south of Area F, on a 50 by 50 meter flat promontory adjacent to the eastern slopes of the high mound.

Soundings G1, G2 and G3, each 1m by 1m, all reached virgin soil, a pebble and cobble conglomerate in a sandy matrix, between 0.5m and 1.5m below the ground surface. The soil layers in these soundings contained only a few artifacts that have yet to be closely examined although our initial impression is that this material is not out of place in the Early Bronze and Late Chalcolithic periods of Kenan Tepe's lower town. However, we have yet to identify any features, such as walls or living surfaces. These findings suggest that occupation might not extend west into Area G. Instead, this part of Area G might represent an accumulation of slope erosion, or alternatively, remains in this area might have been eroded away leaving only disturbed shallow remains.

Sounding G4, also 1m by 1m, is of an entirely different character than the other G soundings. Located just 30 meters from the steep northern slope of the high mound, this sounding uncovered several features, including an infant jar burial and associated surface about 1.3m below the ground surface, ash-filled pits at 1.0m and 2.0m, and possible living surfaces at 1.50m, 1.60m, 1.70m, and 2.20m. The jar burial and ash pits, tentatively dated to the Late Chalcolithic Period, demonstrate that the Late Chalcolithic and possibly also the Early Bronze Age site in Area F extends up to and probably under the high mound (figure 14).

A single 1m by 1m sounding in area H failed to reach virgin soil but uncovered deep cultural deposits. At its base, 3m below the ground surface, we excavated a rich deposit containing several kilograms of artifacts tentatively dated to the Late Chalcolithic. As in G4, these findings in H1 indicate that the early period remains in Area F are part of a larger site that extends south along the eroded hillside above the river and likely under the high mound.

In addition to the soundings in areas G and H, a 1m by 1m sounding was excavated within Area F (F10), a 2m by 4m sounding was cut into the southern slopes of Area F (F6), and two 2m wide sections were cut into the northwestern slopes of Area F (F11 and F12).

Sounding F10, located 40m west of the westernmost trenches in Area F, reached virgin clay at a depth of 2.5m, and contained three living surfaces. This sounding indicates

that substantial Early Bronze and Late Chalcolithic layers are to be found in the wide flat area between existing Area F trenches and Area G.

Sounding F6 cut into the southern slopes of Area F, on the north side of the drainage that separates Area F from Area H and the high mound. This trench contained several features, including burials, and virgin clay was reached at 1.75m below ground surface. On the northwestern slopes of Area F, a new field-road cut provided an opportunity to clean two exposed sections. This road cut is located 40m west of the Area F trenches, about 30m north of the F10 sounding (figure 3). These two section scrapings, F11 and F12, indicate that the remains in this area date to the Early Bronze Age, but do not appear to overlay Late Chalcolithic remains. Cultural deposits in F11 and F12 end approximately 1.5m below the ground surface.

The F11 and F12 sections suggest that the Early Bronze Age settlement in Area F extends at least 40m west of the existing trenches, which hug the easternmost hillside of the area. The sections also show that the Early Bronze Age occupation in this part of the site is very thin, and the Late Chalcolithic site does not extend very far north of sounding F10. However, soundings G4 and H1 indicate that significant deposits of the Early Bronze Age and Late Chalcolithic occupation continue up to and probably under the high mound.

THE ARCHAEOBOTANICAL REMAINS

During the 2001 field season at Kenan Tepe, over 715 liters of soil were floated (233 samples). These samples came from seven areas excavated both in the 2000 and 2001 seasons. Of these samples, 125 (a total of 296.7 liters), collected from five areas, contained macrobotanical remains. This section presents the preliminary results of the analysis of approximately 40% of the samples, concentrating on five trenches from three areas (Table 3).

Table 3: Trenches analyzed.

	F4	D4	C2	C3 and C4
Time Period	Chalcolithic	Early 2nd Millennium	Early 2nd Millennium/Iron Age	Early Iron Age
Number of Samples	25	6	37	25
Number of different features sampled	10	6	20	22
Soil Volume	76.5	13.45	106.55	73.45

Kenan Tepe lies on the Tigris River and is surrounded by modern farmlands and desert scrub vegetation. Modern crops include barley, wheat, tomatoes, peppers, and cotton. Today, the site itself is sparsely vegetated, primarily by thorny desert scrub plants,

caperberry bushes, and wild grasses. Archaeobotanical analysis concentrated on the Late Chalcolithic, Early Second Millennium, and Early Iron Age deposits.

The early samples contained uncharred seeds of cf. *Onobrychis*, *Peganum harmala*, *Heliotropium*, and cf. *Onopordum*, as well as other modern plant material. In order to establish a baseline, our initial sampling strategy involved obtaining a sample from every locus. After examination of each type of locus excavated, selective sampling was employed to maximize the chances of recovering macrobotanical material. Hearths, pits, and floors were the most productive in providing archaeobotanical remains. Samples obtained at the end of the season contained charred cultigens, field weeds, riparian plant seeds, weed seeds, and other plant parts (primarily rachis fragments, glumes, and internodes). Most of the cultigens were highly degraded and fragmented, resulting in indeterminate cereal and legume identifications. No pure caches of cultigens were recovered (Table 4).

Crops and Wild Plants

Late Chalcolithic – Of the cereals identified to genus level, barley (*Hordeum* sp.) is the most common. The grains did not appear to be twisted and thus these cereals are tentatively identified as two-row hulled barley (*H. distichum*). Rachis internodes and fragments were also recovered. The remaining cereals were too degraded or fragmentary to identify to even the genus level. However, wheat rachis fragments were recovered, so it is likely that some of these cereals are wheat (*Triticum* sp.). One type of cultivated legume was identified, bitter vetch (*Vicia ervilia*). The indeterminate legumes could be either bitter vetch, grass pea (*Lathyrus*), or field pea (*Pisum sativum*). Today, grass pea is primarily fed to animals, as consumption by humans can lead to toxic effects (Miller 1996). No orchard crops have yet been recovered from Chalcolithic deposits. Grapes have been identified from Chalcolithic deposits of Euphrates Valley sites (see below), but were not recovered at Kenan Tepe. This is not particularly surprising; grapes did not become important in the Near Eastern economy until the third millennium (Miller 1991).

The cultigens were not found in pure caches, but in combination with various field and riparian weeds. The cereals were found with plants parts (such as rachis fragments, glumes, and internodes) and field weeds (*Polygonum*, *Malva*, *Chenopodium*) that suggest cereal processing was taking place on site (Hillman 1984). This processing would have taken place before storage or transport of these crops, indicating the crops were grown at or near Kenan Tepe.

Early Bronze Age/Early Second Millennium – The cereals recovered were not identifiable to genus level. The only other carbonized seeds identified were cf. *Onobrychis*, *Heliotropium*, and an indeterminate cultivated legume. The excavations in this area are in the early stages, but show promise for future seasons. The cereals recovered were in the lowest strata excavated during 2001. The next field season should produce more identifiable archaeobotanical remains.

Early Second Millennium/Iron Age – The cereals identifiable to genus level were wheat, specifically bread or hard wheat (*Triticum aestivum/durum*). The indeterminate cereals likely include barley; barley rachis fragments were recovered. The legumes identified include lentils (*Lens culinaris*), field pea, bitter vetch, and grass pea. Grape (*Vitis* sp.) seeds are relatively abundant in these deposits. Though the pips are plump, it is not certain whether they represent the wild or cultivated variety since Kenan Tepe lies within the natural range of wild grapes (Zohary and Hopf 1988). This area contained the highest diversity of field weeds and other weed taxa. Field weeds include wild mustard (*Neslia*), wild legumes (*Astragolus*, *Coronilla*, *Trifolium*, *Trigonella*), *Amaranthus*, *Chenopodium*, *Rumex*, *Salsola*, and *Silene*. Riparian weeds include *Carex*, *Suaeda*, and *Eleocharis*. The wild taxa consisted primarily of cf. *Onobrychis* and *Heliotropium*.

Again, as with the Chalcolithic deposits, the cereals were found with plants parts (such as rachis fragments, glumes, and internodes) and field weeds (*Amaranthus*, *Chenopodium*, Leguminosae, *Rumex*, and *Neslia*) that suggest cereal processing was taking place on site (Hillman 1981).

Early Iron Age - Excavation of these deposits are in the early stages and future field seasons should provide additional archaeobotanical material for analysis. Many of the samples from this area contained modern, uncharred seeds from the top few strata of the trenches. The indeterminate cereals were recovered from the lower strata of the trench that was excavated in both the 2000 and 2001 field seasons. A single grape seed was recovered from trench C4. At this stage, no legumes have been identified. The most common field weed recovered is *Fumaria*. Other weeds include *Galium*, *Salsola*, wild grasses, and wild legumes.

Environment

The plant types found at Kenan Tepe today are characteristic of uncultivated or disturbed areas. There are active springs on two sides of the site that contain riparian vegetation. Preliminary analysis suggests that during prehistory the site was surrounded by agricultural fields. Barley, wheat, and various legumes were grown for human and animal consumption. Other legumes, field weeds, and disturbed ground forbs were probably tolerated for animal fodder and human use (Behre 1990; Van Zeist and Bakker-Heeres 1985). The most useful clue suggesting the possibility of environmental change over time is the apparent decrease in the amount of charcoal recovered across the four broad periods discussed above. The Late Chalcolithic deposits contain large amounts of charcoal of various tree types. Most of these charcoal pieces are larger than those found in later deposits. Charcoal pieces become smaller and of less quantity from the Late Chalcolithic to the Early Iron Age. There is also a greater diversity of field wields included in the later deposits. These data suggest that wood charcoal was giving way to animal dung as a source of fuel at Kenan Tepe. These data agree well with many pollen cores examined in the Near East that suggest deforestation associated with increasingly intensified human

occupation over time (Behre 1990; Van Zeist and Woldring 1978; Van Zeist and Woldring 1980) and with textual sources especially from the Assyrian Imperial period (Lanfranchi and Parpola 1990; Parker 2001). Grape seeds were only found in deposits representing later time periods and may reflect changes in crop production that will also be reflected in the cereals.

Table 4: Ubiquity of Common Types by Time Period. Ubiquity is a measure of the number of samples in which a particular taxon is present, expressed as a percentage of total samples.

	Chalcolithic	Early Bronze Age/2nd Millennium	2nd Millennium/ Iron Age	Iron Age
Barley	10		5	
Wheat			5	
Indeterminate Cereal	10	17	30	9
Lentils			5	
Field Peas			15	
Bitter Vetch	10		10	
Grass Pea				
Leguminosae (cultivated)	10		20	
Grape			30	5
Astragolus			10	
Chenopodium	10		10	
Fumaria				9
Malva	10		5	
Neslia			15	
Polygonum	10			
Rumex			10	
Leguminosae (misc)			5	5
Carex	10		10	
Gramineae (misc)	10		15	5
Heliotropium		17	5	18
Lithospermum	10			5
Onobrychis		33	10	18
indeterminate weeds	40	17	40	14
Cereal Fragments	10		30	5
Wheat Glumes			10	
Wheat Rachis	10		15	
Internodes	10			
Barley Rachis			5	

Comparison with Other Sites in Eastern and Southeastern Turkey

The Chalcolithic deposits at Kenan Tepe are similar to Kurban Höyük, Korucutepe, and Hacınebi Tepe except for a lower diversity in legumes and the lack of grapes and flax. The Early Bronze Age/Early Second Millennium deposits at Kenan Tepe are still in an early stage of excavation and did not provide sufficient comparative archaeobotanical material. The same is true for the Early Iron Age deposits. Cultivated crops in later second millennium deposits at Kurban Höyük and Kenan Tepe are quite similar at the genus level. Both sites contained the basic crops associated with the Near Eastern Agricultural Complex. This same suite of crops is found across the Fertile Crescent during the third and second millennia B.C. (Meegan *In Progress;* Miller 1991; Van Zeist and Bakker-Heeres 1985).

Table 5: Presence/Absence Comparison with Other Sites in the Region.

	Kenan Tepe	Kurban Höyük	Korucutepe	Hacınebi Tepe	Kenan Tepe	Kurban Höyük	Kurban Höyük	Kenan Tepe	Kenan Tepe
	Chalco	Chalco	Chalco	Chalco	EBA/2nd Mill.	EBA	Bronze Age	2nd Mill./Iron Age	Iron Age
Barley	x	x	x	x		x	x	x	
Wheat	x	x	x	x		x		x	
Indeterminate Cereal	x	x			x	x	x	x	x
Lentil		x	x	x		x	x	x	
Bitter Vetch	x		x			x	x	x	
Grass Pea		x				x	x		
Field Pea		x	x			x		x	
Chick Pea						x			
Indeterminate Legume	x					x	x	x	
Flax			x			x			
Grape			x	x		x	x	x	x

Kurban Höyük: (Miller 1986); Korucutepe: (Van Zeist and Bakker-Heeres 1975); Hacınebi Tepe: (Miller 1996)

PRELIMINARY OF THE METAL ARTIFACTS FROM KENAN TEPE

Sixty-five metal artifacts, slags and possible ore samples were discovered at Kenan Tepe during the first two field seasons (2000 and 2001). Some metal artifacts are discussed briefly in the Small Finds section of this report (see below). Twenty-seven samples have been analyzed in various ways in order to identify their composition and the range of high-temperature processes that produced them.[9] This report summarizes the results of metallurgical analysis of ten of these twenty-seven samples. The analysis of the remaining samples is currently ongoing. All analyzed samples included in this report were subjected to SEM photographic and X-ray based elemental analysis using either proton induced X-ray emission with Rutherford Back Scatter analysis (PIXE with RBS) or energy dispersive X-ray analysis (EDX). The microstructure and corrosion components were examined under various light regimes. Scanning electron microscope (SEM) and EDX analysis give initial qualitative information on the structure and composition of each sample. PIXE was used for quantitative analysis and in order to identify trace elemental concentrations and variations within each sample matrix. PIXE mapping was especially useful with the iron slags that had great internal variation.

[9] Analysis of the metals from Kenan Tepe was conducted at Oxford University, Department of Materials, Los Angeles County Museum of Art, Conservation Department and at the University of Southern California, Center for Electron Microscopy and Microanalysis. We wish to thank the staff at all of these institutions for their assistance to the UTARP project.

Copper and Bronze

Two copper and low-tin bronze artifacts were found at Kenan Tepe (C1 L1045 KT1315 and C2 L2028 KT2231).

C2 L2028 KT2231 is a copper wire bent in the shape of a staple. SEM analysis revealed large amounts of copper in the center of this sample. No trace element analysis was conducted but qualitative EDX indicates the presence of some tin and other alloy elements. The corrosion in the sample does not penetrate all the way to the center but the envelope of corrosion is complete and is totally consistent with ancient, naturally developed corrosion products for a fairly pure copper or low-tin bronze.

This sample (C2 L2028 KT2231) was discovered in a context dated to the Early Iron Age through ceramic analysis. This locus consists of an ash pit filled with fairly clean gray and white ash (L2028). This pit is adjacent to a slightly higher pit filled with a mass of concreted pottery and stone, and to an area where reddened and possibly burned earth lined a hole subsequently adopted by an animal as a burrow. Although no domestic ovens were discovered in this area, parts of a thick mud brick oval wall was preserved indicating that the top part of the pit may have been encircled by a structure or retaining wall.

C1 L1045 KT1315 is a piece of copper that may represent debris or "splatter" resulting from copper working. Its center is malachite and the outside is cuprite. PIXE maps identified approximately 5% tin bronze with small amounts of arsenic and lead. Unfortunately, the state of corrosion impeded an exact analysis of the tin concentration. This sample (KT1315) was found in a context surrounded by rocks and containing a basalt grinding stone. The layers above and below its find spot are described as bluish, as are two areas located approximately a meter away. The excavators described this bluish area as a layer of thin blue crust containing pebbles. This find may be the result of copper processing.

Both this copper sample (C1 L1045 KT1315) and one of the iron samples (see below, C2 L2041 KT2290) were discovered in different trenches in the same general area of the mound. The ceramics in these two loci (C1 L1045 and C2 L2028) are nearly identical although the trenches are separated by about 30 meters of horizontal distance. These contexts are thus stratigraphically related by the ceramics, which is early to mid second millennium in date and which include types belonging to the Red-Brown Wash Ware assemblage discussed here and elsewhere.

Table 6: Elemental Analysis. Bronze/copper Samples.

KT #	Al	Si	Mg	P	S	Cl	K	Ca	Ti	V	Cr	Mn	Co	Fe	Ni	Cu	Zn	As	Hg	Pd	Sn
C.1.1045.1315 2	0.22	0.27	n/a	0.06	0.16	0.67	n/a	n/a	n/a	n/a	0.02	n/a	n/a	0.13	0.03	90.9	0.25	0.37	n/a	5.28	n/a
C.1.1045.1315 3	n/a	5.27	0.62	0.5	0.28	0.19	0.14	n/a	n/a	0.04	0.04	0.01	0.02	0.34	0.15	63.5	0.08	1.37	n/a	24.3	n/a
C.1.1045.1315 4	0.54	27.6	0.62	n/a	n/a	0.14	0.66	1.65	0.02	0.26	0.08	0.03	n/a	0.66	0.03	68.4	0.16	n/a	n/a	0.22	n/a

Lead

D4 L4022 KT4106 is a lead pin. The object has a normal value for smelted lead containing 82.61% lead. This object is made of a thick wire, approximately round in cross section, which is bent into a loop to encircle the shaft (see Small Finds below and figure 16 P). The end of the pin was blunt when found and already oxidized, indicating that it may have been broken or clipped in antiquity. D4 KT4106 was discovered in the NW corner of trench D4 in what may have been a work area (D4 L4034) where pyrotechnical activities were carried out. Slag, plaster and ceramic artifacts were also found immediately beneath the find spot of this lead object. This underlying level included a plaster-lined pit that was associated with ashy deposits (D4 L4033). Preliminary pottery analysis indicates these loci date to the early second millennium B.C.

Iron

The most notable component of the metallurgical assemblage at Kenan Tepe is the relative abundance of iron. Small quantities of iron slag were discovered in all areas of the site. This includes Area F where Chalcolithic levels have been discovered in abundance. However, in this case the context is suspect and the iron sample almost certainly derives from a later, partly eroded layer. Iron rich slag was located in secure, sealed contexts in the other areas including: the step trench (A2); the Early Iron Age areas (B4, C2); and the early second millennium areas (lower C2, D4, D5 [figure 2]). The latter areas have been dated by AMS and through typological ceramic analysis to approximately 1800 BC +/- 100 years (see above).

Trench A2

Two iron-rich samples were excavated in the step trench (A2). The first, A2 L2012 KT2149 is a porous, high iron content slag. Although our dating of the sequence in this trench is still ongoing, a preliminary analysis of the ceramics contained in this and the surrounding loci suggest a date in the early second millennium. The PIXE map indicates an overall iron concentration of approximately 11% although iron rich areas of up to 98% were identified (table 7). The context for this sample is a small group of rocks, including river cobbles and either river concretion or conglomerate. The locus in which this sample was discovered overlies a substantial ashy area at the same level as a thick, seemingly reinforced oven or kiln. This feature was fairly well-preserved and had a much thicker wall than one might expect if this were a domestic oven. Nevertheless, the exact nature of this context is difficult to interpret. No other slag samples were discovered in or around the oven/kiln feature. The slag was found near but not in the oven and no ceramic kiln debris or indications of ceramic firing were discovered in or around this feature.

Another sample was found higher up in the step trench. This sample, A2 L2010 KT2290, is also very porous, but unlike A2 L2012 KT2149, the iron content of this sample is less pronounced. PIXE maps indicate the sample is approximately 22% iron (see

table 7). There are high concentrations of silicon, oxygen and calcium indicative of a rock or mineralization. A2 L2010 KT2290 may be ceramic slag or a refractory material, or this could be a piece of slag with a large amount of mineral inclusion. A2 L2010 KT2290 was found in association with a dual set of walls founded on a cobbled surface. At some point the cobble layer and walls were subjected to burning. Otherwise, there are no indications of a kiln, furnace, or oven in this area. It is therefore possible that the sample is a result of an accidental firing at high temperature accomplished when this room or section of room burned. In any case, this sample is the least indicative of metal slag, both metallurgically in terms of its iron content and archaeologically in terms of its context.

