

# INVESTIGATIONS AT TELL EL-ḤANDAQUQ, JORDAN (1987-88)

by  
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## Introduction

Between November 1987 and March 1988, fieldwork was conducted at Tell el-Ḥandaquq, on Wadi eṣ-Ṣarar in the east-central Jordan River Valley (Palestine Grid Coordinates 206.5, 189.8; Fig. 1). These investigations revealed a 25-30 hectare early fourth to mid-third millennium B.C. settlement with fortifications, water management features, and associated tomb fields nearby. The author directed the fieldwork with the assistance of Gaetano Palumbo from the University of Rome, and Wajih Karasneh from the Department of Antiquities. The topographical-architectural survey team included Michael Rawlings and Marcus Woodburn from the British Institute at Amman for Archaeology and History.

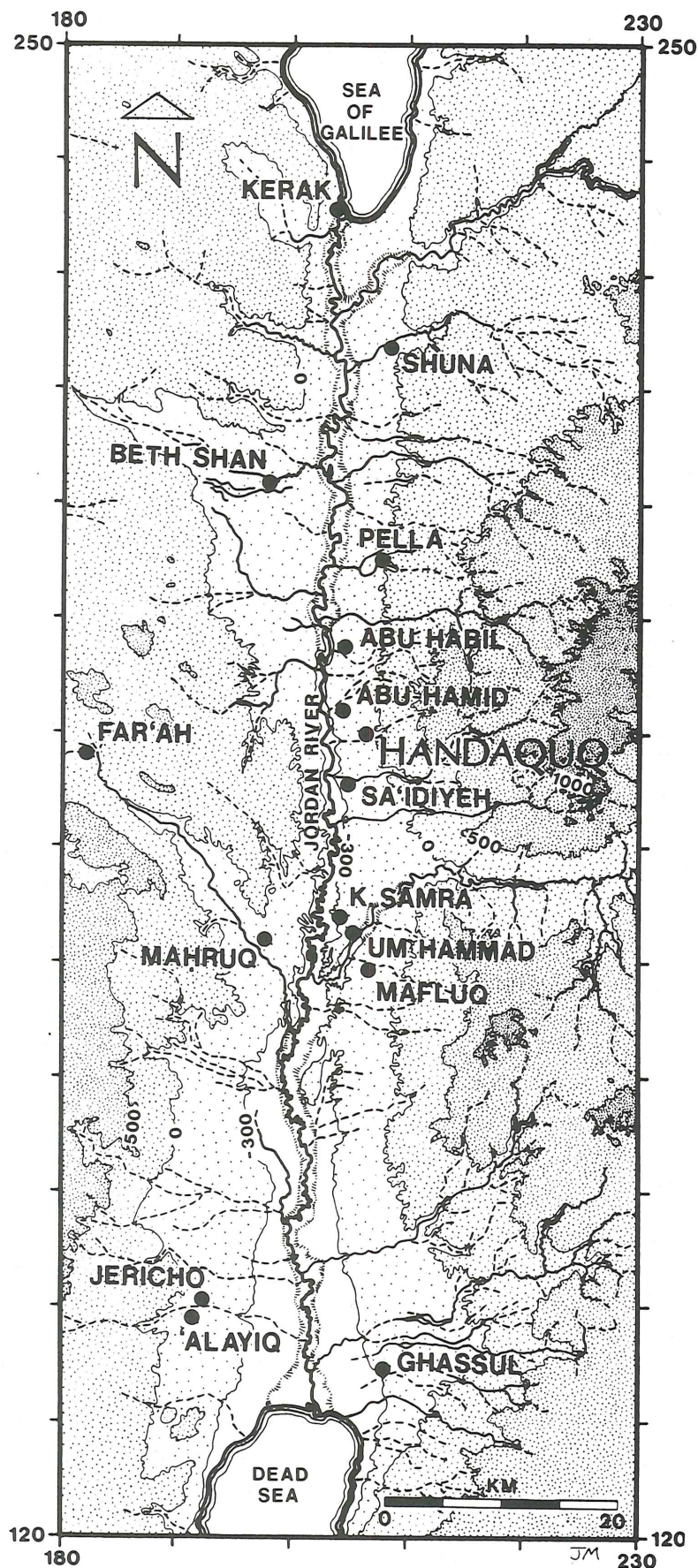
The site is located near the eastern escarpment on a group of three hills that overlook the narrowest part of the Jordan River Valley. Only five kilometres wide, this semi-arid part of the valley presently receives an average of about 225 millimetres of rainfall annually. Cultural deposits on the western part of the site are founded upon a steep natural hill that is an erosional remnant of Pleistocene limestone conglomerates and travertines. A gravel ridge, actually a stranded beach of the late Pleistocene "Lake Lisan" which filled the Jordan Rift, extends northward from this hill along the -180 meter contour (the maximum level of the lake evidenced in other parts of the valley). From the early to mid-Holocene, Wadi eṣ-Ṣarar flowed nearer to the surface than today, and its braiding channel annually deposited silt and gravel to form an alluvial fan up to a kilometer wide and four meters thick on top of the late Pleistocene gravel. This aggradation was apparently interrupted sometime during the mid-Holocene, and the wadi began to cut downward into the

alluvial fan. Today the wadi flows only during the winter rainy season, on its new bed two to four meters below the fan surface.

## Previous Surface Explorations

The French geographer F.M. Abel (1911:416) was perhaps the first western scholar to visit the ruins of Tell el-Ḥandaquq early in this century, though he was most interested in its elevated position and surrounding fertile reddish soil. The Jesuit archaeologist Father Alexis Mallon (1934:156) subsequently described the visible architecture and surface artifacts at a tell he found on the south bank of the Wadi ez-Zarqa, which local villagers also called "Ḥandaquq". The American archaeologist Nelson Glueck (1951:285-288) confused these two sites when he briefly visited the more northern one described here; he apparently did not find the identically named southern site during his extensive surveys of Jordan in the 1940s. Father Robert North (1961:50; Fig. 19) did not correct this mixup in his uncritical compilation of early fourth millennium B.C. sites reported in Palestine and Jordan.

Glueck noticed numerous traces of stone walls and "Middle" and "Late Chalcolithic" (equivalent to "Late Chalcolithic" and "Early Bronze Age I" in current terminology) pottery sherds, but he did not recognize the water control features or the substantial defensive walls which can be traced around much of the site. Ibrahim, Sauer, and Yassine (1976:51; Fig. 16) found flint tools and pottery sherds from the Late Chalcolithic, Early Bronze I, and Early Bronze II-III periods, but also make no remark about the fortification system in the report of their 1975 visit. During a survey of prehistoric cave sites in the eastern Jordan Valley during 1985, Muheisen (1987: site 35) found numerous



## THE JORDAN RIVER VALLEY

Fig. 1. Location of Tell el-Handa and related excavated sequences in the Jordan River Valley.

tombs carved into the limestone cliffs east of the ancient settlement.

### History of Occupation

Pre-third millennium B.C. strata were not reached in the 1988 Sounding and were not clearly evident in the South Cut (see below), but "Late Chalcolithic" sherds and flint tools (Fig. 3) were found over much of the site's surface, indicating that a settlement was established at Tell el-Handaquq by at least the early fourth millennium B.C. These distinctive types of artifacts were also found in association with two partially exposed masonry structures buried by more than a meter of alluvium in the south bank of the wadi (Figs. 2; 3:1, 5, 10).

Typical pottery forms from this early stage of occupation were represented by sherds, including low-fired, everted and thickened rim jars with coarse grit temper ("coarse wares" Fig. 3:1-4), and body sherds of similar ware decorated with raised, indented bands and red trickle paint (Fig. 3:5-7). Chipped stone tools from this period included chisels (Fig. 3:8-9), backed bladelets (Fig. 3:10), and fan scrapers on tabular flint (Fig. 3:11-12). This ceramic and lithic assemblage is clearly similar to those found on the surface at Subeirra (Mabry and Palumbo 1988, Figs. 3-6) and in excavations at several other nearby early fourth millennium B.C. sites: the Pella tell (Smith 1973, Pl. 34) and Area XIV (McNicoll *et al.* 1982:31-34; Hanbury-Tenison 1986, Figs. 24-26), Abu Hamid (Dollfus and Kafafi 1986a, 1986b, 1987), Abu Habil (de Contenson 1960; Mabry and Palumbo 1988, site 18; Leonard, in press), and Sa'idiyeh et-Tahta (de Contenson 1960).

Shallow plowing has disturbed the surface distribution of artifacts over much of the site, but "Early Bronze Age I" sherds (Fig. 4) are the most common on the surface, perhaps reflecting rapid growth of the settlement during the late fourth millennium B.C. Holemouth jars with incised decoration and trickle paint (Fig. 4:1), rolled rim jars with incisions,

and the "Jawa type" holemouth jar with pushed-up lug handles and incised decoration (Fig. 4:2) were represented by surface sherds. These pottery types have been found together in stratified Early Bronze Age I-A (stage 2) deposits at nearby Tell Umm Hammad (Helms 1984, Fig. 12; 1986, Fig. 16), and at Tell esh-Shuna North (de Contenson 1960; Gustavason-Gaube 1985, 1986; Leonard, in press), and Jericho (Kenyon 1952, Fig. 5:3).