Trench B4

B4 L4000 KT4046 was discovered in the topsoil locus of trench B4, which so far contains Early Iron Age remains (figure 2). The global map for this sample indicates that it is largely Fe_2O_3 and Fe_3O_4. These reduced iron oxides are the sort found in slag and in hammer scale. There is less than 0.1% of copper, which is well below the 0.5% threshold that Tylecote argues is the minimum required to associate iron with copper slag runoff.[10] An iron rich point in the sample is almost entirely the more reduced Fe_2O_3 and Fe_3O_4 is not detectable at this location. PIXE analysis done on a mineral rich point indicates there is some internal variation within the sample. The lack of any other slag in the immediate vicinity suggests either a small-scale pyrotechnological activity, or erosion has removed most remnants of a larger scale pyrotechnic activity.

B4 L4013 KT4242 This slag sample was subjected to EDX analysis only. It has a high iron content, probably above ninety percent (90%). The sample was excavated from an extensive ashy layer that extends below a circular ceramic-walled oven. This layer has not yet been exposed enough to characterize it in better detail.

Trench C2

C2 L2004 KT2035 came from trench C2, the same trench that produced the copper wire sample (C2 L2028 KT2231). Under polarized light this sample exhibits red coloration indicative of oxidized iron. There is a high concentration of silicon and calcium as well as a very large amount of iron (table 7). The PIXE map indicates that there is an overall concentration of 71% iron, with areas as rich as 89% iron. The high iron content is indicative of a slag or might also indicate that this is a slag fragment associated with some form

[10] Copper ores may be fluxed with iron and thus it is possible for iron to be a by-product of copper smelting (Tylecote et al 1976: 2-3, 40; Cooke and Aschenbrenner 1975). Copper smelting is a common metallurgical process for this period. Iron production is much less common. However, Tylecote (1976) has argued that samples of iron slag that include less than 0.5% copper should not be considered as derivative of copper smelting. The copper iron mixtures found at Tell Brak included copper with about 2% dissolved iron and the iron routinely had 8% dissolved copper in its matrix. Note that because the raw copper used at Brak often contained above 25% dissolved iron, the temperatures necessary to smelt this were near or above 1400 degrees Centigrade. At Brak, the use of high iron content copper yielded a copper-iron rich bloom that is significantly different (uniformly higher copper content) in composition than those found at Kenan Tepe (Shell 1997:121). Further analysis may allow better definition of the process that yielded this slag.

Table 7: Elemental Analysis. Iron Samples

KT #	Al	Si	Mg	P	S	Cl	K	Ca	Ti	V	Cr	Mn	Co	Fe	Ni	Cu	Zn	As	Hg	Pd	Sn
D.4.4022.4016	0.028	0.498	n/a	n/a	0.021	0.371	1.113	2.229	0.0322	n/a	0.165	0.061	n/a	95.075	0.003	0.025	0.031	0.059	n/a	n/a	n/a
A.2.2010.2290 1	11.4	34.6	6.91	0.67	0.1	0.15	7.24	19.8	0.87	0.03				18.2						0.17	
A.2.2010.2290 2	9.56	28.6	11.2	0.26		0.04	5.58	20.9	0.87			0.37		22.1					0.47		
A.2.2010.2290 3	12.5	36.6	6.76	0.47		0.1	11.5	19.7	0.91				0.24	11						0.13	
A.2.2012.2149 1.2	17	43.7	3.05	0.69	n/a	1.26	6.72	15.5	0.63	0.04	n/a	0.19	n/a	7.3	0.02	0.24	0.02	0.05	n/a	n/a	1.38
A.2.2012.2149 2.2	10.2	36.9	3.2	n/a	n/a		9.2	27.7	1.12	0.06	n/a	0.28	n/a	11.3	0.02						
A.2.2012.2149 3.2	9.96	36.9	3.01	0.05	n/a	0.11	0.87	27.6	1.13	0.03	0.05	0.3	n/a	11.2	n/a	n/a	n/a	n/a	n/a	0.83	n/a
A.2.2012.2149 4.2	3.9	18	1.64	0.99	0.66	0.25	0.34	22.6	0.45	0.09	n/a	n/a	n/a	47.8	n/a	n/a	n/a	n/a	n/a	0.14	n/a
A.2.2012.2149 1.1	3.99	18	16.5	0.99	66.2	0.25	3.44	22.6	0.45	0.09	n/a	n/a	n/a	47.8	n/a	n/a	n/a	n/a	n/a	0.14	n/a
A.2.2012.2149 2.1	0.66	0.44	0.54	0.57	0.09	0.52	0.84	n/a	0.1	0.09	n/a	n/a	n/a	88.4	n/a	n/a	n/a	n/a	0.55	n/a	n/a
A.2.2012.2149 3.1	7.87	54.3	4.67	0.54	0.22	0.12	2.13	16.3	0.29	0.07	n/a	n/a	n/a	13.4	n/a	n/a	n/a	n/a	0.06	1.08	n/a
A.2.2012.2149 4.1	0.05	0.45		0.67		0.62	0.26	1.07	0.1	0.1	n/a	n/a	n/a	97.8	n/a	n/a	n/a	n/a	0.12	n/a	n/a
B.4.4000.4046	n/a	0.058	n/a	n/a	0.016	0.645	0.127	0.492	n/a	n/a	n/a	n/a	n/a	98.653	n/a	0.0099	n/a	n/a	n/a	n/a	n/a
C.2.2004.2035 1	23	16.1	1.02	0.51	0.1	0.17	1.56	4.48	0.25	0.38	n/a	n/a	n/a	71.9	n/a	n/a	n/a	n/a	0.17	0.36	n/a
C.2.2004.2035 2	1.24	17.2	0.58	0.75	0.11	0.15	0.65	0.65	0.36	0.43	n/a	n/a	n/a	75.1	n/a	n/a	n/a	n/a	0.19	n/a	n/a
C.2.2004.2035 3	10.3	61.9	3.62	1.46	0.15	0.23	5.29	5.79	5.79	0.04	n/a	n/a	n/a	0.82	n/a	n/a	n/a	n/a	n/a	n/a	n/a
C.2.2004.2035 4	0.83	4.72	0.53	0.3		0.1	0.08	3.32	0.05	0.45	n/a	n/a	n/a	89.1	n/a	n/a	n/a	n/a	0.17	0.25	n/a
C.2.2041.2290	19.1	33.6	0.84	n/a	0.04	1.78	0.41	23.1	2.93	0.04	0.03	0.25	n/a	16.7	n/a	0.03	0.03	n/a	n/a	1.23	0.19
D.5.5044.5177	0.028	0.498	n/a	n/a	0.021	0.371	1.113	2.229	0.322		0.165	0.061	n/a	95.075	0.003	0.025	0.031	0.059	n/a	n/a	n/a

of smithing. C2 L2004 KT2035 is a piece of mineralized iron that was found directly above an ash pit. The locus is attributed to the Early Iron Age through ceramic remains that include Early Iron Age corrugated bowls and Early Iron Age indigenous painted ware (Parker 2001: 288). This sample was discovered just below the topsoil layer. The excavators did not find any intact oven, kiln, structure, or furnace remains, but did record evidence of burning. In view of the sample's composition, we speculate that this sample is the product of bloom refinement or smithing.

C2 L2041 KT2290 is a sample that contains high concentrations of silicon, oxygen and calcium, which is normally indicative of a rock or mineral composition. PIXE analysis indicates an overall concentration of 17% iron. The copper content of this sample is 0.03%, which does not overtly support an interpretation of this iron slag as derivative of copper processing. This sample was found directly underneath the Early Iron Age ash layer or pit in which C2 L2004 KT2035 was discovered. This lower layer in which produced C2 L2041 KT2290 may be dated to the early to mid second millennium B.C. We therefore have two samples that have higher-iron inclusions inside a matrix of lower-iron slag and both come from areas in which ash is a predominant feature of the context.

Trench D5

D5 L5044 KT5177 is a slag sample made up of 94.7% iron oxide, 0.003% nickel and 0.322% tin (table 7). In addition, and a barely detectable copper trace of 0.03% was identified using PIXE. Spot analysis on an iron rich area shows the composition to be predominantly Fe_2O_3 and Fe_2O_4 with 2.2% calcium carbonate. Thus far there is no indication that a meteoritic origin for the iron inclusions should be considered.[11] No copper or bronze samples have so far been identified in this area and there is no indication that copper processing occurred here. The context for this sample is the north end of trench D5. The locus is sealed beneath a surface and mud brick collapse. The pottery from D5 L5044 has not yet been fully analyzed, but preliminary study indicates this context underlies loci that have been attributed to the early second millennium B.C.

Implications of the Metals Analysis

The early date of the iron finds from Kenan Tepe is notable, as is the fact that the iron slags lack most substances aside from iron and calcium carbonate. For instance, the levels of silicon, potassium, aluminum, and manganese are quite low and imply that these are very clean slags. It is difficult to determine whether the inhabitants of Kenan Tepe were intentionally making iron or whether these samples are a by-product of other pyrotechnic activities. With iron rich rock in abundance in the surrounding area, and with so

[11] Meteoritic composition between 5% and 20% nickel would be expected, with low carbon content. It is possible that nickel content can be leached from samples by water action, which would complicate the identification of meteoritic origin.

little else in these slags aside from iron and calcium carbonate, (which can act as a flux) there was little else to fall out but iron, if only sufficient heat were applied.

Based on this preliminary study, it is apparent that copper and low tin bronzes were being used or made on the west side of the mound. There is too little evidence to interpret the scale of metal working as anything other than small-scale or non-intensive. Iron is an important resource in this region and seems to have dominated the metallurgical universe at Kenan Tepe, at least on the basis of two seasons of excavation. We speculate that the discovery of iron rich slag in early second millennium contexts may be evidence of early experimentation with iron making, perhaps a result of adventitious or accidental processes originally unrelated to deliberate iron smelting. This is based on slag and iron debris that show little or no evidence of copper or tin except at the very lowest of trace levels, and which have high levels of heavily reduced calcium and carbon in the slag. Further analysis is underway and will hopefully provide additional data as a foundation for more specific conclusions about the scale and intentionality of the pyrotechnic processes that yielded these metal objects and iron rich slags.

Preliminary Synthesis of the Cultural History of Kenan Tepe

After two seasons of excavation we are now in a position to offer a preliminary analysis of the cultural history of Kenan Tepe. However, we must emphasize that the conclusions presented here are preliminary and our interpretation of these data may change in subsequent reports.

The initial research discussed above indicates that Kenan Tepe was occupied during four broad time periods: the Late Chalcolithic, the first half of the Early Bronze Age, the early second millennium and the Early Iron Age. Remains dating to the Late Chalcolithic and the first half of the Early Bronze Age were discovered in abundance in Area F. Soundings in areas F, G and H suggest that the northern and western portions of Area G in the lower town were either not occupied during these periods, or erosion has removed significant amounts of these deposits. However, the same soundings show that there are deep deposits dating to the Late Chalcolithic and the first half of the Early Bronze Age in the southern portion of Area G and in Area H. The extent to which these deposits, which reach a depth of more than three meters in G4 and H1, are composed of debris eroded from the main mound remains to be determined. If the disturbed upper deposits in trench A2 are any indicator, we can expect as much as one meter of deposition, especially in Area H, to be cultural debris re-deposited by erosion from the slopes of the main mound. Data from soundings G4 and H1 also suggest that there may be significant remains dating to these periods buried underneath Kenan Tepe's main mound (see above).

These data have several important implications. First, since the remains dating to the Late Chalcolithic and the Early Bronze Age are not covered by later material, the data suggest that Kenan Tepe probably reached its largest extent during the late fourth and early third millennia B.C. Several variables make it difficult to be more precise in our

estimates of the total size of the site during these periods. These variables include: whether or not all of Area G was occupied, whether early remains extend under the main mound, and the extent of occupation in Area H. Another consideration is the site size fluctuation between the Late Chalcolithic and the Early Bronze Age. Finally, our team has yet to adequately explore the terrace south of the main mound (this terrace is not illustrated on figure 3). Taking into consideration all of these variables it is premature to give any site size estimates. It is nevertheless quite clear that Kenan Tepe was a relatively large town during the Late Chalcolithic period when the absolute site maximum may have reached as much as five to six hectares. If we exclude the main mound and portions of Area G, then this number could drop to around three hectares. Similar numbers could be assumed for the first half of the Early Bronze Age.

The nature of occupation during the Late Chalcolithic and Early Bronze Age uncovered at Kenan Tepe is very interesting. Thus far, none of our trenches in Area F have yielded domestic architecture. Instead, these levels are characterized by several large ovens, some up to 2 meters in diameter (figure 13 for example), and significant ash deposits. These data indicate that during the Late Chalcolithic period, Area F at Kenan Tepe was home to some kind of production requiring the use of fire. Archaeobotanical remains from the kiln in trench F4 included charcoal from various tree types suggesting that wood or wood charcoal was the predominant fuel during the Late Chalcolithic. Unfortunately, the artisans in charge of production were evidently quite meticulous as they regularly cleaned their ovens and, in doing so, not only spread large amounts of ash around their production area, but also disposed of any by-products of their production.

It is also interesting to note that a preliminary analysis of the ceramics from Area F has not yet revealed any of the characteristic "Uruk" style ceramics. Instead, this appears to be a regional Anatolian late Chalcolithic assemblage. The only exception to this is a nearly complete ceramic vessel that, although its spout is missing, might be an example of an Uruk style "drooping spout" vessel (figure 17 X).[12] Nor have we recovered any of the other "markers," such as Uruk glyptic, clay cones and accounting tools, commonly used by scholars to argue for the direct involvement, or the presence, of southerners in the Mesopotamian periphery (Algaze 1989b; Stein 1998; 2000). This being the case, the potential to research the effect (or lack of effect) that the so-called "Uruk Outreach" (Algaze 1993; Pollock 1992; Rothman 2001; Stein 1999; 2000) had on the local Late Chalcolithic population of southeastern Anatolia is obvious. In future seasons part of our research agenda will be to discover if pyrotechnical production at this Anatolian town was driven by local, intra- or interregional demand, to investigate whether or not local elites controlled production, and to examine how interregional contact affected the development of complexity at the site.

In the meantime we are conducting a comprehensive analysis of the most reliable loci excavated from our Late Chalcolithic contexts in an effort to clarify the Late Chalcolithic ceramic sequence at Kenan Tepe and contribute to the analysis of the overall chro-

[12] It may be significant that this vessel appears near the end of the Late Chalcolithic sequence (see below).

nology of interregional interaction in this period (cf. Wright and Rupley 2001). Figure 12 illustrates the ceramics excavated from a well preserved oven/kiln (L4009/L4027) in trench F4 (discussed above). Fortunately this feature was sealed by later debris while the oven/kiln walls, which are preserved to a height of 1.3 meters provide clear boundaries for a series of undisturbed archaeological contexts. Furthermore, two of these contexts provided datable carbon-14 samples (C-14 graphs are presented as table 2). The earliest C-14 samples, which come from the lowermost locus in the oven/kiln, yielded 2-sigma calibrated dates of 3360-3030 B.C.(KT4157), 3630-3570 B.C. and 3540-3360 B.C. (KT4229), and 3660-3620 B.C. and 3600-3520B.C. (KT 4253). Another date comes from a sample taken from near the top of the kiln in a locus just below that which contained the possible "drooping spout" vessel illustrated as figure 17 X. This sample yielded a 2-sigma calibrated radiocarbon age of 3350 to 2910 B.C. (KT 4061).

In discussing these dates and the ceramics from within the oven/kiln, several issues come to mind. To begin with, since three of the carbon samples (L4023 KT4157, KT4229 and KT4253) are from the same sealed context we would expect these dates to fall relatively close to each other. This is not the case. In fact, one of the dates (L4023 KT4157) is significantly later than the other two. Given the nature of the context (L4023) we see no reason to believe that debris could have accumulated in this locus for several hundred years. One factor that may have contributed to the difference in these dates is the material analyzed: L4023 KT4257 is charred material while L4023 KT 4229 and KT4253 are organic material. Nevertheless, the fact that the other two samples (L4023 KT4229 and KT4253) are so close together suggests that these dates are more reliable.

If we follow this line of reasoning and we assume that the ashy debris in the lowest level of oven/kiln L4009/L4027 began to accumulate during the late LC 3 or early LC 4 (see Rothman 2001: 5-8 for a discussion of this terminology) somewhere around 3500 B.C. Furthermore, since this feature is built into virgin soil the Late Chalcolithic occupation at Kenan Tepe, or at least the operation of the pyrotechnic facilities in Area F, may also have begun at or around the same time. The oven/kiln fell out of use and filled with debris, the upper levels of which date to the middle or the end of the LC 5 period somewhere around 3100 B.C. These parameters also pertain to the ceramics illustrated in figure 12: this corpus should represent a relatively late set that slightly post-dates Hacınebi B2 (Pierce 2001; Pollock and Coursey 1995). Although preliminary, these data lead to several interesting conclusions. First, if we assume that the first layers of debris that accumulated in oven/kiln L4009/L4027 mark the beginning of its use-life then this evidence suggests that occupation at Kenan Tepe, or at least the utilization of space in Area F, probably begins quite late in the Late Chalcolithic sequence. Unlike other sites in Turkey such as Arslantepe and Hacınebi there does not, so far, appear to be a long development through the LC sequence. Second, the dating of oven/kiln L4009/4027 places Kenan Tepe's Late Chalcolithic occupation in the midst of the "contact period" at Hacınebi (period B2) when the material culture shows a significant amount of intrusive southern Mesopotamian elements. Although our exposures to this period are still limited,

such elements are conspicuously absent from the material culture thus far excavated at Kenan Tepe.

Continuity of settlement between the Late Chalcolithic and Early Bronze Age is quite unusual, at least in comparison with upper Mesopotamia and the upper Euphrates basin. Surveys in the plains of northern Iraq (Wilkinson and Tucker 1995) and in the environs of Tell Leilan in the Upper Khabur area (Stein and Wattenmaker 1990) show substantial settlement dislocations in the transition from the fourth to the third millennium. Similar results have been reported in the Upper Euphrates (Wilkinson 1990a; Algaze et al. 1991, 1994). Many scholars have argued that the decline of settlement observed in these areas is due, at least in part, to the collapse of the Uruk regional trade networks linking the large population centers of southern Mesopotamia with resource zones in highland Iran and Anatolia (Algaze 1989b, 1993). Although survey data from the Upper Tigris river region (Algaze 1989a; Algaze et al. 1991) show that this part of southeastern Anatolia was affected by the "Uruk Expansion" (see above),[13] work on survey material from the Cizre Plain and the Upper Tigris River Valley (Parker 2001)[14] suggests that in these areas there is a far greater degree of continuity between these periods. This theory is supported by our excavations at Kenan Tepe where the transition between the Late Chalcolithic Period and the Early Bronze Age is clearly evident in all Area F trenches and five soundings in areas G and H.

Although our exposure in areas G and H and very limited excavation in Area F suggest that the inhabitants of the Early Bronze Age town continued the tradition of pyrotechnic production on this part of the site by constructing new ovens/kilns and creating new deposits of ash and other debris. Two 1 by 1 meter soundings placed in areas G and H (G4 and H1), between the pyrotechnic facilities in Area F and the main mound (figure 3), yielded deep deposits dating to the Early Bronze Age and the Late Chalcolithic Period. Although our sample is still very small, the discovery of a child interred in a large ceramic jar, mud brick debris that may belong to walls, and the abundance of cooking pot sherds, suggests that the remains in these areas are domestic in nature. These data support the hypothesis that habitation in these periods was concentrated in the area of the main mound while the town's pyrotechnic facilities were located outside of the habitation zone in Area F.