"Jawa type" pottery (*cf.* Hanbury-Tenison 1986: 123-25), as the name implies, was first found at the fourth millennium B.C. fortified settlement at Jawa, on the southeast flank of Jabal ed-Druze in the interior basalt desert of Jordan (Helms 1975, 1976a, 1977, 1981). This distinctive type of pottery includes holemouth and flared rim jars with pushed-up lugs or "axe-blade" ledge handles, incised decoration, and occasional paint. In this same region, this type of pottery has since been found on the surface of Early Bronze Age fortified settlements at Khirbet el-'Umbashi and Hebariyeh, on the northeast flank of Jabal ed-Druze in southern Syria (Frank Braemer, p.c.).

In addition to the stratified contexts listed, sherds of Jawa type pottery have been found in the Jordan River Valley on the surface at Pella (Hanbury-Tenison 1986:124), Kataret es-Samra (Leonard 1983, Fig. 9:7-8), and at Tell el-Hammam South. They have also been found on the surface at sites in the lower (Gordon and Villiers 1983) and upper Wadi ez-Zarqa (Glueck 1951, Pl. 163:9; Hanbury-Tenison 1986), and in Early Bronze Age strata at Tell el-'Umeiri on the Jordan Plateau near Amman (Larry Herr, p.c.). The presence of this distinctive mid to late fourth millennium B.C. (Early Bronze Age I-A) ceramic type therefore links Tell el-Handaquq with these other valley sites, sites on the eastern plateau, and with the runoff-based fortified settlements on the edge of the interior desert.

Inverted- and straight-rim bowls with indented decoration (Fig. 4:5-6) were included in an excavated assemblage from Tulul Abu el-'Alayiq, near Jericho (Pritch-

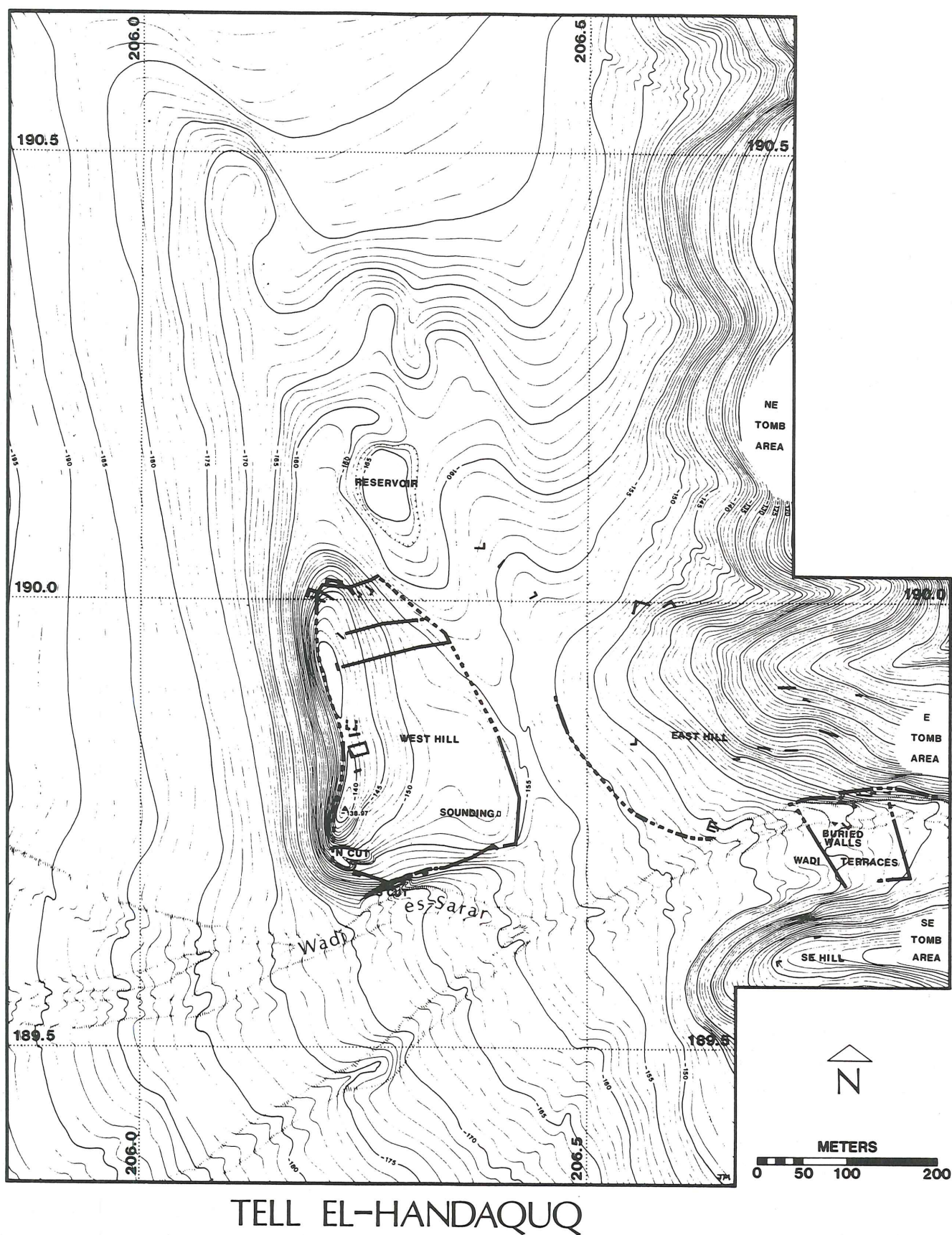


Fig. 2. Topography and visible architecture of Tell el-Handaquq.

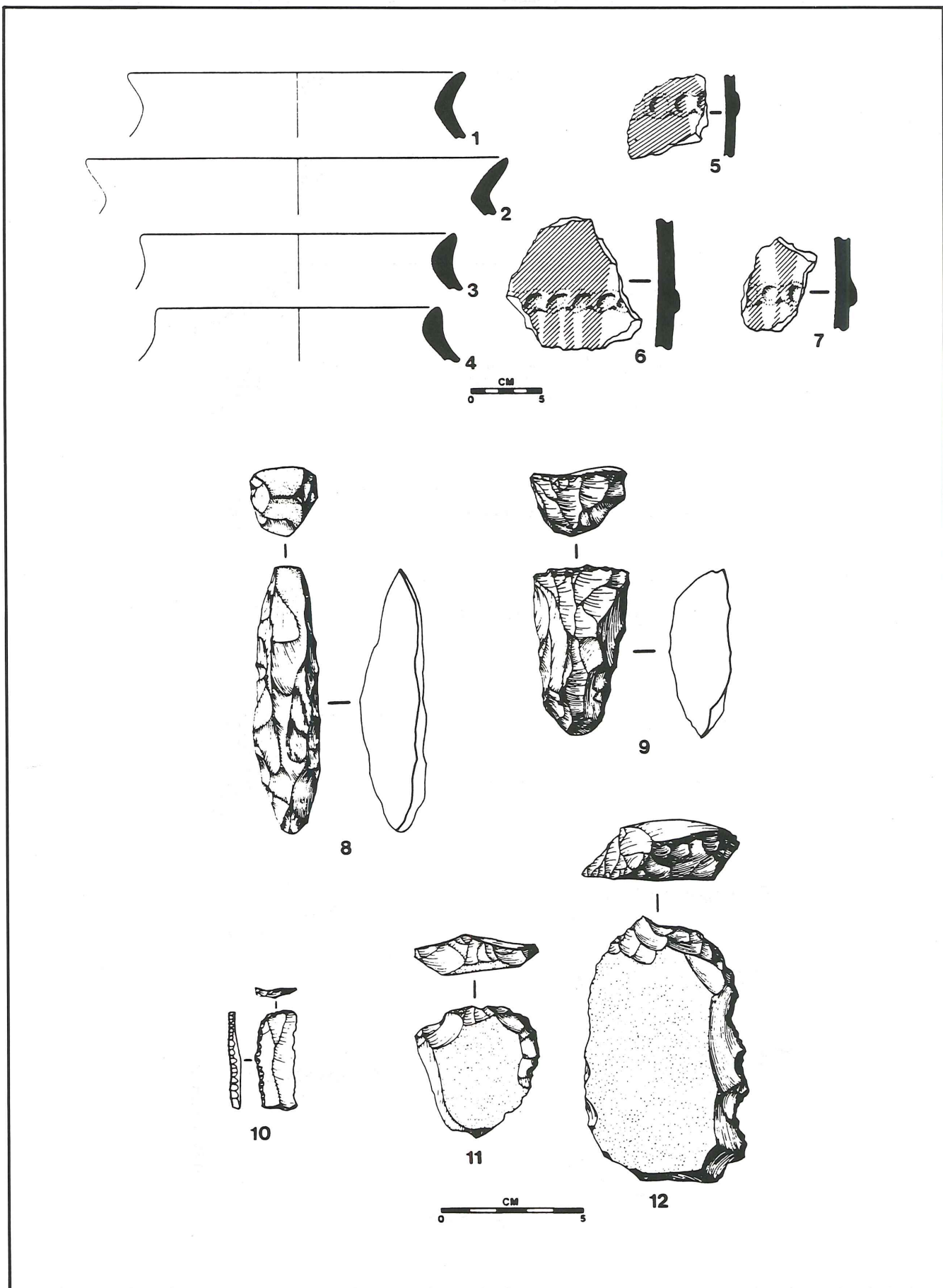


Fig. 3. Early fourth millennium B.C. (Late Chalcolithic) ceramic and chipped stone artifacts.