In the initial survey of the Upper Tigris River Valley (Algaze 1989a; Algaze et al. 1991) no Middle Bronze Age sites were recognized, suggesting that this part of Turkey was sparsely populated during this period. This theory came as somewhat of a surprise since elsewhere in upper Mesopotamia including the Cizre Plain in the far southeastern corner of modern Turkey (Algaze et al. 1991; Parker 2001), the Khabur plains of Syria

[13] Two major sites, other than Kenan Tepe, were identified in the Tigris-Euphrates Archaeological Reconnaissance Project's surveys of the Upper Tigris River region as being potential "Uruk Outposts". These sites are Basorin Höyük in the Cizre Plian, and Çattepe at the Bohtan-Tigris confluence.

[14] The surveys I refer to here are those of the Tigris-Euphrates Archaeological Reconnaissance Project. Unfortunately only preliminary reports of these surveys are published (Algaze 1989a; Algaze et al. 1991). However the results of the Cizre Survey are now available in Parker 2001.

(Meijer 1986; Stein and Wattenmaker 1990), the Sinjar plains of northern Iraq (Wilkinson 1990b; Wilkinson and Tucker 1995) and in the Upper Euphrates Basin (Algaze et al. 1994), the early second millennium is a period of great florescence. This situation led the authors of the survey report to conclude that "either this portion of the Tigris basin was bypassed entirely by Middle Bronze Age development attested to elsewhere or, more likely, it is characterized by a thus far unreported and unrecognized assemblage (Algaze et al. 1991: 183)." The past two years of excavation at Kenan Tepe have confirmed this assumption by showing that the early second millennium in the Upper Tigris River region is marked by a mixed assemblage that includes components of the Khabur ware assemblage of north Syria alongside a so-called Red-Brown Wash Ware assemblage.

Shapes and wares with this characteristic surface treatment occur at Kenan Tepe in the context of a larger assemblage that has not been previously fully documented, or even identified, as a coherent assemblage (figures 8 and 9). Excavations during the 2001 field season concentrated on the two areas where this assemblage was discovered. This research unearthed well-preserved architectural levels with numerous sealed contexts containing both an array of ceramics belonging to this assemblage and a number of carbon samples.[15] An analysis of the carbon samples both confirmed our assumption that this assemblage dates to the early second millennium B.C. and at the same time underscored the importance of this poorly documented ceramic assemblage as a marker of the early second millennium B.C. in this part of southeastern Turkey.

Well preserved levels dating to the early second millennium have been discovered on both sides of Kenan Tepe's main mound (areas C and D) but were absent from the soundings in areas G and H. Thus it is safe to say that second millennium occupation at the site encompassed the entire main mound but did not extend into the lower town. This being the case we estimate the size of Kenan Tepe's early second millennium occupation to have been 1.1 hectares.

Architectural remains dating to this period include a variety of well-built stone structures. In the case of Area C, these structures appear to be domestic in nature (figure 7), while those recovered in Area D appear to be the remains of a large public building. The structure we theorize to be a public building contains architecture made of boulders as well as a floor or hallway made of decoratively arranged up-standing river cobbles. Several slag pits and apparent metal processing areas were also discovered in Area C. Although the analysis of these data is still underway, a preliminary assessment of the slag samples undertaken at the Los Angeles County Museum of Art, Oxford University, and the University of Southern California suggests that both copper and possibly even iron were being refined, probably from local ore, during the early second millennium at Kenan Tepe.

Since little is known about the nature of occupation in much of southeastern Anatolia during the early second millennium, data from Kenan Tepe promise to be an important contribution to the understanding of frontier dynamics in this period. Although

[15] A preliminary report of this material is currently in preparation.

our sample is still relatively small,[16] a preliminary analysis of the data recovered thus far leads to several interesting hypotheses about the nature of early second millennium society and economy at Kenan Tepe. First, the data show that the total occupied area at Kenan Tepe contracted considerably from its peak at the end of the fourth and the beginning of the third millennia B.C. In spite of this contraction, the architecture thus far recovered in areas C and D on Kenan Tepe's main mound suggests that Kenan Tepe's early second millennium town was relatively prosperous. The regionally distinct nature of the ceramic assemblage combined with the existence of what appears to be a large public building, implies that local authorities maintained control over labor resources in the area. Furthermore, metal processing during the early second millennium probably included both the creation of finished products, and some refinement and purification of raw metals, some part of which may have made its way to non-local markets.

Archaeological data thus far recovered suggests that there was a hiatus of occupation at Kenan Tepe during the Late Bronze Age. Only a handful of sherds of the Middle Assyrian and Mitannian assemblages (Pfälzner 1995; Wilkinson and Tucker 1995) have been identified in the hundreds of ceramics processed during the 2001 field season.

Kenan Tepe was again the home to a flourishing settlement during the Early Iron Age (ca. 1100-900 B.C.). Remains from this period have been discovered in abundance in areas B and C, although there is no indication of Iron Age remains either in the lower town or on the eastern slopes of the high mound (in and around Area D). As noted above, parts of Kenan Tepe show signs of severe erosion. Thus it is quite likely that some of the remains dating to the Early Iron Age were eroded away, especially from the steep eastern and northern slopes of the high mound. This being the case, it is difficult to give a precise estimate of the size of the Early Iron Age settlement. We can be quite certain that at its maximum extent Kenan Tepe's Early Iron Age occupation did not exceed the total size of the main mound (ca. 1.1 ha). However, if erosion did not play a significant role in disturbing the Early Iron Age remains at Kenan Tepe, then the size of the site during this period could be slightly smaller.

In the case of Kenan Tepe's Early Iron Age settlement, it is quite clear that we are dealing with an indigenous Anatolian village. The ceramic assemblage includes types belonging to the "corrugated wares" from Norşun Tepe (Bartl 1994) as well as types previously defined as "indigenous Iron Age" based on survey material from the Upper Tigris River region (Parker 1997, 2001). Although many of the contexts dating to this period are somewhat disturbed due to the proximity of this material to ground surface, we are nevertheless in a good position to evaluate the nature of occupation during the Early Iron Age. To begin with, the chronology of the town appears to be limited to the Early Iron Age, as there is no indication of occupation during the Neo-Assyrian Imperial Period. In fact, it appears that the town was either abandoned or destroyed in the wake of Assyrian

[16] Thus far two 5 by 5 meter trenches in area C and one 10 by 5 meter trenches in Area D have exposed levels dating to this period. It should be noted however, that three 10 by 10 meter trenches in areas B and C, as well as 2 more 5 by 10 meter trenches in Area D should reach early second millennium levels in the coming season.

colonization of the region in the ninth century B.C. (Parker et al. 2002a). Further excavation at Kenan Tepe might, therefore, illuminate the affects that Neo-Assyrian imperialism had on the indigenous population of the Upper Tigris River region.

Excavations have thus far revealed several large walls running, in several cases, the entire length of our excavation units. Walls discovered in trenches C3 and C4 presumably belong either to very large houses or some type of public building. In trench B4 we uncovered large piles of stones. We theorize that these stones belonged either to another large building or, perhaps, to a fortification wall or tower. There is also evidence of metal working during the Early Iron Age. Slag, ovens and outdoor work surfaces have been discovered in abundance in Area C. This material is currently being analyzed at Oxford University and the University of Southern California.

KENAN TEPE 2001: SMALL FINDS ANALYSIS

During the 2001 field season, excavators collected several notable small finds that merit description. These objects can be divided into eight categories: seals, figurines, beads, miniature vessels, metal objects, tokens or weights, ceramic kiln stands, and wagon wheels/toy discs/spindle whorls (figures 15, 16 and 17). The objects in each of these categories will be discussed as groups. A more complete analysis of the corpus of small finds from Kenan Tepe, especially the seals, is currently in preparation.

Seals

A ceramic cylinder seal (F4 L4026 KT4132) incised with geometric intaglio design was discovered in Late Chalcolithic context in trench F4 (figure 15 A). The 27 x 18mm, 9.5g seal is punctured from end to end, but the puncture holes do not bear burnishing, as would result from twine rubbing the surface. The seal has been unevenly fired (or perhaps burnt), such that the majority of the surface is consistently dark grey (Munsell 10YR 4/1) except for an area 15 x 15mm along one side which is very pale brown (Munsell 10YR 7/3). This color difference is visible in the fabric at one end where the seal is badly damaged, revealing very fine grit temper. The seal has relatively straight sides, clearly not convex or concave, but the preserved end bulbs outward in one place. The surfaces of the two ends are not parallel to each other, indicating that the seal was hand formed. The puncture hole at the preserved end is positioned slightly off-center and the edges of each end are rounded to meet the face of the seal.

Figurines

A fragment of a ceramic animal figurine (KT4067) was recovered from mixed fill in trench A4, L4000 (figure 15 B). The very fine grit tempered figurine is consistently black (Munsell 5Y 2.4/1) and appears to have been burned or low-fired at the time of

production. The animal's preserved head, forepaws and abdomen are chipped at the right ear, tip of the nose, and feet. The 12.9g figurine stands 28mm from foot to ear, is 16mm wide and 33mm long. The surface is marked by creases. Other than traces of fingerprints over the entire surface, there is no surface decoration or burnishing and the eyes are not represented. Although the chipped feet cause the figurine to appear strangely proportioned, on the basis of the appearance of the head, the animal may be either a dog or a sheep.

A broken ceramic animal figurine (KT4060) was recovered in early second millennium context in trench D4, L4009 (figure 15 C). The 32.3g animal is preserved from neck to tail, measuring 54mm long, 22mm wide, and 34mm tall at the neck. The light brownish-grey (Munsell 10YR 6/2) fine grit tempered object bears no paint, wash, or other decoration. The head is broken off, but the gentle slope at the back of the neck suggests that the animal's neck was not especially long. The proper left foreleg is broken almost at the joint with the body although the other three intact legs are short and wide. The hindquarters preserve a long tail that curls down the proper-right rear leg. On the basis of the preserved features, the animal may be a dog, or goat, but the tail is too long to be a sheep and the neck is too low to be a donkey or horse.

A fragment of a painted ceramic animal figurine (KT4095) was recovered in early second millennium context in trench D4, L4020 (figure 15 D). The head and hindquarters are missing, leaving a 17.4g fragment measuring 29mm long, 24mm wide, and 44cm tall at the neck. The fine grit and chaff tempered fabric is reddish yellow (Munsell 5YR 6/6). On the basis of the long neck in proportion to the width of the abdomen (18mm) and length of the legs (15mm) and the presence of a small nub between the legs indicating a tuft of fur, the animal is most likely a horse or goat. The very pale brown (Munsell 10YR 8/3) surface bears a single, wide band of dark brown (Munsell 10YR 3/3) paint extending from the nape of the neck to the tip of the feet. This painted decoration is similar to the painted figurine recovered from trench C2 (KT2306) during the 2000 excavation season and is similar, if not identical in color to paint used on KT type 28 ceramics.

Beads

A crudely formed orange-red (Munsell 7.5R 5/6) bead (KT1164) measuring 5 x 8mm and weighing 0.7g was discovered in mixed fill in trench A1, L1035 (figure 15 E). The circumference of the bead is rounded and the edges curve out to join the sides. The bead is punctured by a drill hole that diminishes in width from one side to the other. The bead bears no decoration, although the surface bears a high sheen.

A thin triangular-shaped ivory or bone bead (KT5250) measuring 12 x 7 x 3mm and weighing 0.3g was recovered from fill in trench D5 (L5031 [figure 15 F]). The lower tip of the isosceles triangle comes nearly to a right angle. The hypotenuse is curved from front to back of the bead. Both front and back faces are flat and bear no decoration. The two short sides of the bead are cut flat and form a sharp corner where they meet the contoured hypotenuse. A 1mm wide hole is drilled through the width of the bead, positio-

ned just above the median point on the short sides (3mm from the edge of the hypotenuse). The surface is not polished, but is highly refined.

An undecorated round black stone bead (KT1100) measuring 13 x 13 x 5mm and weighing 1.3g (Munsell 2.5Y 2.5/1) was recovered from Early Bronze or Late Chalcolithic fill in trench F1 (L1020 [figure 15 G]). The top concave face of the seal and the flat bottom face are punctured by a central 3.5mm wide drill hole. The edge at the circumference crests out to a rounded peak. The matte stone bears mild accretion and has two minor chips on one face and at the inner edge of the drill hole. These chipped areas are shiny, suggesting that the material may be obsidian.

A light blue-green round stone bead (KT4180) measuring 7 x 4 x 4mm and weighing 0.2g (Munsell GLEY1 8/5G) was recovered in Late Chalcolithic context in trench F4, L4025 (figure 15 H). The edge around the circumference of the bead is cut consistently smooth. The two undecorated faces are flat, although one face is cut at a minor slant causing one edge to be 1mm thicker than the other. The central drill hole widens at the openings at each face. The stone appears to belong to the quartz family as it seems to be slightly translucent and bears random cracking patterns in the crystalline structure.

Miniature Vessels

A miniature ceramic offering stand (KT4066) was recovered from an unsealed Early Iron Age context in trench B4 (L4004 [figure 15 I]). The 34.1g, 40mm tall stand has a shallow (7mm deep) scooped bowl (52mm diameter) atop a wide neck (25mm diameter) attached to three short legs (9mm diameter each). A new chip and two old chips at the rim of the bowl reveal medium to coarse grit temper in the yellowish red (Munsell 5YR 5/6) fabric and the pale brown (Munsell 10YR 6/3) surface shows chaff inclusions. The half of the vessel not covered by accretion reveals light, uniform burnishing; there is no other surface decoration. The heavily accreted interior of the bowl does not appear to be burnished. One of the three legs appears mildly burned, another bears an old break at the base, but the third is wholly intact.

A miniature ceramic chalice (KT3265) was recovered in Early Iron Age context in trench C3, L3032 (figure 15 J). The 6.5g, 30mm tall chalice is composed of a 22mm wide rounded basin that scoops in to 10mm at the neck and flutes out to 16mm at the base. The straight, rounded rim is damaged by several old chips and an area of loss caused by a new break. The very dark grey (Munsell GLEY1 3/N) fabric of medium grained grit temper indicates low-firing conditions. The pinkish grey (Munsell 7.5YR 7/2) interior bears a residue and corrosion; the exterior is pinkish brown (Munsell 7.5YR 6/2.5). The object is apparently hand pressed; the surface is smooth although a bit wobbly. The side of the bowl with the new break bears burnishing; this burnishing does not continue on the neck. There is no other decoration on the vessel.

A fragment of a miniature bowl (KT 5391) was recovered from trench D5, L5063 (figure 15 K). Half of the bowl is preserved and weighs 28.2g; it is 34mm tall and 48mm wide. The rim curves inward from the body and then turns out slightly to a flattened edge;

the rim is chipped in several places. A new chip at the broken edge of the base reveals brown (Munsell 7.5YR 4/3) fabric with charred chaff inclusions, indicating low-firing. Striations on the dark grey (Munsell GLEY1 4/N) interior and exterior suggest wheel turning; wobbly sides suggest that the wheel apparatus was hand driven. The exterior is reddish brown (Munsell 5YR 5/4) at the rim, grading to Munsell 7.5YR 4/1 at the base. The thickness of the vessel tapers from base to rim with the thickest area at the edges of the base. There is no surface decoration.

An Early Bronze (?) miniature bowl (KT1087) was recovered from a burial in trench F1, Locus 1021 (figure 15 L). The 21.1g bowl is 33mm in diameter and 23mm tall. The bowl's crude appearance, wobbly surface, and uneven base suggest that it was hand pressed from a coil. The simple, rounded rim continues from the body without flaring. The surface has uneven coloring, such that the base is dark bluish grey (Munsell GLEY2 4/1 [5PB]) while the body is red (Munsell 2.5YR 5/6) with one side very pale brown (Munsell 10YR 7/4). The rim is slightly burnished in the pale brown area, but this burnishing does not continue across the remainder of the vessel. There is no other decoration.

A miniature jar (KT1118) probably of Early Bronze Age date was recovered from a burial in trench F1, L1021 (figure 15 M). The 224.5g jar stands 90mm tall and measures 36mm at the neck and 65mm at the body. The body of the coil-formed jar is shaped like a bulb and the rim flares out to a rounded edge. The thick base is slightly flattened but has no foot. The exterior bears a very pale brown (Munsell 10YR 7/4) wash and shows chaff temper. Other than one old chip on the rim and an arc-shaped fracture on the shoulder, the vessel is completely intact. There is no surface decoration.

A Late Chalcolithic shallow, hand-wheel turned bowl with a ring base (KT4300) was recovered from trench F4, L4039 (figure 15 N). This 262.6g fully reconstructed bowl measures 113mm diameter at the rim, 121mm at the body and 35mm at the base. The base is wobbly and the rim ascends and descends irregularly. The rounded rim hooks inward slightly but is continuous with the sides. The reddish yellow (Munsell 5YR 6/6) exterior is burnished with parallel striations spaced an average of 2mm apart. These striations originate at the nub of the base and extend upwards toward the shoulder at a slight diagonal. Another set of diagonal burnishing striations extend from the shoulder upward toward the rim. The red (Munsell 2.5YR 5/6) interior repeats the same burnishing pattern.

A broken miniature offering stand with circular base (KT8075) was recovered in Early Bronze Age context in trench F8, L8007 (figure 15 O). The 16mm diameter neck and 32mm diameter base are intact, although the sides of the bowl are broken, leaving a cross-bar that measures 13mm x 42mm. The 18.2g fragment bears new chips at the widest edges of the bowl, although the major loss results from old damage. The very dark grey (Munsell GLEY1 3/N) surface shows chaff temper, as does the black (Munsell 5YR 2.5/1) fabric at the breaks. The wobbly neck curves slightly and the rounded base slopes upward toward the neck in a slight twist. The top of the object (the interior of the bowl) is flattened. There is no surface decoration.

Metal objects

A lead pin (KT4106) was recovered early second millennium context in trench D4, L4022 (figure 16 P). The 13.2g pin measures 67 x 10 x 5mm and has a light bluish grey (Munsell GLEY2 7/1) surface. The pin is formed by a relatively thick, straight shaft that bends into a needle-eye at the head while the tip of the coil thins and loops around the neck 1.5 times. The blunt end of the pin was sampled, revealing a shiny light colored metal, which was found to be lead (see above).

A copper pin with fiddlehead scroll (KT4160) was recovered in Late Chalcolithic context in trench F4 (L4025 [figure 16 Q]). The 3.0g pin measures 4mm wide and 55mm long and has grayish green (Munsell GLEY1 4/5G) patina covered by dark greenish grey (Munsell GLEY1 4/5G) corrosion. The undecorated shaft of the pin curves very slightly inward and comes to a point while the head of the pin loops around to create a fiddlehead.

Tokens/Weights

A small round stone weight or token (KT4231) was recovered from mixed Early Iron Age fill in trench C4, L4026 (figure 16 R). This dusky red (Munsell 5R 3/2) slightly oblong ball measures 49mm diameter at the widest point and weighs 124.6g. Three-fourths of the surface bears significant accretion, although a smoothed surface is visible on the remainder.

Andiron

An unusual ceramic andiron (KT4225) was recovered from an ash layer (L4023) inside a large Chalcolithic oven/kiln in trench F4 (figure 16 S). This andiron weighs 163g and measures 101mm tall x 125mm wide x 150mm long. The oval base tapers inward along the short axis and gradually forms a neck along the long axis as the top sweeps out to form opposing arms; these arms are broken. The undecorated pale brown (10YR 6/3) surface bears chaff temper and heavy cracking with burn evidence at the top and on one side.

Wheels/Toy discs

A ceramic toy wheel (KT2438) was recovered from trench A2, L2058 (figure 16 T). This 134.1g, palm sized wheel measures 97mm in diameter. It has wide, narrow sides and a 42mm long central axle with an 18mm diameter puncture hole wide enough to insert a wooden stick. The very pale brown (Munsell 10YR 7/4) surface bears chaff temper and two chipped areas at the edge reveal chaff and grit temper. The hand-pressed wheel is not perfectly circular and the surface bears no decoration.

A small ceramic wheel (KT1012) was recovered from trench H1, L1003 (figure 16 U). This crudely formed 6.3g wheel measures 19mm in diameter with funnel-shaped sides

forming an axle measuring 22mm wide. It probably dates to the Early Bronze Age. The very pale brown (Munsell 10YR 7/4) wobbly surface has a highly visible chaff temper. The outer edge around the circumference shows wear; parts of the edge are flattened and lighter in color than the faces of the wheel.