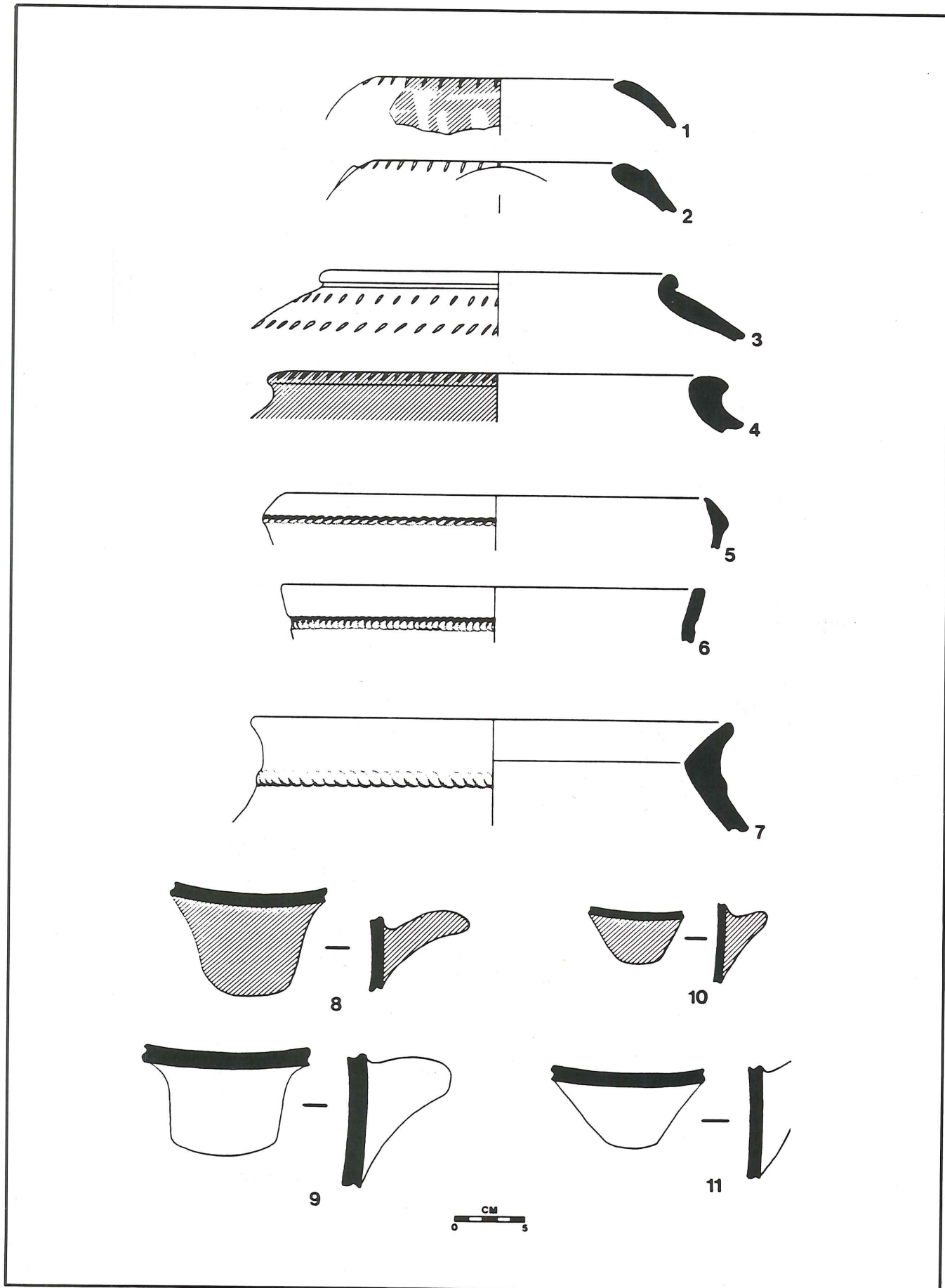


Fig. 4. Late fourth millennium B.C. (Early Bronze Age I) ceramic artifacts.

ard 1958, Pl. 27:7). Reddish "Proto-Urban D (or Umm Hammad) ware" with bands of raised decoration (Fig. 4:7) is also common on the surface. This ware has been found stratified in Early Bronze Age I-B (Stage 3) strata at Tell Umm Hammad (Helms 1984, Fig. 15), and in Stratum XVI at Beth Shan (Fitzgerald 1935, Pl. 1:3), but it was a long pottery tradition that lasted from the early to late fourth millennium B.C. in northern Palestine and Jordan (cf. Glueck 1945:10, 1951:318-329; Miroschedji 1971; Hanbury-Tenison 1986:127-129). Typical Early Bronze Age I plain ledge handles, some with a thin red slip or wash, were also found over much of the site (Fig. 4:8-11).

Early Bronze Age II sherds are second in frequency on the surface, followed by Early Bronze Age III sherds (see discussions below of the ceramic sequences in the South Cut and the Sounding). A handful of Early Bronze Age IV sherds, including high-fired, cream slipped "combed ware", and folded "envelope" ledge handles (Fig. 12:1-4), are the latest found on the site, except for two or three Byzantine period sherds. These patterns in the surface assemblage indicate contraction and eventual abandonment of the settlement during the mid-third millennium B.C. (Early Bronze Age III). Except for brief squatter occupations during the late third millennium B.C. (Early Bronze Age IV), Tell el-Handaquq was never settled again. The plan of the late prehistoric town is therefore not obscured by later occupations, and can be traced on the surface.

### The Topographical-Architectural Survey

A detailed survey of the topography and visible architectural remains at the site was conducted in several visits between November 1987 and March 1988 (Fig. 2). Using an electronic theodolite and EDM, the survey team mapped an area of ca. one square kilometer at one meter contour intervals. Traces of prehistoric masonry structures were recorded over an area of 25-30 hectares mainly on two opposing western and eastern hills.

### *The Fortified Settlement*

Connecting to enclose the western hill are long sections of a boulder-constructed, ca. three meter wide defensive wall with regularly spaced rectangular towers on the visible northern and southern sections, and possibly a bent entry gate near the south-east corner. This type of fortification system was constructed at many early third millennium B.C. sites in the southern Levant (Helms 1976). Within this defensive enclosure are traces of at least three large masonry buildings (possibly for "public" functions) in a shallow saddle between the two high points of the steep western summit, walls and corners of rectangular masonry houses on the northern slope, and a flat lower mound in the southeast. Two parallel walls ascend from the northeastern section of this defensive wall to the northern summit of the western hill, dividing this part of the settlement into separate precincts within the town wall.

Shorter sections of a second massive, boulder-constructed wall appear to connect to skirt the base of, and probably enclose, the eastern hill and an area on the north bank of the wadi. Stone foundations of rectangular buildings and slope retaining walls are visible over much of the eastern hill, and are exposed in the eroded north bank of the wadi, immediately below this defensive wall. As described above, masonry house walls and corners are also exposed in the opposite bank of the wadi, buried by more than a meter of alluvial silt and gravel. Traces of at least two masonry structures (one a watch tower?) are also visible on the summit of the steep southeastern hill, on the south side of the wadi opposite the eastern hill.

### *Water Management Features*

The topographical-architectural survey also identified several features designed for capture and storage of local slope runoff and wadi floods, which, in the absence of any evidence for a historic occupation at the site, were probably contemporary with the late prehistoric

settlement (see Fig. 2).

Two boulder-constructed dams, originally ca. 100 meters long, span the width of the southern terrace of Wadi eṣ-Ṣarar, opposite the visible structures on the northern bank. The foundations of these dams are above the buried structures exposed in the southern bank, indicating that the dams were constructed after abandonment and burial of the buildings; (i.e. post-“Late Chalcolithic”). Alluvial silts and gravels have accumulated up to the top of these dams, forming a series of stepped terraces, above, between, and below them. Like similar systems used historically and today in Palestine and Jordan, these prehistoric? dams captured the silt carried by winter floods. The stepped arrangement of terraces also slowed the flood water long enough to saturate fields planted on the silt trapped behind the dams. Both of these dams were breached during a cycle of wadi incision that probably began in the mid-Holocene.

A large basin, ca. 1.5 hectares in area and three meters deep, was also found in the northwest part of the site. Elders in the neighbouring villages recall that, until early in this century, this basin was partially filled by winter runoff from the surrounding slopes. It is likely that during prehistoric times, when the wadi was flowing nearer the surface, wadi floods were also diverted through the shallow gully which separates the fortified western and eastern hills to fill the basin completely. A shallow core sample taken from the centre of the basin revealed that at least 1.5 meters of dark silty clay forms a virtually impermeable lining on the bottom. This basin is under cultivation today, but its clay lining causes it to remain swampy for several months after the last winter rains.

The thick accumulation of silty clay sediments also indicates that the basin was substantially deeper in antiquity. The core sample shows that the original depth was at least 4.5 meters, such that the original volume has declined from at least 67,500 cubic meters to the present 45,000 cubic meters. On the basis of ethnographic data, Helms (1981:189, 1982:106) has estimated

that the 3000-5000 people at Jawa, and their livestock, required about 1800 cubic meters of water per month, or 21,600 cubic meters per year. If similar figures are used, it may be calculated that one third of the total volume of the single reservoir at Tell el-Ḥandaquq could have easily supplied a population of 5000 and their livestock through the dry summer, with a surplus of about two thirds left for irrigation of fields below, even after evaporation loss.

The presence of water management features does not necessarily imply wetter climatic conditions during the occupation of the settlement, as the capacity of this flood storage system is efficiently suited to current hydrological conditions. The reservoir could originally hold 90% of Wadi eṣ-Ṣarar's present estimated total annual flood flow of ca. 75,000 cubic meters, which is 22% of the total combined surface and groundwater flow of ca. 340,000 cubic meters from a catchment of ca. 13 square kilometres (National Water Master Plan 1977). Historically, local slope runoff from an area of only ca. 5 hectares partially filled the reservoir every year. Excavation will be necessary to determine whether this is a natural basin, or an artificial reservoir created by construction of a dam at its northern end.

Late prehistoric town water management at Tell el-Ḥandaquq was not a unique development in the southern Levant. The reservoir at this site is similar in size and design to the extramural reservoirs found in association with the contemporaneous fortified settlement at Jawa, on the southeastern flank of Jabal ed-Druze in northern Jordan (Helms 1975, 1976, 1981). Archaeological explorations in southern Syria have also shown that systems for diversion and storage of runoff supported a network of fortified late prehistoric towns in this interior basalt desert. Smaller, intramural reservoirs have been found at Khirbet el-'Umbashi and Hebariyeh (Dubretet and Dunand 1954; Braemer 1988:132), and el-Laboueh (Maqdissi 1984), all fortified Early Bronze Age settlements on the northern flanks of Jabal ed-Druze.

The location of reservoirs inside the fortification systems indicates that protection of stored runoff was often critical for the survival of Early Bronze Age towns in the southern Levant. Intramural reservoirs have also been found at contemporary fortified town sites at 'Ai (et-Tell) in the hills near Jerusalem (Callaway 1978), and at Arad in the northern Negev desert (Amiran 1978). Helms (1982) has hypothesized similar intramural reservoirs for the Early Bronze Age town at Jericho, and at Bab ed-Dhra' and other Early Bronze Age town sites southeast of the Dead Sea. Yassine (p.c.) has suggested the identification of one at Lahun, an Early Bronze Age town on the edge of the Jordan Plateau above the Dead Sea. Large intramural cisterns were found carved into the bedrock at Tell el-Maqlub in Wadi el-Yabis (Mabry and Palumbo 1988, site 43), and at Jabal el-Muṭawwaq in the upper Wadi ez-Zarqa (Hanbury-Tenison 1986:75), both fortified Early Bronze Age settlements in the hills of northern Jordan. In the Jordan Valley, large cisterns lined with clay were found just inside the Early Bronze Age town walls at Jericho (Kenyon 1960:93-96). Three intramural stepped shafts, one measuring ca. 100 meters long, were found carved through bedrock down to the water table at Khirbet ez-Zeirāqoun, a fortified Early Bronze Age town site on the northern Jordan plateau (Ibrahim and Mittmann, 1987).

Late prehistoric town runoff storage systems were developed in currently marginal areas of the southern Levant, as is evident by the location of all of these sites at the edge of the modern rainfall farming zone, near the 200 millimeter rainfall isohyet. These Early Bronze Age fortified towns, with efficient systems for capture and storage of highland runoff and its fertile load of silt, are early examples of an ancient "runoff techno-complex" which extended from Lebanon to Aden in mountainous western Arabia (Roberts 1977). The extramural water management features found at Tell el-Ḥandaquq are physical evidence of the technical capabili-

ties of the prehistoric "irrigation culture" of the Jordan Valley, first hypothesized by Albright (1924). While this water management technology supported a large town at Tell el-Ḥandaquq for centuries, the cycle of wadi entrenchment that breached the dams made continued flood irrigation impossible, and also prevented diversion of floods into the reservoir. The abandonment of the settlement during the mid-third millennium B.C. was probably due to this failure of the flood diversion system.

### The South Cut

During his 1985 survey, Muḥeisen (1987) stopped bulldozers from quarrying the southern end of the western hill for road fill. About one meter of cultural deposits can now be seen in an upper bulldozer cut. Fifty meters to the south is a second, lower cut more than sixty meters long, showing a maximum depth of ca. 2.5 meters of cultural stratigraphy near the center. This cut (Fig. 5) shows in cross-section the massive defensive wall, domestic mudbrick walls with stone foundations, cobble pavements and streets, ceramic vessels lying smashed on house floors, pits, *ṭabuns*, hearths, and thick lenses of ash and charcoal.

Between March 11 and 18, 1988, this entire sixty meter bulldozer cut was straightened and drawn by Gaetano Palumbo, with the assistance of Wajih Karasneh. Chronologically diagnostic ceramic and lithic artifacts were recovered from each stratum in order to date the sequence of deposits. Due to the height of the section (more than eight meters above the present wadi bed), the work was carried out on ladders from below, and in a rope harness tied to a jeep from above.

### The Stratigraphic Sequence

Seven major phases of architectural construction and cultural deposition were recognized in this cut, dating from the beginning to the middle of the third millennium B.C. (late Early Bronze Age I to Early Bronze Age III) on the basis of the

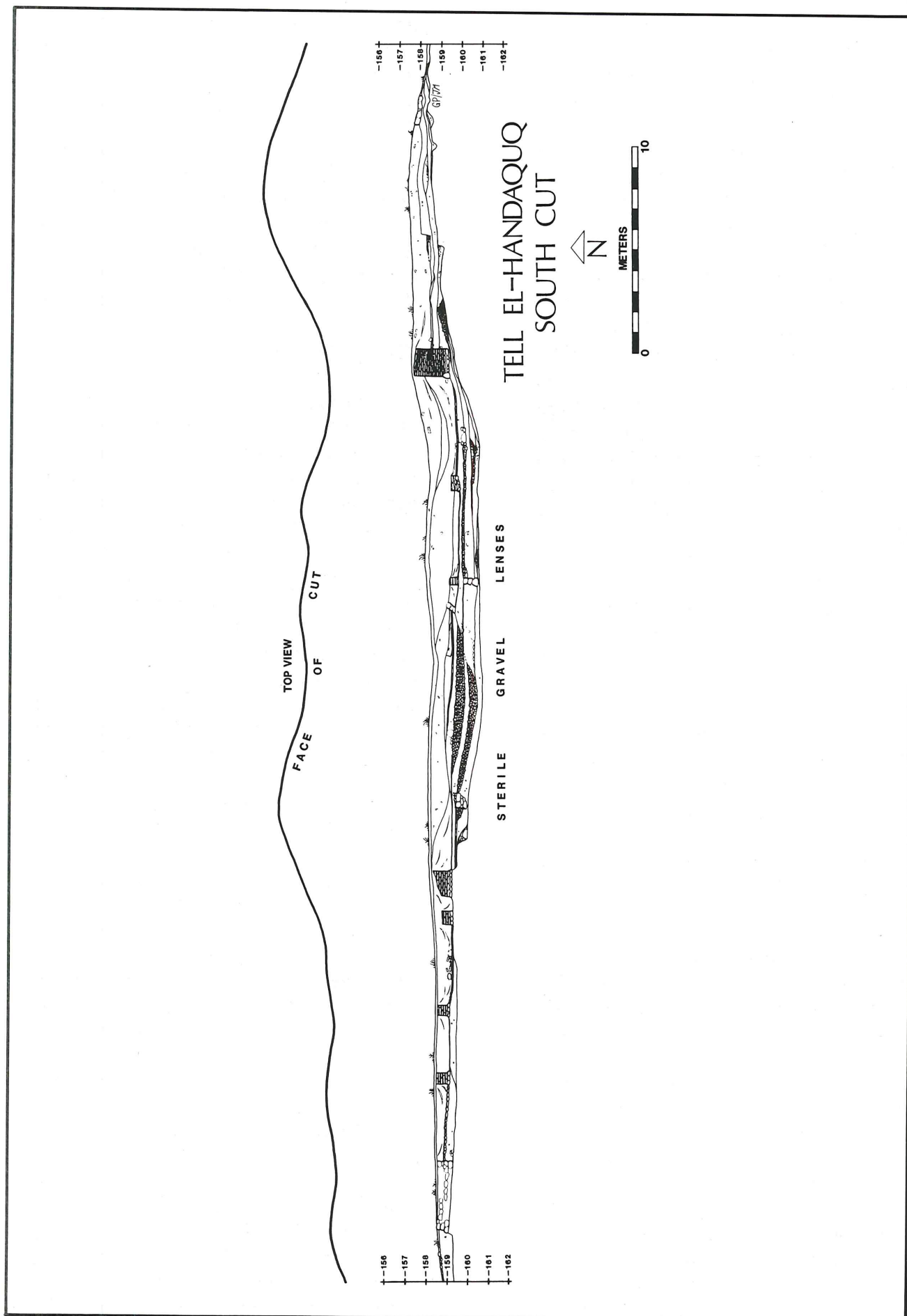


Fig. 5. Stratigraphy of the South Cut.

artifacts recovered (Fig. 6). The earliest phase (Stratum 7) exposed at this edge of the site is a layer of silt and ash lying at the deepest level near the center of the cut, directly upon the sterile Pleistocene gravel. This stratum (7) yielded sherds of undecorated everted rim jars (Fig. 6:1-2), forms which appear in late Early Bronze Age I (EB I-B) excavated sequences in the Jordan River Valley.

The second phase (Stratum 6) that can be discerned in the cut included escarpment of the underlying gravel, and construction of a narrow stone wall, a *ṭabun*, and earthen floors, one with a sherd from a late EB I or early EB II everted rim jar (Fig. 6:3) lying on it. Wet-wiped body sherds with red trickle paint also characterize this stratum (not illustrated).