A burned ceramic wheel, spindle whorl or bead (KT5420) was recovered from trench D5, Locus 5066 (figure 16 V). This black (Munsell 10YR 2/1) chaff tempered circular-shaped object measures 30mm x 19mm and weighs 18g. Between its conical top and mildly convex bottom the circumference of the object bears flattened sides with irregular notch impressions. A 7mm wide drill hole punctures the undecorated faces.
Parallels:
Bollweg, catalogue IIIb 22, fig. 41; terra cotta 132mm; Assur [Ass7498]; Neo-Sumerian ca. 2327 – 2042.
Bollweg, catalogue IIIb 18, fig. 39; terra cotta 115mm; Aleppo (Halab); end 3rd millennium

Finds from the Year 2000 Field Season

Because of their relevance to this report, a number of finds from the year 2000 field season are discussed in the previous pages. These finds are illustrated as figure 17 W-Z and are described here.

A chert blade (L4007 KT4088) was discovered in the Chalcolithic kiln (F4 L4009/L4027) described above (figure 17 Z). This grayish brown (Munsell 2.5YR 5/2) blade measures 12.4cm in length and is 2.8cm wide.

In Area C, Trench 2, a ceramic animal figurine was excavated from early second millennium context as KT2306 (figure 17 W). This figurine, weighing ca. 45 grams, measures 68mm from neck to tail, 34mm tall at hindquarters, 32mm tall at the shoulder, and the abdomen measures 19.5mm in diameter. The object is made of high-fired clay of fine silt with sand particles and a chaff temper, with minimal gray firing evidence. A new break reveals the light reddish-brown fabric color (Munsell 2.5YR 6/4). The exterior of the figurine is light greenish-gray at the rear and pink (Munsell 5YR 7/3) at the fore portion.

The figurine retains brownish-gray (Munsell 7.5YR 3/1) paint. One 10.55 millimeter wide paint stripe extends down the back from neck to tail. A stripe of paint extends from the edge of this dorsal stripe down each of the legs. These leg stripes are of a different width: 13mm wide on the proper-right foreleg, 18.5mm wide on the proper-left foreleg,15mm wide on the proper-right rear leg and 17.25mm wide on the proper-left rear leg.

The animal is posed in a static frontal posture with the tail extending straight back such that the spine and tail produce a continuous line. The chest bears a protruding ridge representing the fur between the forelegs. A piece of clay protrudes between the hind legs, possibly representing male genitals or a tuft of fur. The tail is 21 millimeter wide at the base; the tip has been broken. The head is broken off at the neck and the animal is missing

its proper-right foreleg and half of its proper-left rear leg. The proper-left foreleg is chipped close to what appears to be the tip but the proper-right rear leg is intact. Based on the width of the tail at its base, the short legs and the slender profile of the body, the figurine can be identified as a dog.

Figure 17 X illustrates a nearly complete pot (F4 L4000 KT4027) excavated from Late Chalcolithic level just above kiln L4009/L4027 in trench F4. Although the spout is missing, our suspicion is that this is a "drooping spout" pot.

Finally, figure 17 Y is a nearly complete pedestalled vessel excavated from early third millennium context in trench F2 (L2003 KT2017). This vessel has a vertical burnish. This vessel has clear parallels in the Birecik dam area (Sertok and Ergeç 1999; fig. 8 I).

KENAN TEPE'S "GLOBAL RECORD" DATABASE

Over the past three years members of UTARP have been developing a system of digitizing the data recovered from our excavation. The goal of this system is to capture all of the excavated data in a format that allows for data organization, presentation and analysis. The foundation of the information system (called "the Global Record") is a database that was created with Microsoft Access. The architecture created in Microsoft Access interconnects all of our visual and textual information, including scans, digital photographs and text documents. As is true at most excavations, we record units of data at increasingly smaller increments, from "macro data" about the entire site, to more detailed data about a specific trench, to "micro data" about, for example, a single pot sherd. Then we utilize the database to integrate and reconnect all of these levels of data recovery.

Kenan Tepe's Global Record database uses a "tree" of related tables in order to+ organize the individual pieces of information about each stage of excavation and analysis (table 8). The top of the tree is composed of the *area* and the *trench*; these are the most general parts of the database structure. Because everything that we excavate on the site comes from a trench within an area, all of the other pieces of information contained in the database relate back to some combination of these two categories. The next, more specific level of the tree contains *loci* (three dimensional volumes of excavated material). From within each locus there is the possibility that we will collect homogeneous sets of objects (such as pottery, bone, stone, etc.) into separate *KT find bags*. Objects within each KT find bag may be further subdivided for analysis by assigning a unique *item* number to each object. These item numbers are the database tree structure's bottom level, sometimes referred to as leaves.

By separating each of these stages of excavation and analysis into different tables within the database architecture, one can achieve an efficient relational storage structure. Using this structure different stages within the database tree relate to their constituent tables in a "parent-child relationship" and thus related data from different stages can thus be displayed for analysis. For example, if a researcher is viewing a particular animal bone (which is considered an item), he or she can also readily access the information specific to

the locus from which that bone was removed. This process also works in reverse. If for example, a researcher is viewing information about a specific locus, he or she can also access the items within that locus (items such as animal bones, ceramics or other cultural remains).

In addition to the database itself, other useful forms of digital data can be connected through the database structure. At Kenan Tepe we have scanned more than 1500 documents (mostly day plans and artifact drawings) and we have recorded over 5000 digital photographs. Most of these photographs were taken either of specific loci in the process excavation or of items found within loci. These images allow researchers to visually revisit excavation units and to view artifacts found within that unit in order to acquire the most complete understanding of the data. In our information system, when a researcher requests data about a specific locus, he or she is also given immediate access to all of the photographs and drawings of the locus itself and of the artifacts found within that locus. Another example of connecting diverse sets of digital information is our journals. Each day the excavator records the progression of his or her work in the trench. This record is then typed into a Microsoft Word document, which is directly associated with the trench information in the database.

Although the system just described is obviously convenient and fast because it gives a researcher access to all of our excavation data at his or her desktop, by far the most powerful aspect of this system is its ability to search and query. Simply put, by using the search and query functions Microsoft Access, a researcher can sort the data in nearly any conceivable way. A simple type of search might be to ask the database for all contexts within which a specific type of find was discovered. For example, one might request a list of all loci within which obsidian was found. If a researcher wants to find information across many tables, such as all pottery of a certain type that was found within a locus with particular attributes, Microsoft Access provides a powerful tool for producing complex queries. In addition, statistics can be extracted from the data. An example of a statistical query might be volume totals for soil flotation or the amount of botanical remains of a certain type found within total or specific volumes.

The disadvantage of such a system is that the creation of the database is time consuming. We estimate that each of our excavators spends about one to one and a half hours per day on data entry. However, we believe that this time also helps ensure that data is being recorded properly because each day all excavators are forced to look over their notebooks in the process of data entry. In addition, since data entry is completed in real time, this provides the added advantage that there is a continual feed-back loop between data analysis and the focus of daily excavation. Research questions and excavation goals and priorities can be constantly guided as the data is analyzed. For example, as the pottery was read during the 2001 field season, a typology database was being constructed. The real time interface between the analysis of the ceramics and the excavation of specific trenches allowed us to alert excavators to particularly interesting contexts, guide excavation priorities and chronologically link loci both within and between trenches.

By collecting our recorded information into digital form during the season, we also gained some other more practical advantages. The most tangible of these is that we can leave the heavy paper notebooks at the dig house in Turkey, while at the same time presenting various team members with a complete copy of the data to bring home for individualized analysis. As the importance of computers continues to grow in everyday life and in academic research, students will have a need for complete, flexible information sets from multiple sites. Our information system will be readily available to them at the end of each season. We hope that one day such systems will be common and that such systems will eventually be interconnected to allow complex cross site analysis.

The Kenan Tepe Archaeological Database Tree Structure

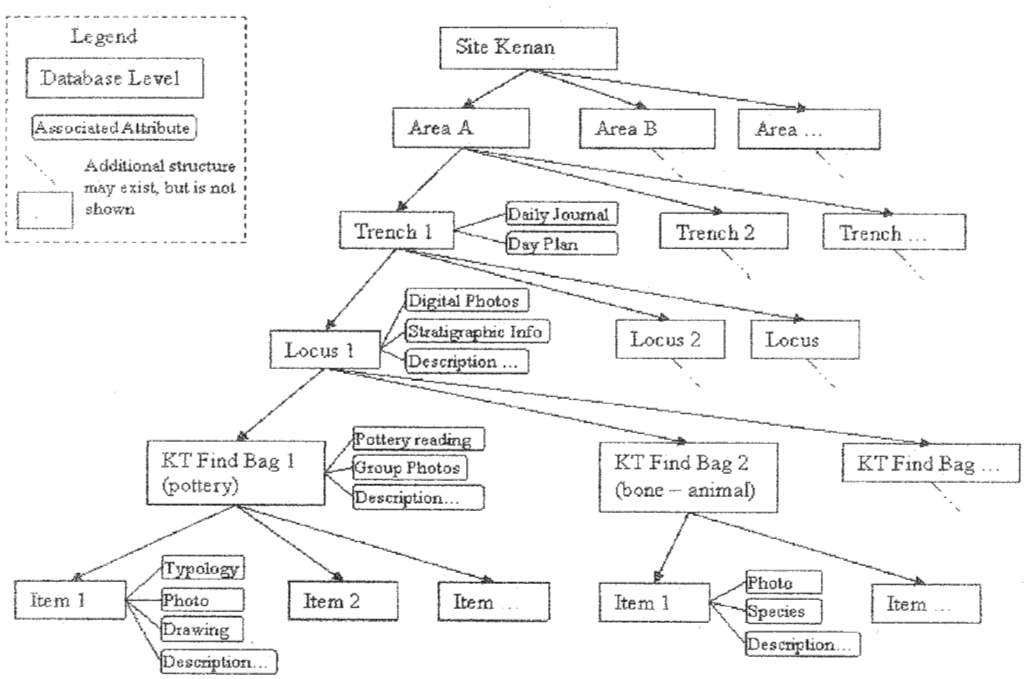

Table 8: Diagram of the structure of the Kenan Tepe Database.

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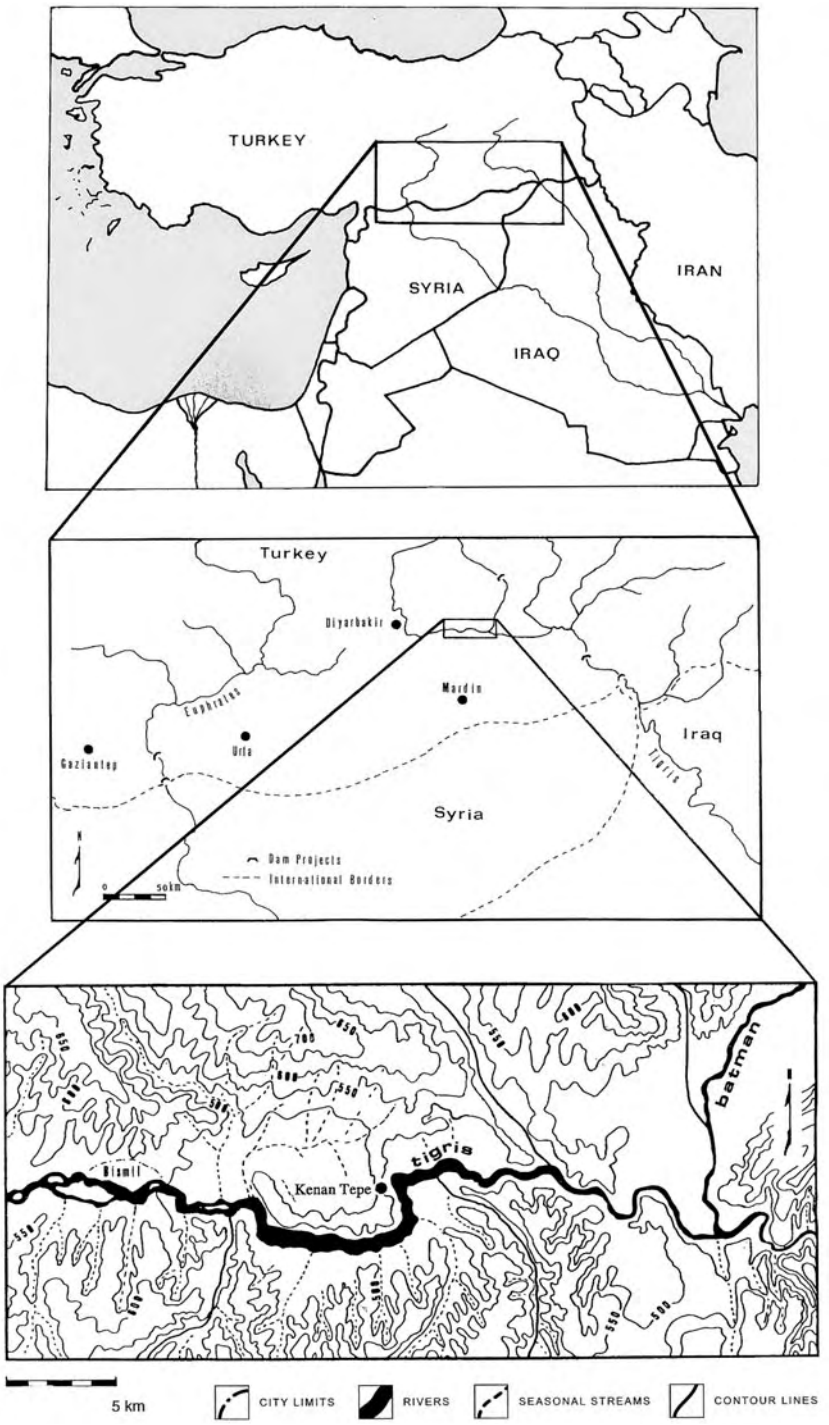


Figure 1. Map of the modern Middle East with enlargements showing southeastern Turkey, the Upper Tigris River valley and the location of Kenan Tepe.

Figure 2. View of Kenan Tepe facing north from the Tigris River.

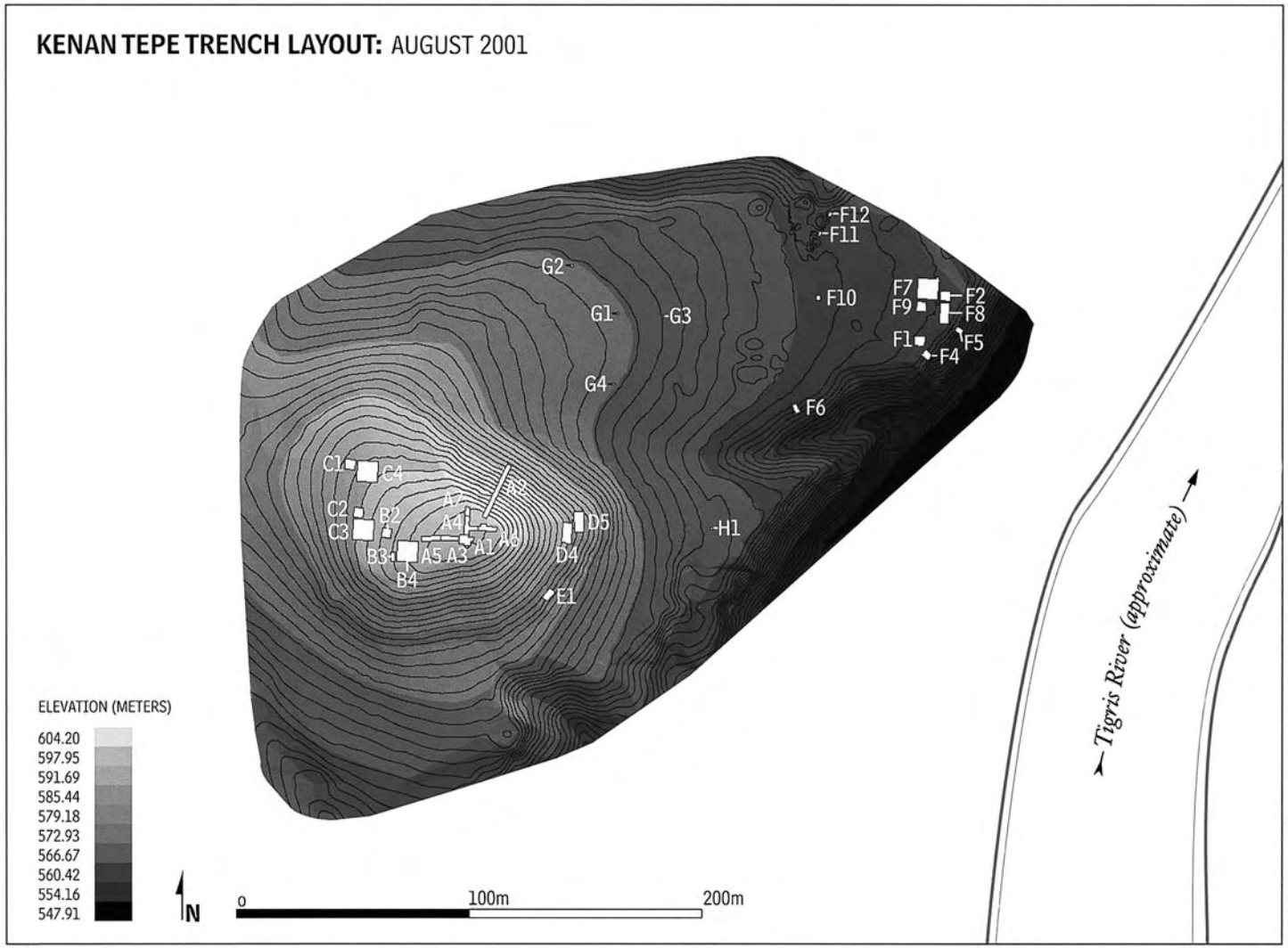


Figure 3. Topographic map of Kenan Tepe showing the location of various excavation areas.

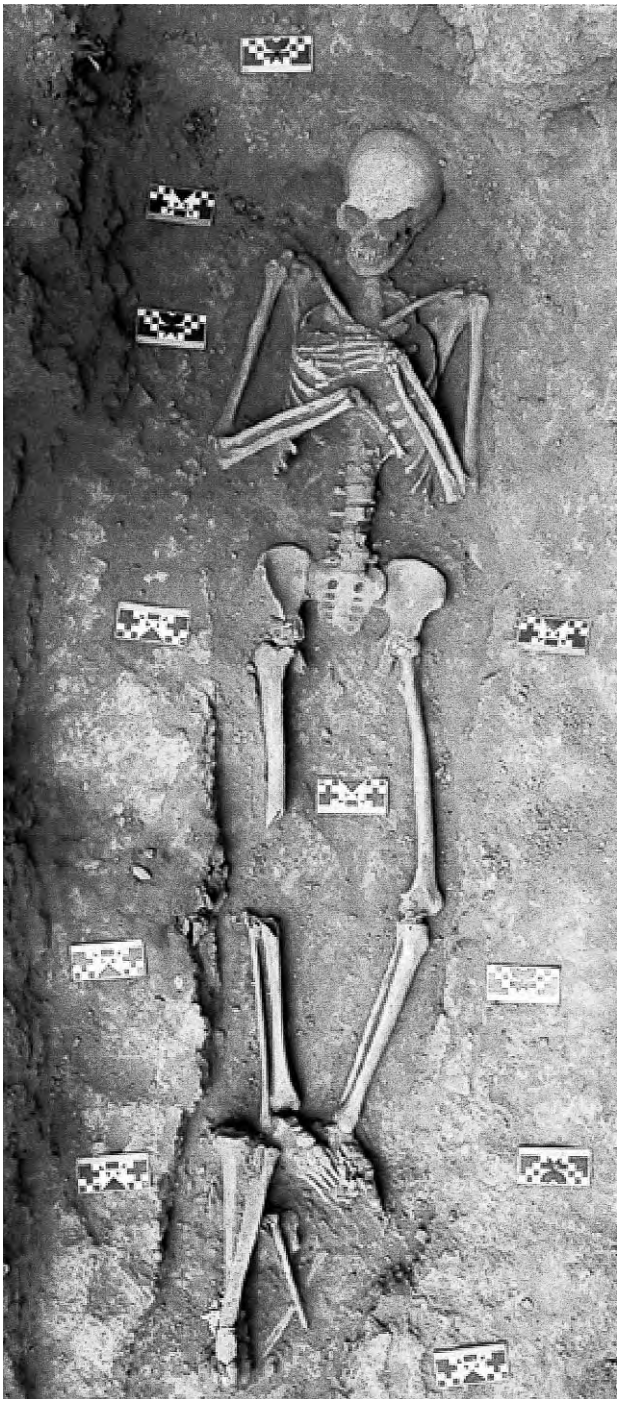


Figure 4. Burial from Area A.