The third phase (Stratum 5) included further escarpment of the sterile gravel, reuse of the earlier stone wall by raising the floor, and construction of two, more substantial masonry walls. A stone pile, cobble pavement, and a thick cobble fill, possibly for a street, also belong to this phase. Sherds recovered from this stratum include one from an everted rim jar (Fig. 6:4), a body sherd of "Proto-Urban D (or Umm Hammad) ware" with raised and indented decoration (Fig. 6:5), and another body sherd with raised decoration and a red slip (Fig. 6:6). While it is possible that this sherd of Proto-Urban D ware is intrusive from earlier deposits, its presence supports the late Early Bronze Age I (EB I-B) date for the basal strata of the cut.

During the fourth phase (Stratum 4), the three meter wide boulder-constructed defensive wall was founded upon sterile gravel near the western end of the cut. The underlying gravel in front of the wall was cut into, forming a kind of "fosse". Near the center of the cut, a second thick cobble fill was laid above the earlier one during this phase, to raise the level of the street. Several new mudbrick walls with stone foundations were also constructed, probably for houses. Several earthen floors are visible between these mudbrick walls, one of which shows two postholes with carbonized remains of posts. Lying smashed on

the floor of another mudbrick structure are several large, holemouth and rolled-rim storage jars with indented ledge handles and "grain washed" decoration (Fig. 6:7-8). A four meter wide cobble pavement was laid between the defensive wall and the first wall of this structure, possibly to serve as a foundation for another street behind the town wall. Several pits were also cut into the sterile gravel at the eastern end of the cut during this phase. Sherds from a flat jar base with a red slip (Fig. 6:9), and a plain rim bowl with a red slip inside and outside (Fig. 6:10) also point to an Early Bronze Age II date for this stratum, and therefore, construction of the defensive wall.

The fifth phase (Stratum 3) represents reuse of the mudbrick walls of the previous phase by raising the internal floors. Near the center of the cut, one of these earthen floors has a very large "pithos" storage jar lying smashed on its side over a length of 1.5 meters. The floors of this stratum also yielded sherds of beveled and thickened rim holemouth jars (Fig. 6:11-12), and of a high-fired "metallic ware" flared rim jar with red painted stripes over a white slip (Fig. 6:13). These forms appear together in the top two strata of the Sounding (see below), and suggest a late Early Bronze Age II or early Early Bronze Age III date for this stratum.

The sixth phase (Stratum 2) includes thick accumulations of debris above the floors of the previous phase, and construction of a wide stone wall or foundation at the eastern end of the cut. No chronologically diagnostic artifacts were recovered from this stratum.

The seventh and final phase (Stratum 1) visible in the cut represents collapse of Strata 6-4 structures, and rapid colluvial deposition from upslope. A trapezoidal "sickle blade" fragment with silica polish along both edges (Fig. 13:4) was found in these sediments. The only diagnostic sherd recovered from this stratum is from an everted rim bottle with two pierced, vertical lugs on the neck (Fig. 6:14). This is a well-known Early Bronze Age form, but its long use within the period, and its context

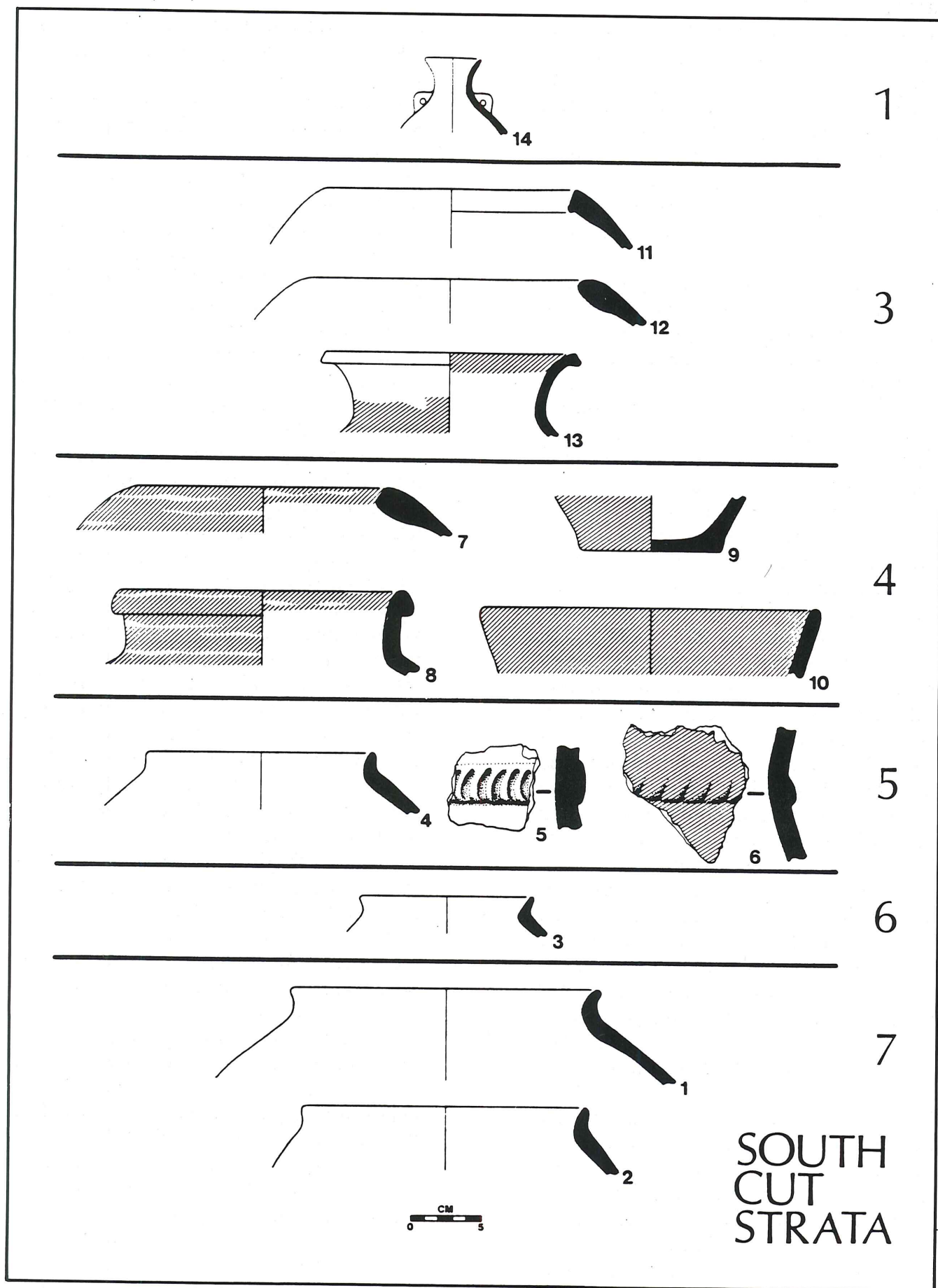


Fig. 6. Ceramic artifacts from the South Cut by stratum.

in colluvial sediments does not allow precise dating of the evident abandonment of this part of the site. The latest, datable *in situ* cultural deposits in this sequence belong to Stratum 3, with late EB II - early EB III sherds.

### The Sounding

Between March 11 and 18, 1988, a 2.5 x 5 meter area on the southeast corner of the western hill (Fig. 2) was excavated to a depth of ca. 2.4 meters from the surface (Figs. 7-8). This location, at the edge of the flat lower mound just inside the southeast gate and corner of the defensive wall, was chosen because the fortifications there have served to retain the greatest depth of cultural deposits at the site. The underlying, culturally sterile, Pleistocene Lisan Lake beach gravels were not reached in the sounding, and the bottom of the sounding trench is still more than 2.5 meters above the surface level outside of the defensive wall. On this basis, a depth of at least five meters of cultural deposits may be estimated for this part of the site.

This Sounding exposed parts of two burials, five strata of household cultural deposits, and five phases of construction and rebuilding of domestic structures. Though only a small total area was exposed, comparisons among the large number of pottery sherds and stone tools recovered provide a useful sequence of material culture from clearly stratified household deposits, dating to the development of this settlement into a fortified town near the beginning of the third millennium B.C., until its abandonment during the mid-third millennium B.C. (Early Bronze Age II-III).

A 25% sample of all excavated sediments was sifted through 5 millimeter mesh screen, while 100% from selected loci was sifted. A large number of well-preserved animal bones was recovered from every strata, and several samples were taken from areas with large amounts of charcoal for flotation of plant remains. By sifting, one carbonized olive pit was recovered from such an area on a Stratum 2 floor.

Large samples of charcoal were taken from the uppermost and lowest strata for radiocarbon dating.

### The Stratigraphic Sequence

The earliest cultural deposit (Stratum 5) reached in the bottom of the Sounding was a ca. 1 x .5 x .25 meter area exposed in the southern part of the trench (Fig. 7). In the very limited area exposed, no architecture was found in association with this deposit, which was a gravelly silt fill (037) with charcoal fragments, a few animal bones, and pottery sherds. The next phase (Stratum 4) included a surface (036) which covers the earlier fill, a curved stone wall foundation (035) founded on that surface and faced with mud plaster on the interior, and another surface (034) which runs up to the mud plaster (Fig. 8).