Figure 5. Burial from Area A. Note that the western portion of this burial has been disturbed.

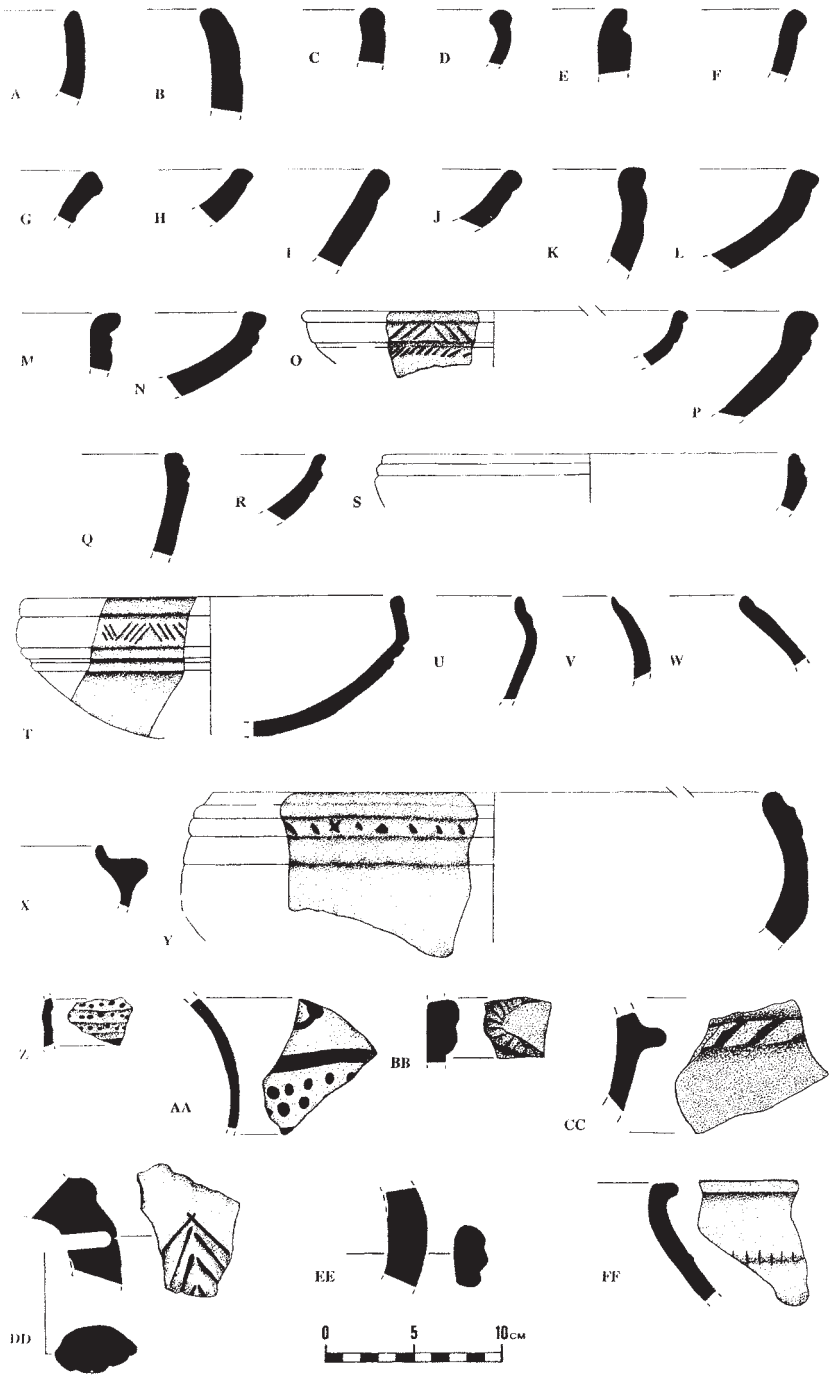


Figure 6. Early Iron Age ceramics from various contexts in Area B. This figure includes corrugated types (A-Y) and indigenous types such as the indigenous painted wares (Z and AA), "snake decoration" (BB) and the rope imitation band (CC).

Figure 6
Descriptions of Assorted Early Iron Age Ceramics

A. B1021 KT1110 #4: Surface exterior is light brownish gray (10YR 7/2), interior surface is light gray (10YR 7/2), core color is very pale brown (10YR8/4); fine chaff temper; 24 cm diameter.
B. B1021 KT1110 #13: Surface exterior is brown (7.5YR 6/4), interior surface is light brown (7.5 YR 4/3), core color is black (10YR 2/1); medium grit/chaff temper; 50 cm diameter.
C. B1021 KT1110 #12: Surface exterior is grayish brown (2.5Y 7/2), interior surface is light gray (2.5Y 5/2), core color is very pale brown (10YR 7/3); medium to coarse chaff temper; 42 cm diameter.
D. B1021 KT1110 #3: Surface exterior is pink (10YR 6/2), interior surface is light brownish gray (7.5YR 7/3), core color is dark gray (10YR 4/1); medium chaff temper; 17 cm diameter.
E. B1027 KT1189 #3: Surface exterior is reddish yellow wash (7.5YR 8/3), interior surface is pink (5YR 7/6), core color is light red (2.5YR 6/6); coarse chaff temper; 34 cm diameter.
F. B1027 KT1140 #10: Surface exterior is reddish yellow (5YR 6/4), interior surface is light reddish brown (5YR 7/6), core color is red (2.5YR 5/6); fine chaff temper; cm diameter is indeterminate.
G. B1021 KT1110 #2: Surface exterior is light brown (7.5YR 7/8), interior surface is reddish yellow (7.5YR 6/4), core color is brownish yellow (10YR 6/6); fone grit temper with very minor chaff inclusions; 54 cm diameter.
H. B1027 KT1189 #5: Surface exterior is a light brown wash (5YR 6/6), interior surface is reddish yellow (7.5YR 6/4), core color has an abrupt change from very pale brown (10YR 7/3) to very dark gray (5Y 3/1); coarse chaff temper; cm diameter indeterminate.
I. B1027 KT1140 #5: Surface exterior is pale red (2.5YR 7/4), interior surface is light reddish brown (10R 7/4), core color is light red (2.5YR 6/6); fine chaff temper; 27 cm diameter.
J. B4013 KT4179 #2: Surface exterior is strong brown (7.5Yr 6/4), interior surface is light brown (7.5YR 5/6), core color is yellowish brown (10YR 5/4); medium chaff temper; cm diameter is indeterminate.
K. B1021 KT1110 #8: Surface exterior is a burnished reddish yellow (5YR 7/6), interior surface has mild burnishing and is a reddish yellow (5YR 6/6), core color has a abrupt change from strong brown (7.5YR 5/6), to a very dark gray (7.5YR 3/1); medium grit/chaff temper, 49 cm diameter.
L. B1027 KT1140 #1: Surface exterior is pale red (10YR 7/3), interior surface is pale red (10R 6/3), core color is light red (10R 6/8); fine chaff temper; cm diameter is indeterminate.
M. B1027 KT 1140 #12: Surface exterior is light reddish brown (2.5YR 5/4) interior surface is reddish brown (2.5YR 6/4), core color is light red (10R 6/6); very fine chaff temper, cm diameter is indeterminate.
N. B1025 KT1130 #1: Surface exterior is pink (10YR 7/2), interior surface is light gray (7.5YR 7/4) core color is very dark gray (10YR 3/1); medium to coarse grit/chaff temper; cm diameter is indeterminate.
O. B1014 KT1057 #5: Surface exterior is pink (7.5YR 7/4), interior surface is pink (7.5YR 7/4), core color grades from pink (7.5YR 7/4) to brown (7.5YR 5/2); temper is indeterminate; 40 cm diameter.
P. B1012 KT1089 #1: Surface exterior is pink (5YR 7/4), interior surface is very pale brown (10YR 8/2), core color is reddish yellow (5YR 6/6); medium chaff temper, 20 cm diameter.
Q. B1014 KT1057 #3: Surface exterior is a burnished reddish yellow (7.5YR 7/6), interior surface

is a burnished reddish yellow (5YR 6/6), core color grades from reddish yellow (7.5YR 6/6) to grayish brown (10YR 5/2); coarse chaff temper; cm diameter is indeterminate.

R. B1027 KT1140 #2: Surface exterior is red (7.5R 6/6), interior surface is light red (7.5R 5/6), core color is light red (10R 5/6); medium chaff temper; 20 cm diameter.

S. B1014 KT1057 #4: Surface exterior is reddish yellow (5YR 6/6), interior surface is reddish yellow (5YR 6/6), core color is reddish yellow (5Yr 7/6); coarse chaff temper; 22 cm diameter.

T. B4013 KT4179 #1: Surface exterior is a burnished light brownish gray (7.5YR 5/4), interior surface is brown (10YR 6/2), core color has an abrupt change from strong brown (7.5YR 4/6) to brown (7.5YR 4/2); coarse grit temper, 20 cm diameter

U. B1012 KT1089 #2: Surface exterior is very pale brown (10YR8/4), interior surface is pink (7.5YR 7/4), core color is reddish yellow (5YR 6/6); medium chaff temper; cm diameter is indeterminate.

V. B1027 KT1140 #9: Surface exterior is pale red (10R 6/4), interior surface is pale red (10R 6/4), core color is light red (10R 6/6); fine chaff temper; 9 cm diameter.

W. B1027 KT1189 #2: Surface exterior is light reddish brown (5YR 6/6), interior surface is reddish yellow (5YR 6/3), core color is very dark gray (5Y 3/1); medium grit/chaff temper; cm diameter is indeterminate.

X. B1027 KT1140 #11: Surface exterior is light reddish brown (2.5 YR 6/3), interior surface is light reddish brown (2.5YR 6/4), core color is reddish brown (2.5YR 5/3); fine chaff temper; cm diameter is indeterminate.

Y. B1013 KT1078 #1: Surface exterior is a burnished light reddish brown (5YR 6/4), interior surface is brown (7.5YR 5/4), core color is reddish brown (2.5YR 5/4); medium to coarse grit temper; 50 cm diameter.

Z. B1014 KT1072 #1: Surface exterior is reddish yellow (5YR 6/6), interior surface is reddish yellow (5YR 6/6), core color is reddish yellow (5YR 6/6); no visible temper; body sherd.

AA. B4012 KT4163 #1: Surface exterior is pinkish gray (7.5YR 7/4), surface paint is reddish brown (5YR 4/4), interior surface is pink (7.5YR 7/2), core color is reddish yellow (7.5YR 6/6); fine to medium grit/chaff temper; body sherd.

BB. B1027 KT1140 #6: Surface exterior is light reddish brown (2.5YR 6/3), interior surface is light reddish brown (2.5YR 7/3), core color is weak red (10YR 4/3); fine chaff temper; body sherd.

CC. B1035 KT117 #5: Surface exterior is light brown (7.5YR 6/3), interior surface is light brown (7.5YR 6/4), core color is black (2.5Y 2.5/1); medium chaff temper; body sherd.

DD. B1027 KT1140 #3: Surface exterior is light reddish brown (2.5YR 6/3), interior surface is light reddish brown (2.5YR 7/3), core color is reddish brown (5YR 6/6); coarse chaff temper; handle.

EE. B1027 KT1140 #4: Surface exterior is light red (2.5YR 6/6), interior surface is light red (2.5YR 6/6), core color is reddish brown (2.5YR 5/2); medium chaff temper; handle.

FF. B1027 KT1140 #8: Surface colors and temper information is unavailable; cm diameter is indeterminate.

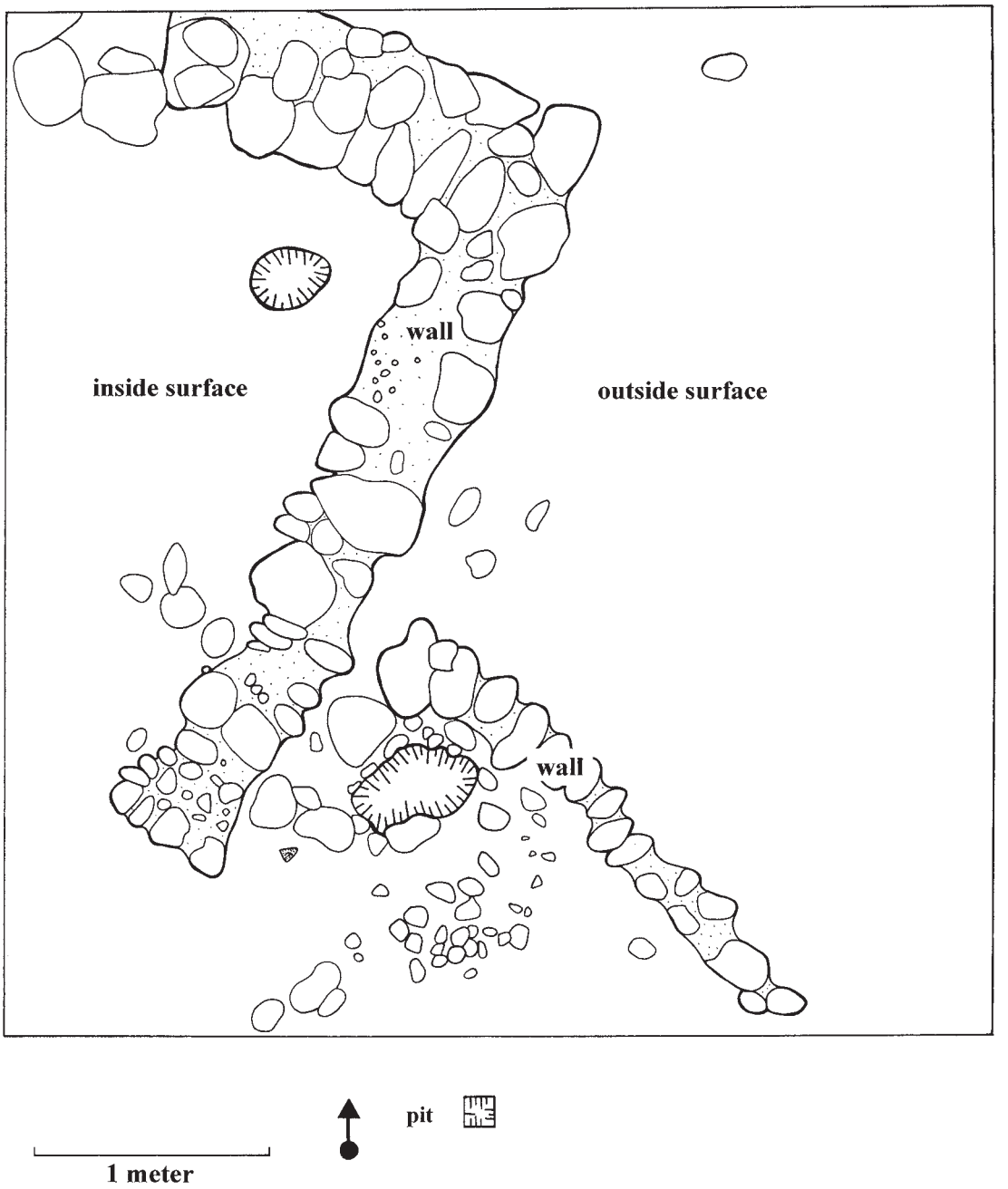


Figure 7. Plan of trench C2 showing architecture dating to the early second millennium B.C.

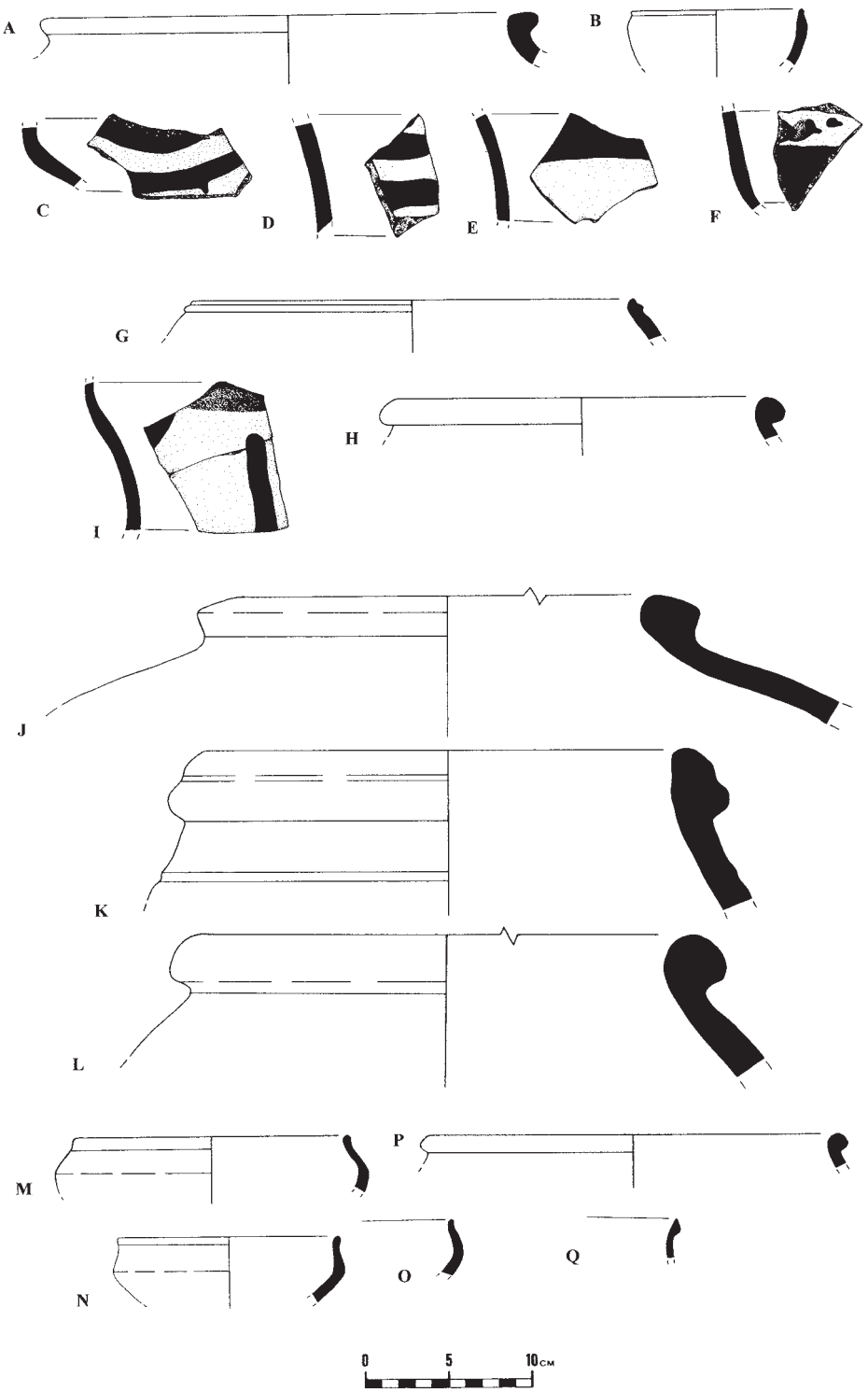


Figure 8. Ceramics belonging to the Red-Brown Wash Ware corpus from trench C2.