Above this earlier curved structure were found three phases (Strata 3-1) of construction and rebuild of two parallel walls directly on top of each other, ca. 2 meters apart and oriented northwest to southeast (Fig. 8). Each of these walls had a stone foundation between one and three courses high and two to three rows (ca. .75 meters) wide, and a superstructure of unfired mudbricks preserved one or two courses high. In the upper two phases (Strata 2-1), smaller subsidiary walls abut the northeastern face of the longest wall section exposed. Levelling fills, one to three compacted earthen floors, hearth areas with burned soil, charcoal and ash, animal bones, flint tools and flakes, and flat-lying pottery sherds were found in association with each phase of wall construction or reconstruction (Fig. 7; Table 1 for summary of loci by stratum). These walls probably formed the sides of a single rectangular house, or of two houses separated by an alley.

Part of a burial (021), with the skeleton lying extended on the right side from southwest to northeast, was found beneath a floor (019) between the walls (010, 022) of the second phase (Stratum 2). Fragments of a plain rim lamp with a burnished red slip and soot on the rim, a

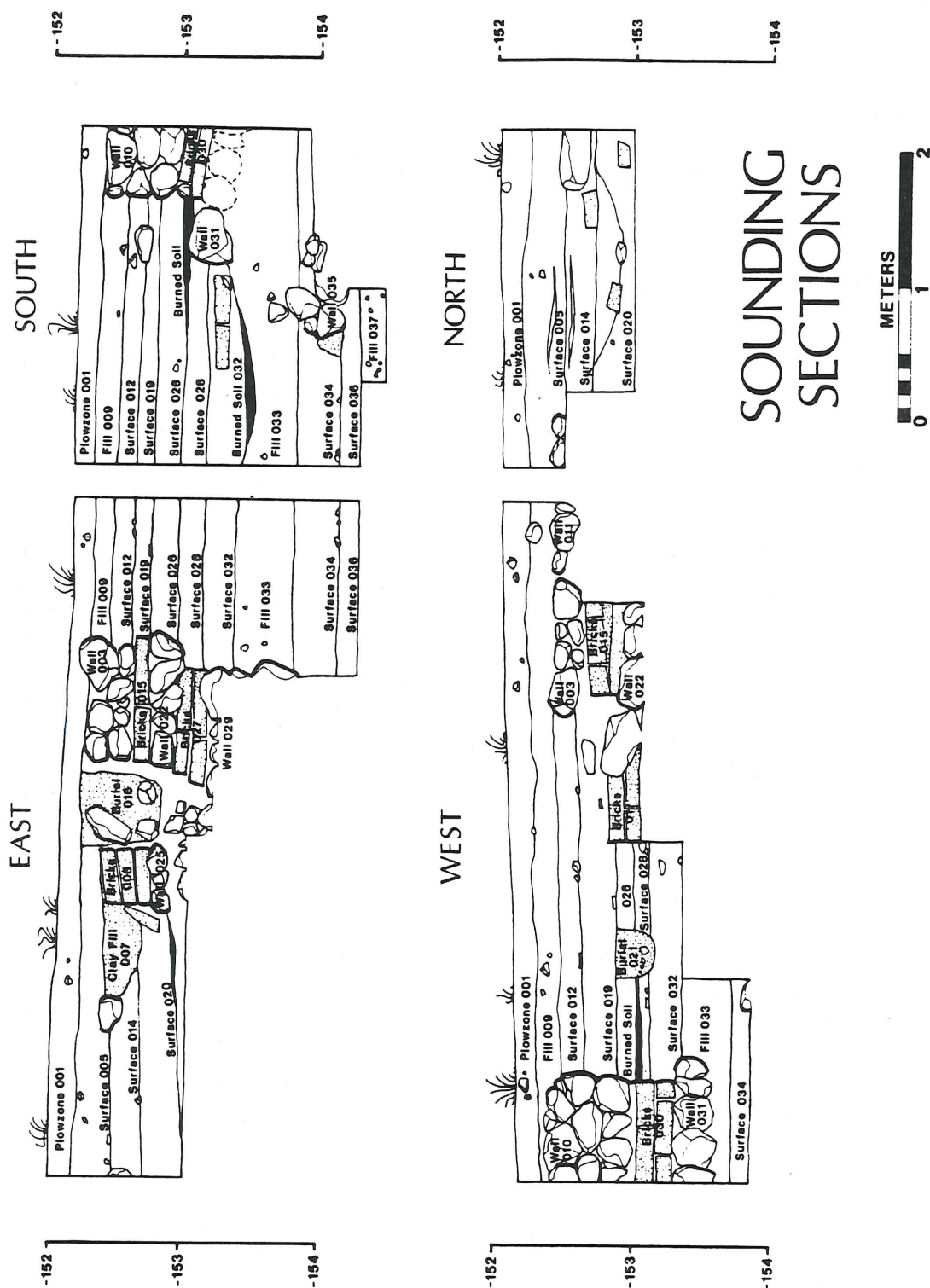
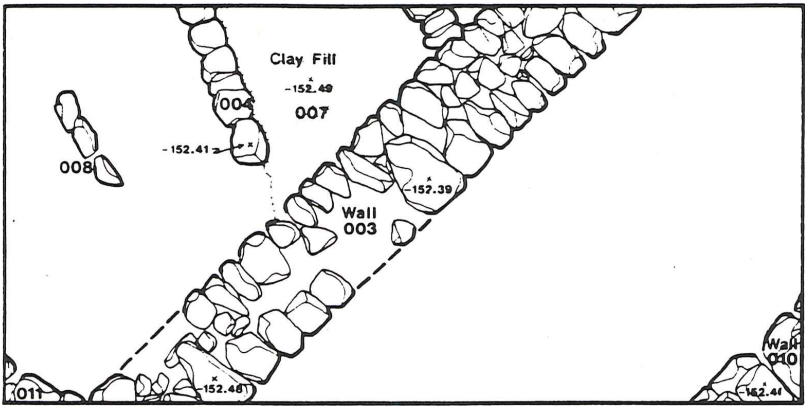
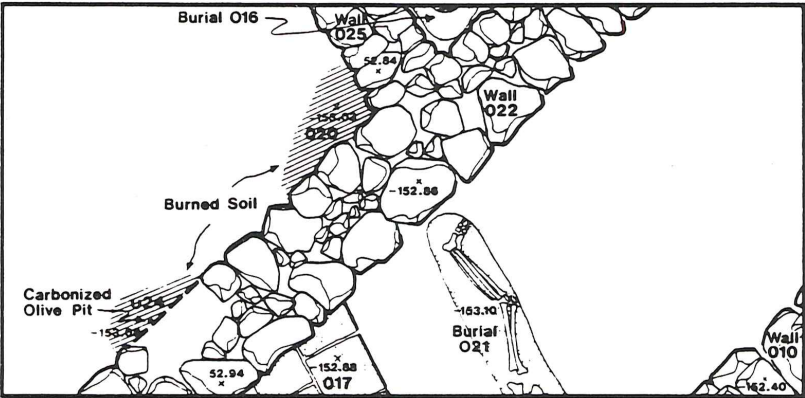


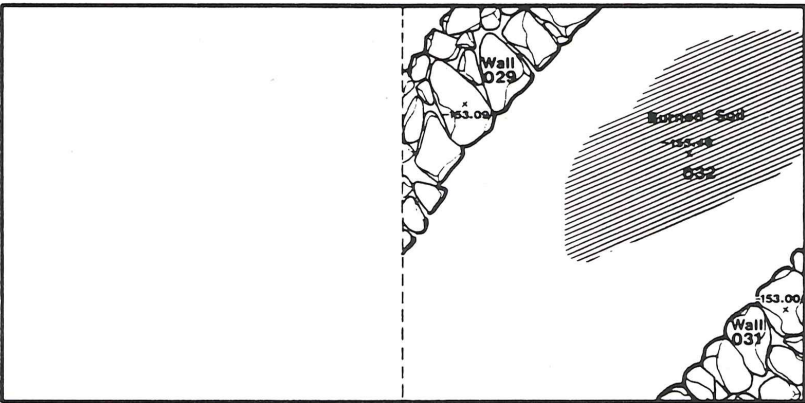
Fig. 7. Sounding sections.



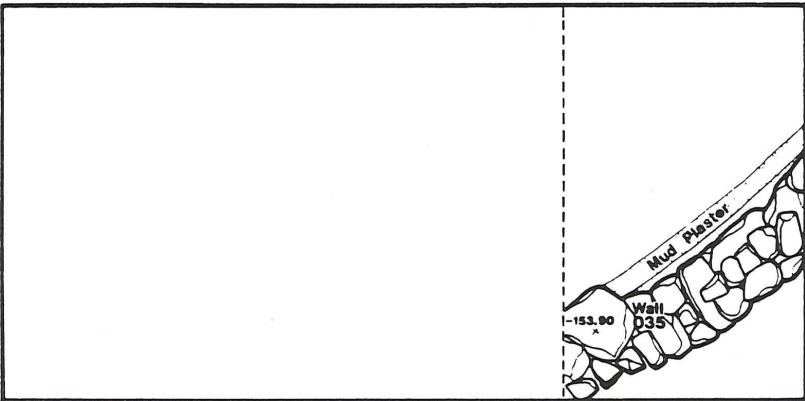
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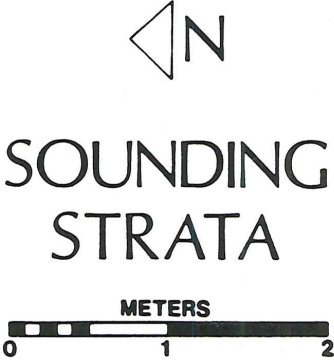


Fig. 8. Sounding strata.