Figure 8
Description of Assorted Early Second Millennium Ceramics from Trench 2

A. C2 L2070 KT2476 #6: Light reddish brown exterior surface (7.5YR 7/3) grading to a pink core (7.5YR 7/4). Pink interior surface (5YR 6/4). Medium grit and chaff temper.
B. C2 L2070 KT2476 #1: Gray exterior surface (2.5Y 3/1) grading to a black core (5Y 2.5/1). Very dark gray interior surface (10YR 5/1). Wash on exterior surface. Medium grit and chaff temper.
C. C2 L2070 KT2476 #5: Light gray exterior surface (10YR 7/2). Light yellowish brown fabric (10YR 6/4) grading to a light gray core (2.5Y 7/2). Light gray interior surface (10YR 7/2). Brown paint (7.5YR 4/3) on exterior surface. Medium grit and chaff temper.
D. C2 L2070 KT2476 #2: Reddish yellow exterior surface (5YR 7/4). Yellowish red fabric (5YR 6/8) abruptly changing to a reddish yellow core (5YR 6/6). Pink interior surface (5YR 6/6). Reddish brown paint (2.5YR 4/4) on exterior surface. Fine grit temper.
E. C2 L2070 KT2476 #3: Light brownish gray exterior surface (7.5YR 7/2) grading to a very dark gray core (10YR 3/1). Pinkish gray interior surface (10YR 6/2). Yellowish red paint (5YR 5/6) on exterior surface. Fine grit temper.
F. C2 L2070 KT2476 #4: Dark grayish brown exterior surface (10YR 7/2) grading to a brownish yellow core (10YR 6/6). Light gray interior surface (10YR 4/2). Brown paint (7.5YR 4/2) on exterior surface. Very fine grit temper.
G. C2 L2073 KT2519 #3: Pink exterior surface (5YR 5/6). Reddish yellow fabric (7.5YR 7/6) grading to a light olive brown core (2.5Y 5/4). Yellowish red interior surface (7.5YR 7/4). Pink wash (5YR 5/6) on exterior surface. Medium chaff temper.
H. C2 L2073 KT2519 #4: Dark reddish gray exterior surface (5YR 4/2) grading to a brown core (7.5YR 5/4). Dark reddish gray interior surface (5YR 4/2). Coarse grit temper.
I. C2 L2073 KT2519 #1 and #2: Grayish brown exterior surface (2.5Y 7/2). Dark grayish brown fabric (2.5Y 4/2) grading to a dark gray core (2.5Y 4/1). Light gray interior surface (2.5Y 5/2). Reddish brown paint (2.5YR 4/4) on exterior surface. Burnished exterior surface. Fine grit temper.
J. C2 L2084 KT2568 #1: Reddish yellow exterior surface (5YR 6/6) grading to a very dark gray core (GLEY1 3/N). Dark gray interior surface (GLEY1 4/N). Red paint in the groove of the rim (2.5YR 5/6). Medium grit and chaff temper. Cmd. 36
K. C2 L2084 KT2589 #1: Pink exterior surface (7.5YR 7/4). Reddish yellow fabric (7.5YR 7/6) abruptly changing to a very dark gray core (10YR 3/1). Pink interior surface (7.5YR 7/4). Medium chaff temper.
L. C2 L2084 KT2589 #2: Very pale brown surface (10YR 7/4) grading to a dark gray core (2.5Y 4/1). Very pale brown interior surface (10YR 7/4). Medium chaff temper.
M. C2 L2084 KT 2568 #3: Reddish-yellow surface (5YR 6/6) that continues through to the core. Pale yellow wash on interior surface (5Y 8/3). Medium grain chaff temper.
N. C2 L2084 KT 2568 #2: Very pale brown exterior surface (10YR 7/4) grading to light yellowish brown core (2.5Y 6/4). Pale brown interior surface (10YR 6/3). Fine grit temper.
O. C2 L2084 KT 2568 #5: Reddish yellow exterior surface (5YR 6/6) grading to yellowish red core (5YR 5/6) with abrupt transition to very dark gray (GLEY1 3/N). Reddish yellow interior surface (5YR 6/6). Medium grain chaff temper. Cmd. unknown.C2 L2084 KT 2568 #4: Light gray surface (10YR 7/2) grading to light brown core (7.5YR 6/4). Reddish yellow interior surface (5YR 6/6) Reddish brown paint on the top edge of the rim (2.5YR 5/4). Fine chaff temper.
P. C2 L2084 KT2589 #4: Light gray surface (10YR 7/2) grading to brown core (7.5YR 6/4). Reddish yellow interior surface (5YR 6/6). Reddish brown paint on the top edge of the rim (2.5YR 5/4). Fine chaff temper.
Q. C2 L2084 KT2589 #3: Pink exterior surface (7.5YR 8/4) grading to a brown core (7.5YR 5/4). Pink interior surface (7.5YR 7/4). Medium grit temper.

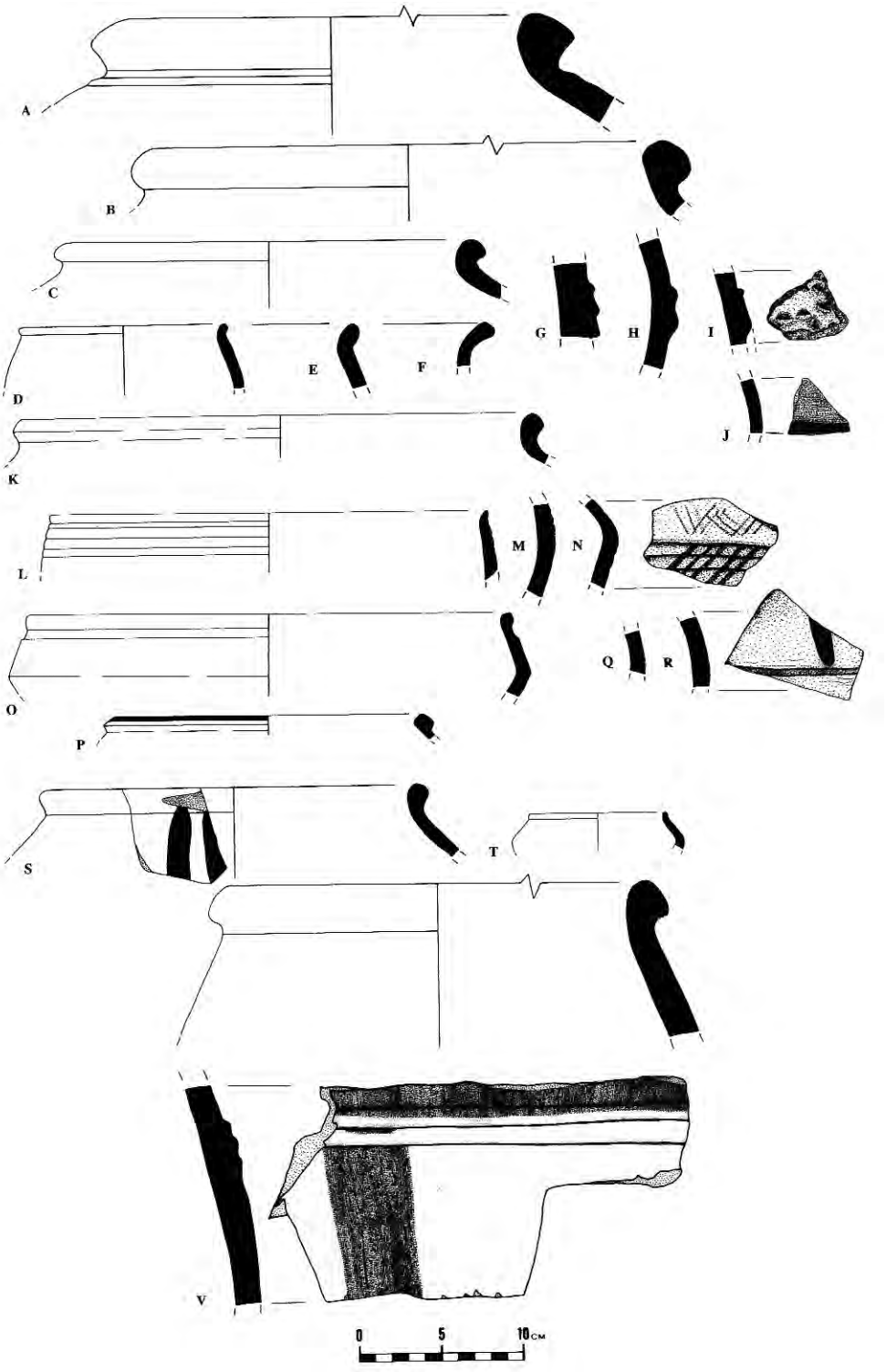


Figure 9. Ceramics belonging to the Red-Brown Wash Ware corpus from trench D4.

Figure 9
Descriptions for Assorted Early Second Millennium Ceramics from Trench D4

A. D4 L4032 KT4154 #7: Reddish brown exterior surface (7.5YR 8/4) grading to a very dark gray core (5Y 3/1). Pink interior surface (5YR 4/4). Medium chaff temper.
B, D4 L4032 KT4180 #7: Pink exterior surface (7.5YR 7/6). Very pale brown fabric (10YR 7/4) grading to a dark gray core (10YR 4/1). Reddish yellow interior surface (7.5YR 8/4). Medium grit and chaff temper.
C. D4 L4032 KT4180 #8: Yellowish red exterior surface (5YR 5/6). Strong brown fabric (7.5YR 4/6) abruptly changing to a black core (10YR 2/1). Yellowish red interior surface (5YR 5/6). Very coarse grit temper.
D. D4 L4032 KT4154 #1: Pink exterior surface (5YR 6/6). Reddish yellow fabric (5YR 6/6) abruptly changing to a gray core (GLEY1 5/N). Reddish yellow interior surface (7.5YR 6/4). Red paint (2.5YR 4/6) on exterior surface. Medium to coarse grit temper.
E. D4 L4032 KT4154 #2: Dark grayish brown exterior surface (7.5YR 7/4). Very pale brown fabric (10YR 8/4) grading to a very dark gray core (2.5Y 3/1). Pink interior surface (2.5Y 4/2). Fine grit temper.
F. D4 L4032 KT4154 #3: Strong brown exterior surface (7.5YR 5/3). Brown fabric (10YR 5/3) grading to a dark gray (2.5Y 4/1). Brown interior surface (7.5YR 4/6). Medium chaff temper.
G. D4 L4032 KT4154 #14: Reddish gray exterior surface (2.5YR 6/6). Light red fabric (2.5YR 6/1) abruptly changing to a dark gray core (GLEY1 4/N). Light red interior surface (2.5YR 5/1). Incised bands on exterior surface. Medium chaff temper.
H. D4 L4032 KT4154 #8: Pale brown exterior surface (7.5YR 7/4). Reddish yellow fabric (7.5YR 7/6) abruptly changing to a very dark gray core (2.5Y 3/1). Pink interior surface (10YR 6/3). Incised on exterior surface. Fine chaff temper.
I. D4 L4032 KT4154 #6: Pink exterior surface (7.5YR 6/4) grading to a pinkish yellow core (7.5YR 6/5). Pink interior surface (7.5YR 6/4). Impressed decorations on exterior surface. Medium grit temper.
J. D4 L4032 KT4154 #13: Light red exterior surface (7.5YR 6.5/4). Reddish yellow fabric (5YR 6/6) grading to a gray core (5YR 5/1). Light pinkish brown interior surface (2.5YR 6/6). Interior badly corroded. Red band of paint (2.5YR 5/6) on exterior of the upper edge of the sherd.
K. D4 L4032 KT4154 #9: Light brown exterior surface (7.5YR 7/3). Light yellowish brown fabric (10YR 6/4) abruptly changing to a very dark gray core (2.5Y 3/1). Pink interior surface (7.5YR 6/3). Wash on exterior surface. Burnished on exterior surface. Medium to coarse grit temper.
L. D4 L4032 KT4154 #10: Pink exterior surface (7.5YR 8/3). Very pale brown fabric (10YR 8/4) grading to a pale brown core (10YR 6/3). Pink interior surface (7.5YR 7/4). Incised bands on exterior surface. Fine grit temper.
M. D4 L4032 KT4154 #11: Dark brown exterior surface (5Y 8/2). Pale yellow fabric (5Y 7/3) grading to a light gray core (10YR 7/2). Pale yellow interior surface (7.5YR 3/2). Incised with very dark gray paint (5Y 3/1) on exterior surface. Fine grit temper.
N. D4 L4032 KT4180 #4: Very pale brown exterior surface (10YR 8/3). Reddish yellow core (7.5YR 6/6). Pale yellow interior surface (10YR 8/3). Dark yellowish brown paint (10YR 4/4) on exterior surface. Medium grit temper.

O. D4 L4032 KT4154 #5: Pale yellow exterior surface (10YR 7/3). Yellow fabric (10YR 7/6) abruptly changing to a very dark gray core (5Y 3/1). Very pale brown interior surface (2.5Y 7/3). Burnished interior and exterior surfaces. Fine chaff temper.

P. D4 L4032 KT4180 #3: Pink exterior surface (7.5YR 8/4) grading to a reddish yellow core (7.5YR 8/6). Pink interior surface (7.5YR 8/4). Reddish brown paint (2.5YR 4/4) on the rim. Very fine grit temper.

Q. D4 L4032 KT4154 #12: Brown exterior surface (10YR 7/2) grading to a pale yellow core (2.5Y 8/3). Light gray interior surface (7.5YR 5/2). Incised bands on exterior surface. Medium grit temper.

R. D4 L4032 KT4180 #2: Pale yellow exterior surface (2.5Y 8/2). Reddish yellow fabric (7.5YR 7/8) grading to a dark grayish brown core (10YR 4/2). Pale yellow interior surface (2.5Y 8/3). Incised on exterior surface. Brown paint (7.5YR 4/2) on exterior surface. Fine grit temper.

S. D4 L4030 KT4211 #1: Pink exterior surface (7.5YR 7/4) grading to a reddish yellow core (5YR 7/6). Pink interior surface (7.5YR 7/4). Burnished exterior with a reddish brown painted surface (2.5YR 5/4). Fine grit temper.

T. D4 L4030 KT4211 #2: Very pale brown exterior surface (10YR 7/4) grading to a black core (2.5Y 2.5/1). Light gray interior surface (10YR 7/2). Very pale brown wash on exterior surface (10YR 7/4). Medium grit and chaff temper.

U. D4 L4030 KT4211 #3: Pink exterior surface (7.5YR 7/4). Reddish yellow fabric (7.5YR 8/6) grading to a dark gray core (10YR 4/1). Reddish yellow interior surface (7.5YR 5/6). Pink wash on exterior surface (7.5YR 7/4). Coarse chaff temper.

V. D4 L4019 KT4087 #1: Very pale brown exterior surface (10YR 7/4) grading to a very dark gray core (10YR 3/1). Pink interior surface (5YR 7/4). Strong brown paint on exterior surface (7.5YR 5/6). Medium grit temper.

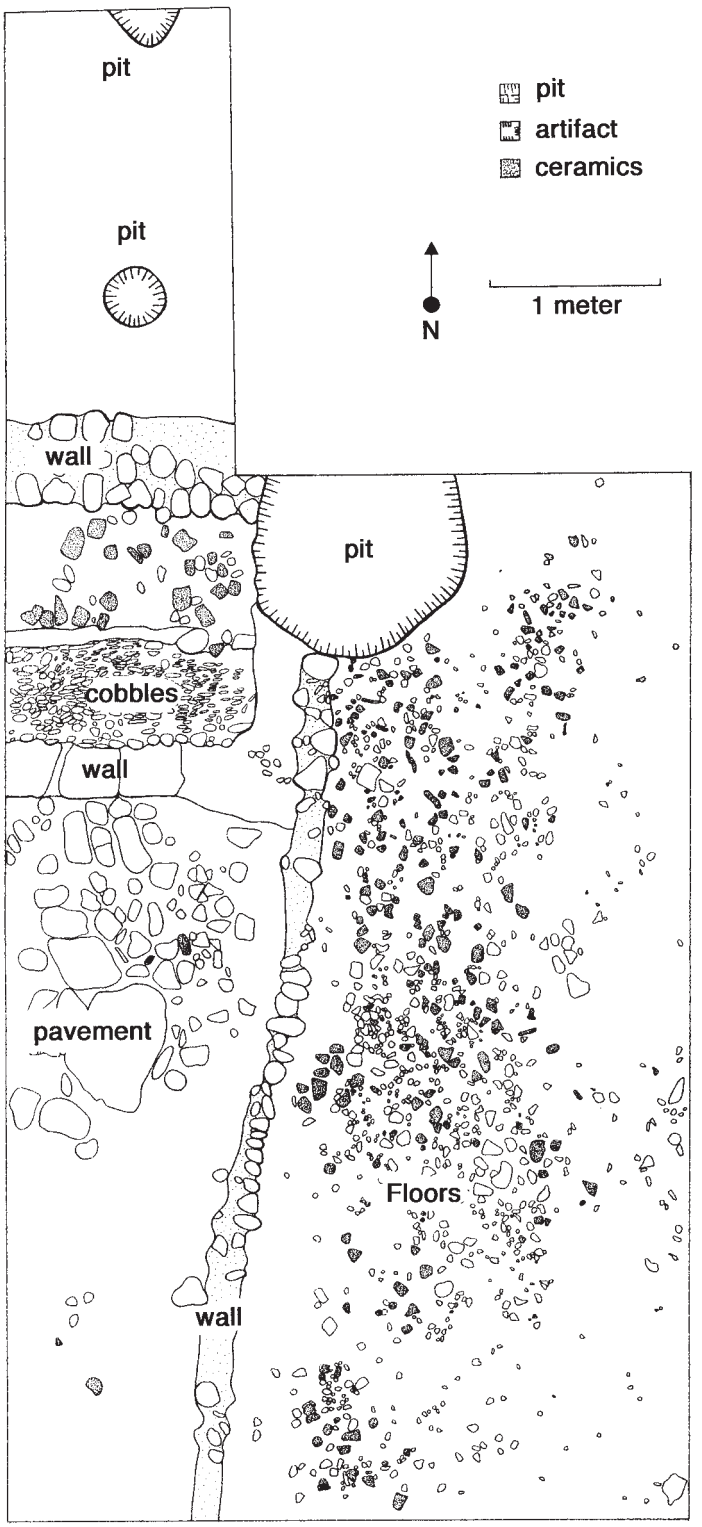


Figure 10. Plan of trench D4 showing architecture dating to the early second millennium B.C.

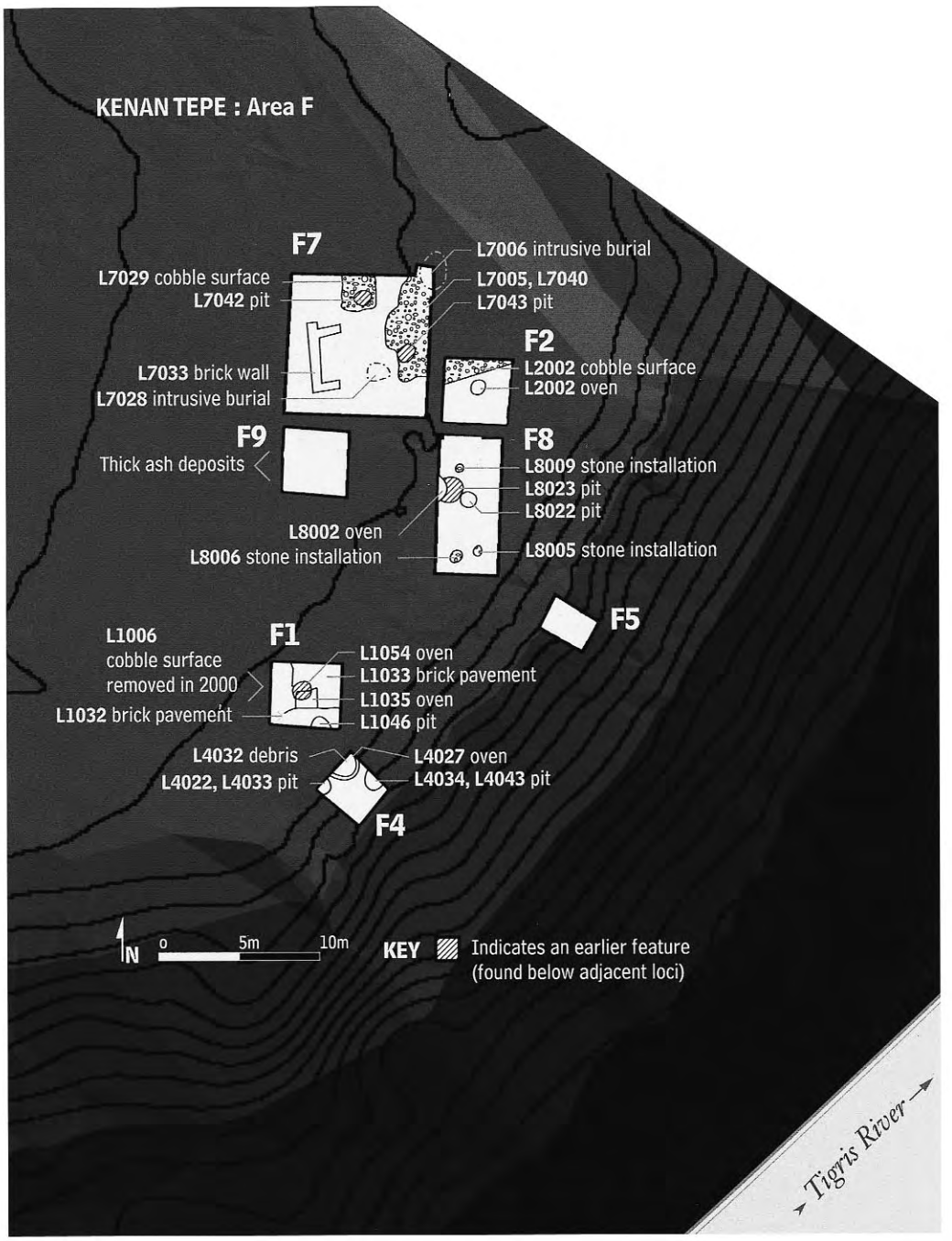


Figure 11. Plan of Area F trenches.

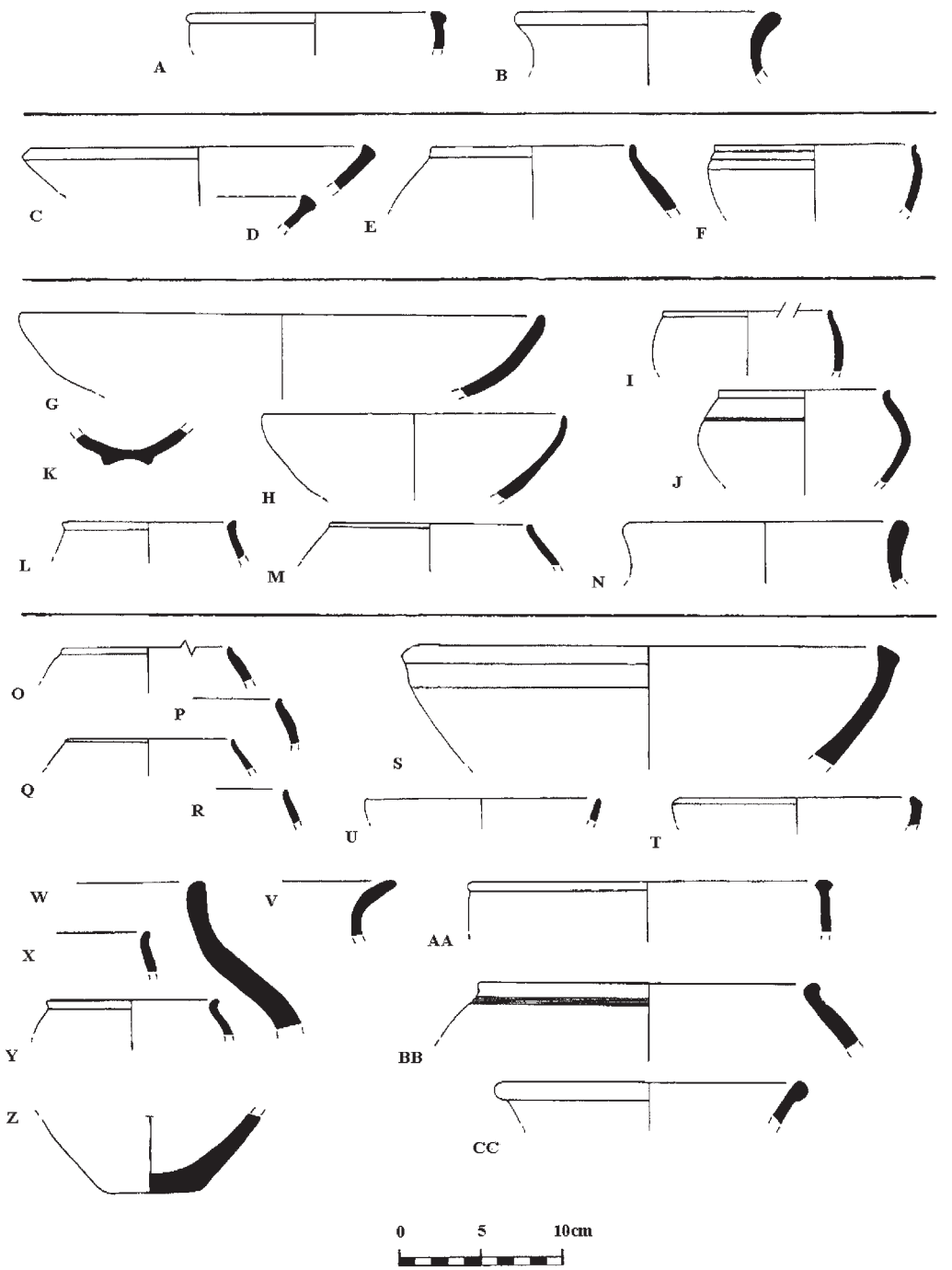


Figure 12. A sample of Late Chalcolithic ceramics from oven/kiln (L4009/L4027) in trench F4. These ceramics come from four sealed, superimposed loci within this feature and are bracketed by four carbon-14 dates (see table 2).

Figure 12
Descriptions for Late Chalcolithic Ceramics from Trench F4

A. F4 L4004 KT4047 #1: Reddish yellow exterior surface (5YR 6/6) grading to a reddish yellow core (5YR 7/6). Reddish yellow interior surface (5YR 6/6). Burnished exterior. Fine grit temper.B.

B. F4 L4004 KT4047 #2: Light brown exterior surface (7.5 YR 6/4). Pink fabric (7.5YR 7/4) abruptly changing to a black core (10 YR 2/1). Pink interior surface (7.5YR 7/4). Medium chaff temper.

C. F4 L4005 KT4062 #2: Pink exterior surface (7.5 YR 6/3) abruptly changing to a pinkish gray core (7.5YR 6/2). Light brown interior surface (7.5YR 7/4). Pink wash on exterior surface (7.5YR 6/3). Fine chaff temper.

D. F4 L4005 KT4062 #6: Reddish yellow exterior surface (5YR 5/6) grading to a reddish yellow core (5YR 6/6). Reddish yellow interior surface (5YR 6/6). Reddish yellow wash on exterior surface (5YR 5/6). Pink paint on exterior surface (5YR 7/4). Very coarse chaff temper. Cmd. unknown.

E. F4 L4005 KT4062 #4: Reddish yellow exterior surface (5YR 7/3) grading to a reddish yellow core (5YR 6/6). Pink interior surface (5YR 6/6). Fine chaff temper.

F. F4 L4005 KT4062 #5: Reddish yellow exterior surface (5YR 6/6) grading to a yellowish red core (5YR 6/6). Reddish yellow interior surface (5YR 7/6). Reddish yellow wash on exterior surface (5YR 6/6). Very coarse chaff temper.

G. F4 L4007 KT4086 #2: Reddish yellow exterior (10 YR 7/4). Red fabric (2.5YR 5/6) abruptly changing to a reddish yellow core (7.5YR 7/6). Very pale brown interior surface (5YR 6/6). Reddish yellow wash on exterior surface (10YR 7/4). Medium grit temper.

H. F4 L4007 KT4086 #1: Reddish yellow exterior surface (5 YR 6/6) grading to a reddish yellow core (5 YR 6/8). Reddish yellow interior surface (7.5 YR 7/6). Non-visible temper.

I. F4 L4007 KT4065 #2: Reddish yellow exterior surface (7.5 YR 6/6) grading to a reddish yellow core (7.5 YR 7/6). Reddish yellow interior surface (5 YR 6/6). Fine grit temper. Cmd. unknown.

J. F4 L4007 KT4077 #1: Reddish yellow exterior surface (5 YR 6/4) grading to a light brown core (7.5 YR 6/4). Light reddish brown interior surface (5 YR 6/6). Fine grit temper.

K. F4 L4007 KT4086 #5: Light brown exterior surface (10YR 7/4) grading to a yellowish brown core (10YR 5/4). Very pale brown interior surface (7.5YR 6/4). Medium grit temper.

L. F4 L4007 KT4065 #1: Light brown exterior surface (7.5 YR 6/4) grading to a light reddish brown core (7.5 YR 6/4). Light brown interior surface (7.5 YR 6/3). Light brown wash on exterior surface (7.5 YR 6/4). Fine grit temper.

M. F4 L4007 KT4086 #3: Pale brown exterior surface (10YR 7/3) grading to a dark gray core (10YR 4/1). Very pale brown interior surface (10YR 6/3). Medium grit temper.

N. F4 L4007 KT4086 #4: Light brown exterior surface (10YR 5/3). Brown fabric (10YR 5/3) abruptly changing to a black core (10YR 2/1). Brown interior surface (7.5YR 6/4). Light brown wash on exterior surface (10YR 5/3). Burnished on interior and exterior surfaces. Coarse chaff temper.

O. F4 L4023 KT4111 #2: Very pale brown exterior (10YR 6/4). Yellow fabric (10YR 8/6) grading to a dark gray core (10YR 6/1). Light yellowish brown interior surface (10YR 7/3). Medium grit temper.

P. F4 L4023 KT4202 #2: Reddish yellow exterior surface (5YR 6/6). Reddish yellow core (5YR

6/6). Reddish yellow interior surface (5YR 6/6). Fine chaff temper. Cmd. unknown.

Q. F4 L4023 KT4217 #2: Reddish yellow exterior surface (7.5YR 7/6). Reddish yellow core (7.5YR 7/6). Reddish yellow interior surface (7.5YR 7/6). Burnished exterior. Fine grit temper.

R. F4 L4023 KT4202 #4: Pink exterior surface (7.5YR 7/3). Pink fabric (7.5YR 7/4) abruptly changing to a pink core (7.5YR 7/3). Pink interior surface (7.5YR 7/4). Fine grit temper. Cmd unknown.

S. F4 L4023 KT4202 #1: Pink exterior surface (10YR 6/6). Reddish yellow fabric (7.5YR 6/6) grading to a strong brown core (7.5YR 5/6). Very pale brown interior surface (7.5YR 7/4). Fine chaff temper.

T. F4 L4023 KT4111 #4: Pink exterior surface (7.5YR 6/4) grading to a reddish yellow core (7.5YR 6/6). Light brown interior surface (7.5YR 7/4). Fine grit and chaff temper.

U. F4 L4023 KT4217 #1: Reddish yellow exterior surface (7.5YR 7/4) grading to a reddish yellow core (5YR 7/6). Pink interior surface (5YR 7/6). Fine grit temper.

V. F4 L4023 KT4111 #1: Reddish yellow exterior surface (7.5YR 6/4) grading to a reddish yellow core (7.5YR 6/6). Light brown interior (7.5YR 6/6). Burnished exterior. Very coarse grit temper.

W. F4 L4023 KT4251 #1: Pink exterior surface (7.5YR 6/6). Light brown fabric (7.5YR 6/4) abruptly changing to a black core (7.5YR 2.5/1). Reddish yellow interior surface (7.5YR 7/3). Burnished exterior. Fine grit and chaff temper. Cmd. unknown.

X. F4 L4023 KT4202 #3: Reddish yellow exterior surface (5YR 5/6) grading to a yellowish red core (5YR 5/6). Yellowish red interior surface (5YR 6/6). Burnished exterior. Fine grit temper. Cmd. unknown.

Y. F4 L4023 KT4251 #2: Reddish yellow exterior surface (7.5YR 6/6) grading to a strong brown core (7.5YR 5/6). Reddish yellow interior surface. Fine grit and chaff temper.

Z. F4 L4023 KT4111 #6: Pink exterior surface (7.5YR 7/4). Pink core (7.5YR 7/4). Pink interior surface (7.5YR 7/4). Coarse chaff temper.

AA. F4 L4023 KT4111 #5: Reddish yellow exterior (7.5YR 7/4) grading to a reddish yellow core (5YR 6/6). Pink interior surface. Fine grit temper.

BB. F4 L4023 KT4111 #3: Yellowish red exterior surface (7.5YR 5/4). Brown fabric (7.5YR 3/3) grading to a yellowish red core (5YR 5/8). Brown interior surface (5YR 5/6). Yellowish red wash on exterior surface (7.5YR 5/4). Double incised bands. Coarse grit temper.

CC. F4 L4023 KT4251 #3: Light brown exterior surface (5YR 6/6) grading to a yellowish red core (5YR 5/6). Reddish yellow interior surface (7.5YR 6/4). Light brown wash on exterior surface (5YR 6/6). Fine grit and chaff temper.

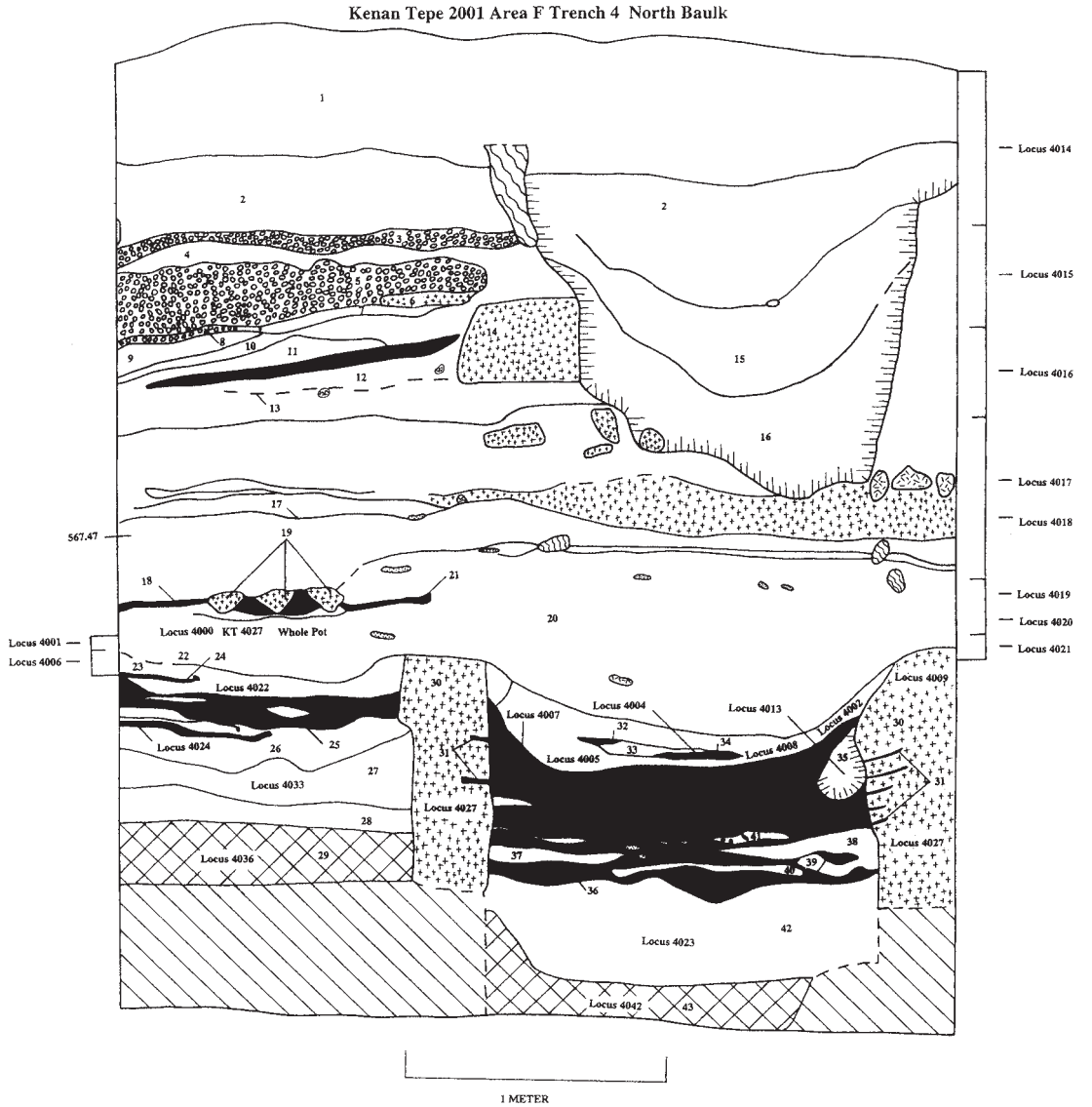
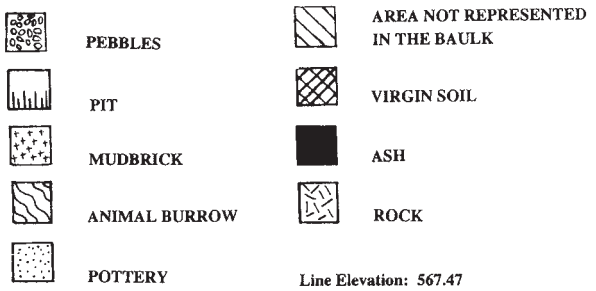


Figure 13. Trench F4 North Section. Note that the carbon dates come from L4004 and L4023.



*** WET Munsells**
(Otherwise, Munsells are natural Munsells)

1. Topsoil – Loosely packed angular grained soil. Light brownish gray.*
2. Subtopsoil – Brown with white flecks, darker inside the pit in the North-East area.*
3. Rock Surface – Mostly rocks along a straight line. Light brownish-red soil.*
4. Space between Surfaces – Light reddish-brown to darker reddish brown in hue.*
5. Larger Rock Surfaces – Larger cobbles on top, smaller cobbles on the bottom.
6. Mudbrick. Light gray.*
7. Medium gray soil between cobble layer and surface.*
8. Floor surfaces that become black ash.*
9. Light brown area.*
10. Strong Brown. 7.5YR 5/6.*
11. Strong Brown. 7.5YR 4/6.*
12. Light Gray fill between surfaces and ash layer.*
13. Very thin surface of pebbles in a line with small white plaster bits.
14. Mudbrick. Brown 7.5YR 5/4.*
15. Strong Brown. 7.5YR 4/6.*
16. Brown. 7.5YR 5/4.*
17. Possible surface.
18. Possible surface.
19. Mudbricks. Strong Brown 7.5YR 4/6.*
20. Light Gray – very hard layer that extends from the West to the East baulk. Very tightly packed. Comes off in jagged strips. Not easily troweled. Possibly brick.*
21. Lightly colored ash areas between bricks and leading to the bricks.
22. Clay. Very hard packed. Gray 5YR 6/1.
23. Clay. Hard packed. Light Brown 7.5YR 6/3.
24. Ash lens. Dark Gray 5YR 4/1.
25. Ash. Dark Gray 2.5Y 4/1.
26. Less dense ash deposition with medium packed clay matrix. 7.5YR 6/1 Gray.
27. Clay. Chunky, cracking layer. Pinkish Gray 5YR 6/2.
28. Clay. Pinkish Gray 5YR 7/2.
29. Virgin Soil. Pinkish Gray 7.5YR 7/2.
30. Mudbrick. Light Brown 7.5YR 6/4.
31. Mortar Line. PaleBrown 10YR 6/3.
32. Ash. Fine, soft. Dark Grayish Brown 10YR 4/2.
33. Ash with charcoal bits. Light Gray 10YR 7/1.
34. Ash/ Fine, soft. Very Dark Gray 7.5YR 3/1.
35. Ash. Pale Brown 10YR 6/3.
36. Ash with charcoal bits. Gray 10YR 5/1.
37. Clay-loam. Hard; of medium sort. Light Yellowish Brown 10YR 6/4
38. Clay-loam. Hard; of medium sort. Pale Brown 10YR 6/3.
39. Hard crumbly soil of very coarse texture. Light Yellowish Brown 10YR 6/4.
40. Clay. Crumbly; of medium sort. Pale Brown 10YR 6/3.
41. Ash with charcoal pieces. Gray 7.5YR 6/1.
42. Clay. Very hard. Light brown 7.5YR 6/3.
43. Virgin soil. Brown 7.5YR 5/3.