**Table 1:** Stages of Occupation and Area Strata.

Years B.C.	Periods	Sounding	Area Strata		Tombs	Stages of Occupation
			South Cut	Wadi Terrace		
2000	EB IV			1 continued incision	?	5 squatters abandonment
2300	EB III	1	1-2	2 breach of dams, wadi incision?		4 contraction
2600	EB II	2	3	3 aggradation		3 nucleation, town walls
2900	EB I	3	4	4 dam construction?		2 growth
3500	L. Chalco.	4-5	5	5 aggradation, burial of houses		1 establishment?
4000			6-7	6 house construction		

burnished everted rim jar, and a ground basalt ring were found in the clayey burial fill (Fig. 12:5-7). The cranium of a second skeleton was found in part of another burial (016) that stratigraphically post-dates the last building phase on this part of the site (i.e. post-Stratum 1).

### *The Ceramic Sequence*

The sherds found *in situ* on the floors in each stratum of this Sounding form a sequence of typical early to mid-third millennium B.C. (late EB-I-EB III) pottery wares, forms, and decoration, with some types appearing only in lower or upper strata (Figs. 9-11). Sherds from earlier deposits were common in secondary fills, but by excluding these loci from analysis, almost every obviously intrusive sherd was accounted for. Most of the wares from the earlier strata were low-fired, with grey cores and coarse grit or grog temper. Though coarse-tempered low-fired wares continued to occur, fine-tempered high-fired "metallic" wares also appeared in the upper two strata (Strata 2,1). The majority of the forms were made by hand, though the folded and flared rims found in the upper two strata (Strata 2,1) were finished on a slow "tournette" wheel, and the platter-bowls were manufactured quickly on a fast wheel. Table 2 compares the

sequence of various types of ceramic wares and decoration by stratum.

Sherds from large "coarse ware" jars with thickened and slightly everted rims and occasional red trickle paint (Figs. 9:2-4, 10-11) were common on the floors of the lower two strata (Strata 5, 4). These are late examples in the long history of coarse ware forms manufactured locally in the Jordan Valley, extending back to the Neolithic in the sequence excavated at Tell esh-Shuna North (Gustavson-Gaube 1985, 1986). Body sherds that were wet-wiped or finger-streaked and decorated with parallel lines of trickle paint appear to be related to the trickle painted coarse wares, and were found in all but the latest (Stratum 1) deposits. Finger-streaks and trickle paint were also common decorations on sherds found in Early Bronze Age I-A (Stratum 2) deposits at Tell Umm Hammad (Helms 1986, Fig. 12), Tell Abu el-'Alayiq (Pritchard 1958, Pl. 31, and Tell esh-Shuna North (Gustavson-Gaube 1987, Fig. 4), indicating a long history for these local techniques as well. The impression is that these types represent the final phase of a substratum of local pottery traditions that extend back to the Neolithic in the Jordan River Valley.

A typical form represented throughout the sequence was the holmouth jar with a flat base, indented ledge handles, and a thickened rim (Figs. 9:1, 7-9; 10:1-2,

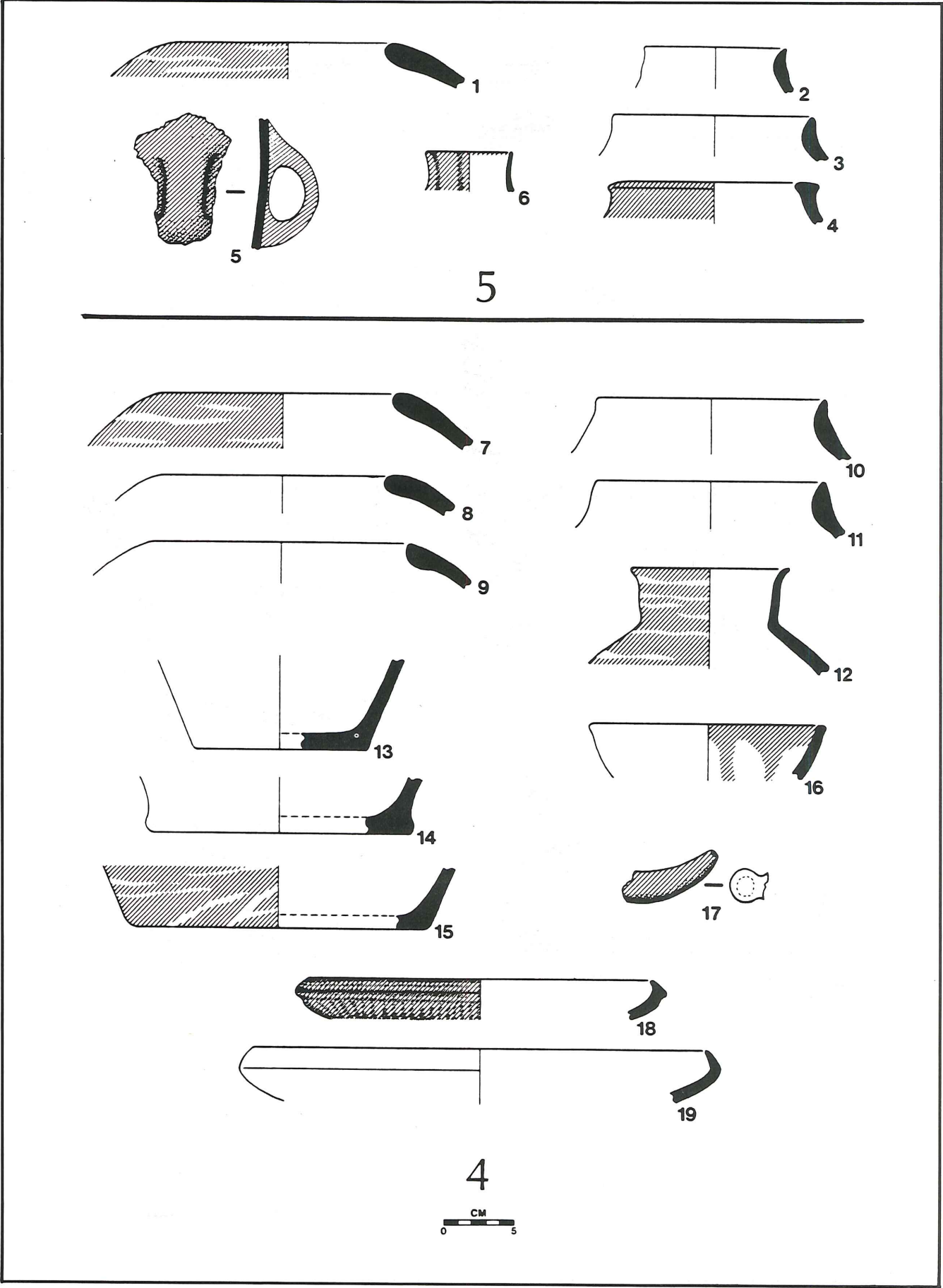


Fig. 9. Ceramic artifacts from Sounding Strata 5 and 4.

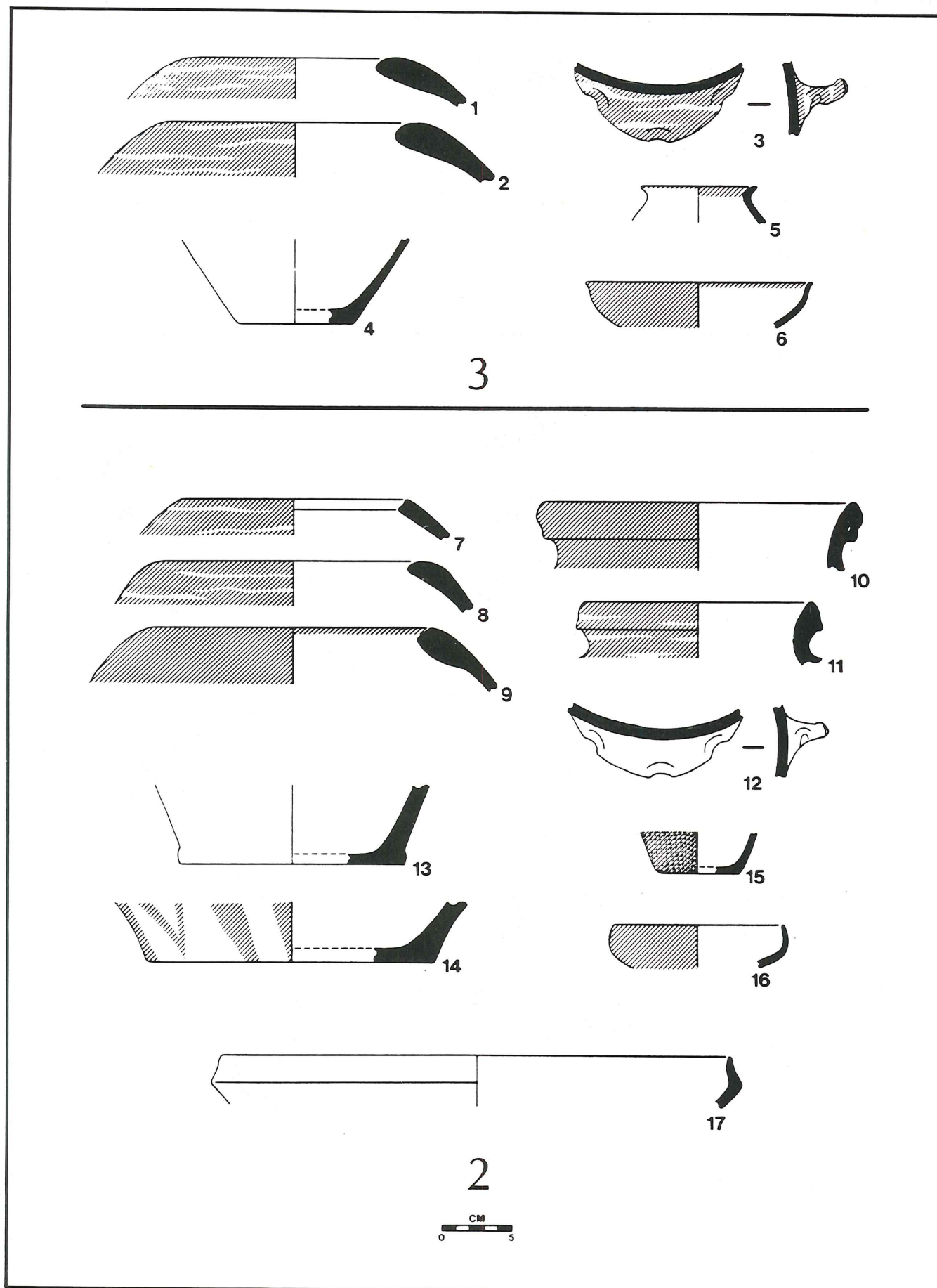


Fig. 10. Ceramic artifacts from Sounding Strata 3 and 2.