Description for Figure 13.

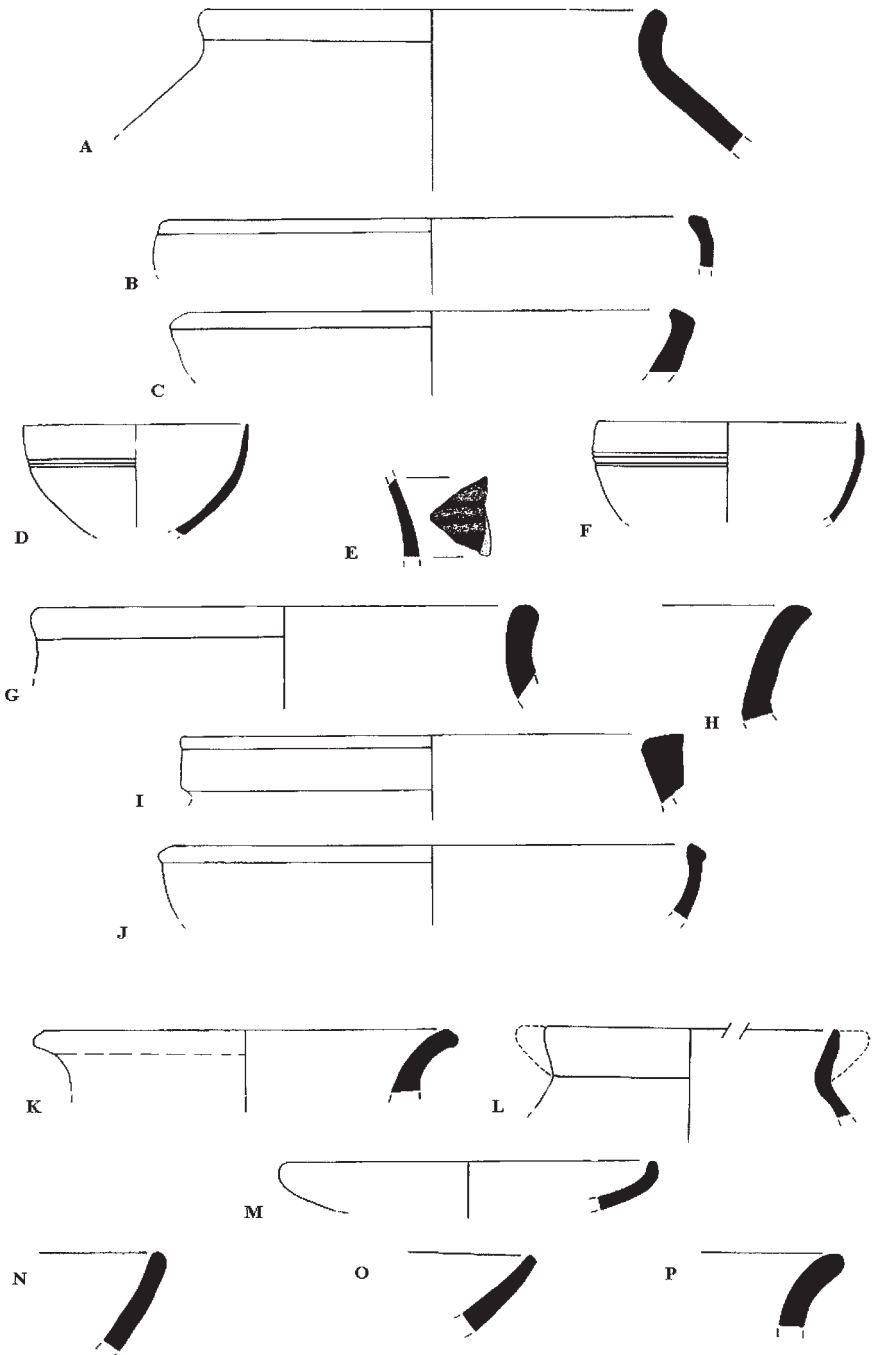


Figure 14. A sample of ceramics recovered from soundings in areas G and H.

Figure 14
Descriptions for Assorted Ceramics from Soundings G and H

A. G4 L4007 KT4013 #9: Light brown exterior surface (7.5YR 6/3) grading to a brown core (7.5YR 5/4). Light brown interior surface (7.5YR 6/4). Coarse grit and chaff temper.
B. G4 L4007 KT4013 #6: Light brown exterior surface (7.5YR 6/4) grading to a reddish yellow core (5YR 6/6). Reddish yellow interior surface (7.5YR 6/6). Fine grit temper.
C. G2 L2002 KT2005 #2: Light brown exterior surface (7.5YR 6/4). Strong brown fabric (7.5YR 5/6) abruptly changing to a dark brown core (7.5YR 3/2). Light brown interior surface (7.5YR 6/4). Very fine grit temper.
D. G4 L4007 KT4013 #7: Very pale brown exterior surface (10YR 8/4) grading to a yellow core (10YR 8/6). Very pale brown interior surface (10YR 8/4). Incised band on exterior surface. Fine grit temper.
E. G4 L4007 KT4013 #3: Very pale brown exterior surface (10YR 7/4) grading to a yellowish brown core (10YR 5/4). Light brown interior surface (7.5YR 6/3). Medium grit temper. Cmd. unknown.
F. G4 L4007 KT4013 #4: Pink exterior surface (7.5YR 7/3) grading to a light brown core (7.5YR 6/4). Light brown interior surface (7.5YR 6/4). Incised band on exterior surface. Very fine grit temper.
G. G4 L4007 KT4013 #8: Very pale brown exterior surface (10YR 8/2). Reddish yellow fabric (5YR 6/6) abruptly changing to a very dark gray core (5Y 3/1). Reddish yellow interior surface (5YR 7/8). Very coarse chaff temper.
H. G4 L4007 KT4013 #2: Light yellowish brown exterior surface (10YR 6/4). Light yellowish brown fabric (10YR 6/4) abruptly changing to a dark bluish gray core (GLEY 23/5b). Light yellowish brown interior surface (10YR 6/4). Coarse chaff temper. Cmd. unknown.
I G2 L2002 KT2005 #1: Light brown exterior surface (7.5YR 6/4) grading to a dark grayish brown core (10YR 4/2). Light brown interior surface (7.5YR 6/4). Light brown wash on exterior surface ((7.5YR 6/4). Fine grit and chaff temper.
J. G4 L4007 KT4013 #5: Reddish yellow exterior surface (7.5YR 6/6). Reddish yellow fabric (7.5YR 6/6) abruptly changing to a dark brown core (7.5YR 3/2). Light brown interior surface. Fine to medium chaff temper
K. H1 L1002 KT1006 #3: Light gray exterior surface (10YR 7/2). Yellow core (10YR 8/6) grading to a dark olive gray core (5Y 3/2). Very pale brown interior surface (10YR 7/3). Burnished exterior and interior surfaces. Medium to coarse chaff temper.
L. H1 L1002 KT1006 #5: Pink exterior surface (7.5YR 7/4) grading to a light yellowish brown core (10YR 6/4). Pink interior surface 7.5YR 7/4). Coarse grit and chaff temper. Cmd. unknown.
M. H1 L1002 KT1006 #4: Yellowish red exterior surface (5YR 5/6) grading to a strong brown core (7.5YR 5/6). Reddish yellow interior surface (5YR 6/6). Burnished interior surface. Fine grit temper.
N. H1 L1002 KT1006 #2: Light reddish brown exterior surface (5YR 6/4) grading to a dark yellowish brown core (10YR 4/6). Reddish brown interior surface (5YR 5/4). Medium chaff temper. Cmd. unknown.
O. H1 L1002 KT1006 #1: Light brown exterior surface (7.5YR 6/4) grading to a yellowish brown core (10YR 5/4). Pink interior surface (7.5YR 7/4). Burnished interior and exterior surface. Coarse chaff temper. Cmd. unknown.
P. H1 L1002 KT1006 #6: Light reddish exterior surface (5YR 6/4) grading to a reddish yellow core (5YR 6/6). Reddish yellow interior surface (5YR 7/6). Burnished exterior surface. Coarse grit temper. Cmd. unknown.

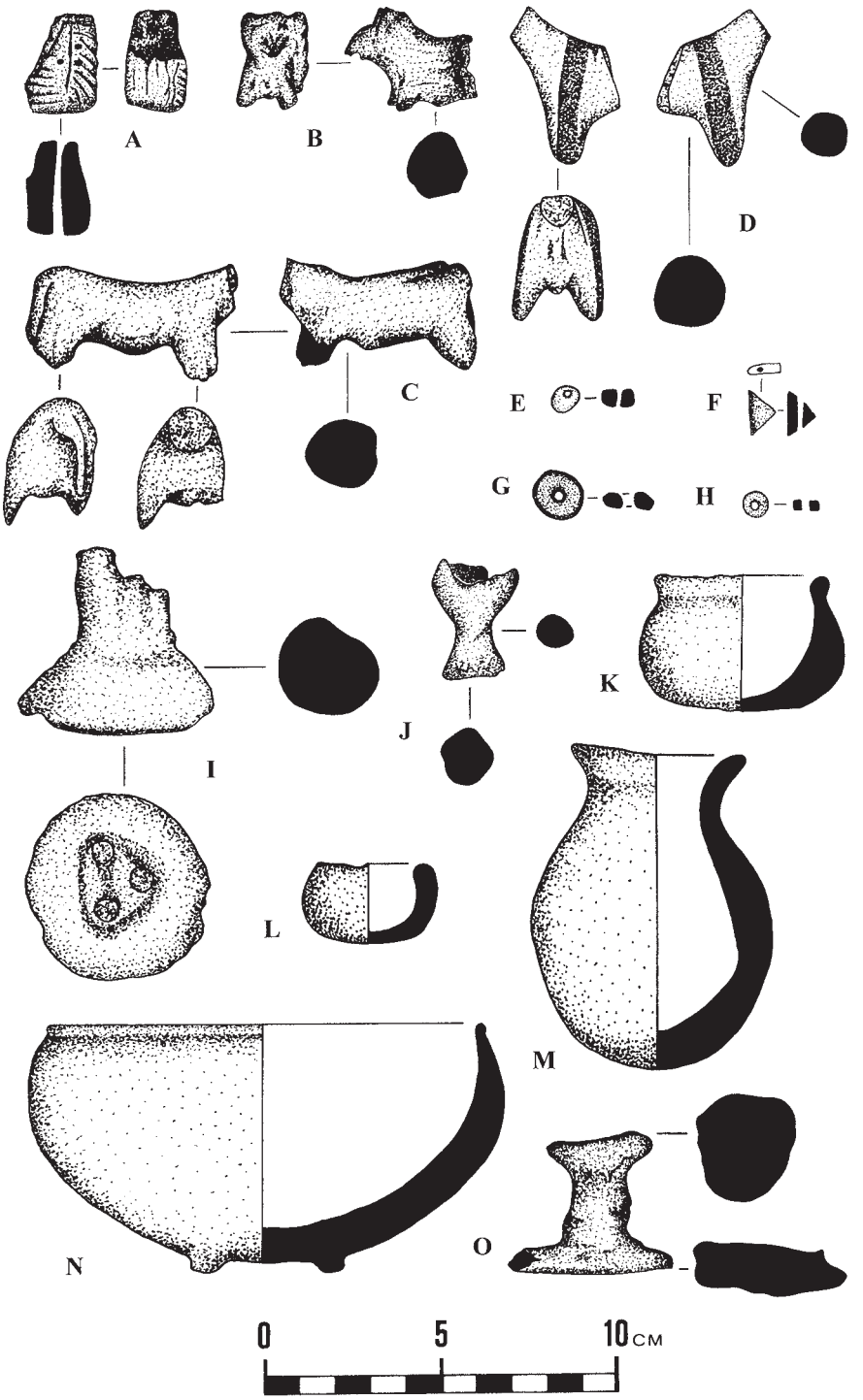


Figure 15. Small finds from various contexts at Kenan Tepe.

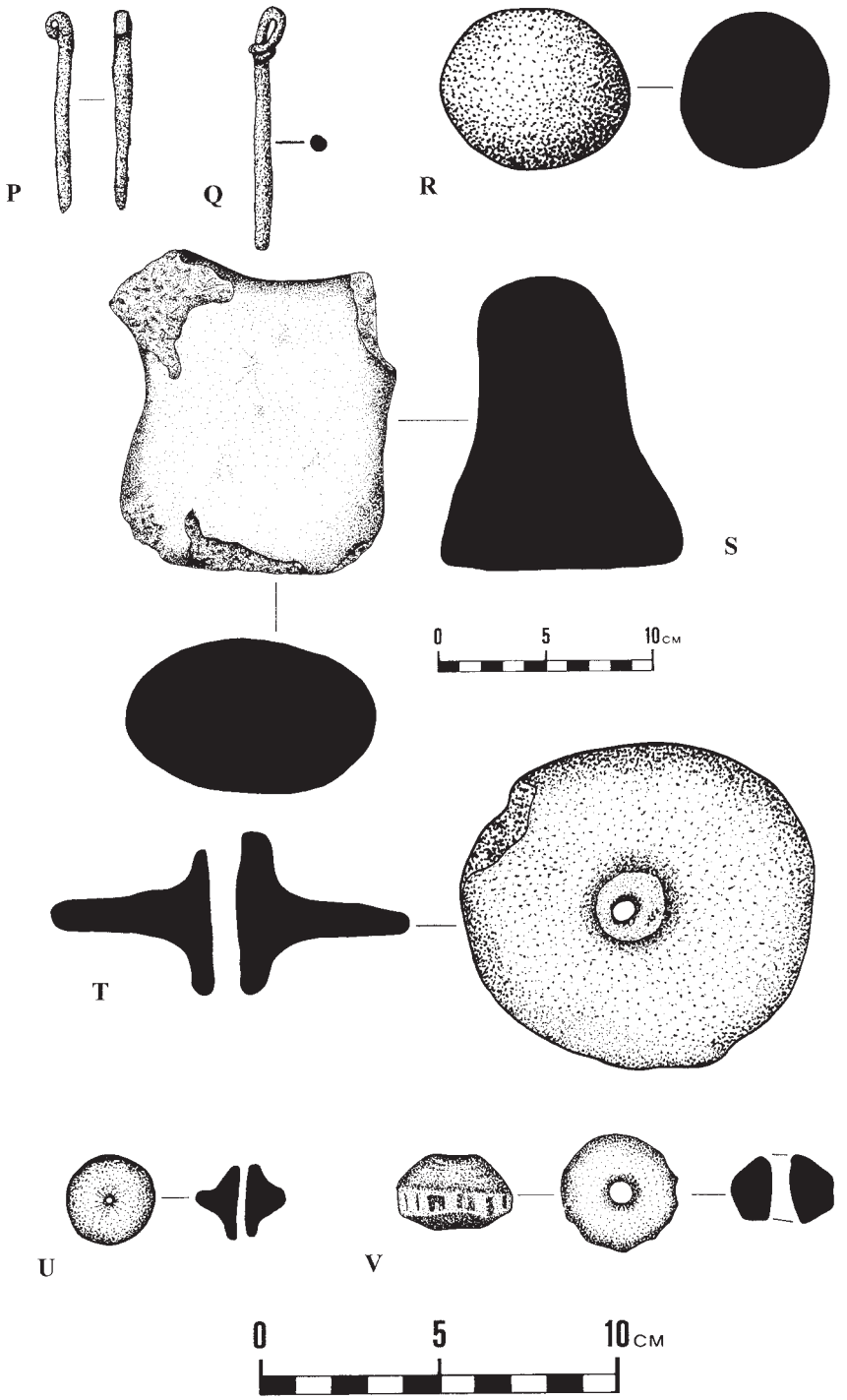


Figure 16. Small finds from various contexts at Kenan Tepe.

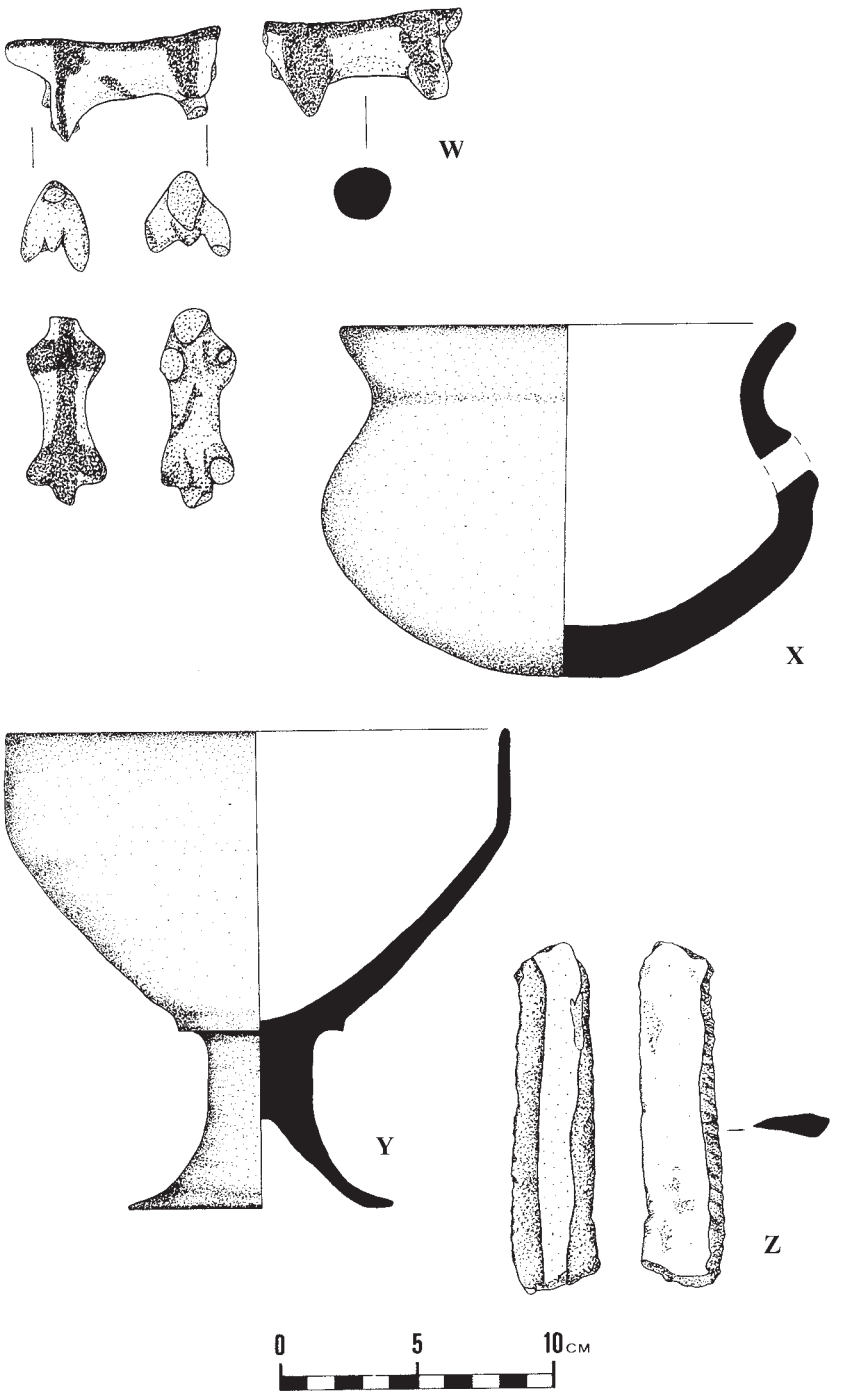


Figure 17. Small finds from various contexts at Kenan Tepe.