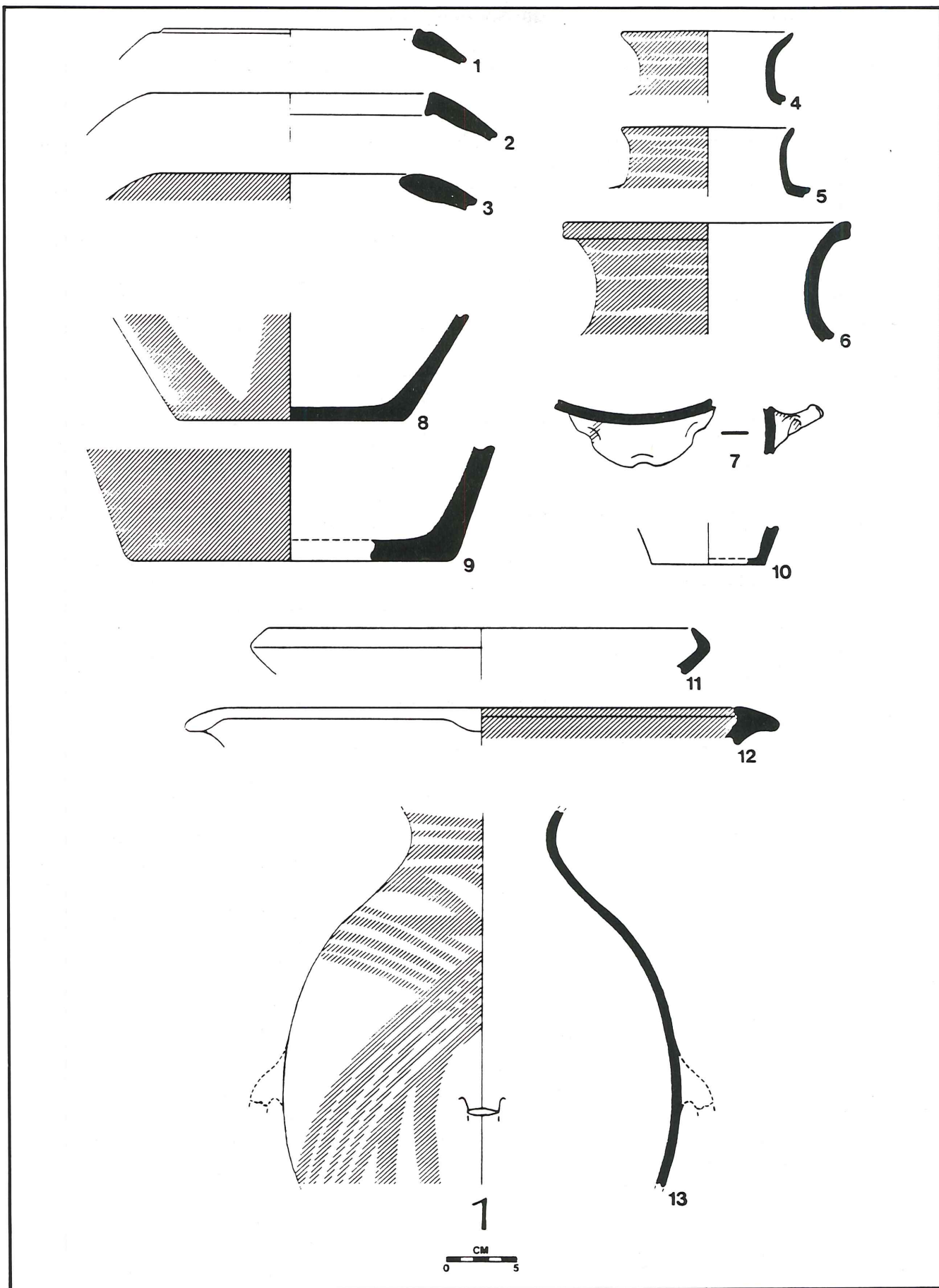


Fig. 11. Ceramic artifacts from Sounding Stratum 1.

**Table 2:** Sequence of ceramic types in Sounding by Stratum.

<i>Ceramic Types</i>	<i>Sounding Strata</i>					<i>Surface</i>
	5	4	3	2	1	
Jawa type						X
line painted (Proto-Urban B)						X
Proto-Urban D (Um Hammad ware)						X
coarse ware/trickle painted	X	X				X
wiped/trickle painted	X	X	X	X		X
grain washed (band slipped)	X	X	X	X		X
lattice slipped/burnished	X	X	X	X		X
red polished (Abydos ware)	X	X	X	X		X
red slipped	X	X	X	X	X	X
red paint on white slip				X	X	X
metallic orange ware				X	X	X
metallic line painted				X	X	X
metallic cream slipped/combed ware						X
metallic reserve slipped						X

8-9, 11:3). Beveled, grooved, and "rail" holemouth jar rims (10:7; 11:1-2) appeared alongside thickened rims in the upper two strata (Strata 2, 1). These variations were not unique to any one phase within the Early Bronze Age however, as "rail" and beveled holemouth jar rims appeared together even earlier, in Early Bronze Age I-B (Stage 3) strata at Tell Umm Hammad (Helms 1986; Fig. 16). Vertical strap jar handles also occurred throughout the sequence. While a few in each stratum were undecorated, the outsides of holemouth jars were typically decorated with a red or grey "grain wash" (or "band slip"; Figs. 9:1, 7; 10:1-2, 7-8) in all but the final (Stratum 1) deposits. Sherds with lattice pattern slips and burnishes appear in the same strata, and appear to be related techniques.

The grain wash style was common throughout northern Palestine and Jordan (Glueck 1946) and southern Syria (Frank Braemer p.c.) during the early third millennium B.C. Its earliest context in the northern Levant are phases H and I in the Amuq sequence, and in the Jordan River Valley in stratified Early Bronze Age I-B deposits at Tell esh-Shuna North (Gustavson-Gaube 1985, 1986). Holemouth jars with thick red slips (Figs. 10:9; 11:3) also appeared occasionally alongside the grain washed type throughout the sequence. Red painted stripes over a thick white slip (Figs. 10:14; 11:8) became a more common decoration than grain wash on jars in the upper two strata (Strata 2, 1). These two styles also appear together in "Early Bronze Age I, Phase 1" deposits at Tell el-Far'ah North (Huot 1967), and in

Stratum II at Khirbet Kerak (Beth Yerah). In the Jordan Valley, red painted stripes over a white slip were found in Early Bronze Age II contexts at Tell el-'Oreimeh (Fritz 1987:45), and at Tell es-Sa'idiyeh (Tubb, 1988).

Folded rim jars decorated with a red slip (Fig. 10:10), or a grain wash (Fig. 10:11) were found on Stratum 2 floors. High-fired, flared rim jars with straight or everted necks (Figs. 9:12; 11:4-6) were represented in all but the earliest (Stratum 5) deposit. These jars were decorated with the grain wash technique, and also with red painted stripes over a thick white slip in the upper two strata (Strata 2, 1).

Inverted rim platter-bowls, some with pattern burnished red slips (Fig. 9:18), and some with horizontal lug handles (Fig. 11:12), were common from Stratum 4 upwards. Plain rim bowls with red trickle paint on the interior (Fig. 9:16) were found in Stratum 4, while red-slipped bowls with recessed (Fig. 10:6) or inverted rims (Fig. 10:16) were found in Strata 3 and 2. These types of bowls were also found in Stage 2 and 3 strata at Tell Umm Hammad (Helms 1986, Fig. 10). The everted rim juglet or cup with vertically burnished stripes over a red slip found in the deepest (Stratum 5) deposit (Fig. 9:6) is paralleled in Early Bronze Age I-B (Stage 3) deposits at Tell Umm Hammad (Helms 1986, Fig. 14:12).

High fired local wares found in the sequence were used for the flared rim jars described above, for "Abydos ware" juglets with vertical strap handles and vertically burnished or polished red or grey slips, and for "metallic orange ware" platter-bowls (Fig. 10:17). Abydos ware was found on all but the final (Stratum 1) floors, while the metallic orange ware was found only on the upper two (Strata 2, 1) floors. Both wares have been found in early to mid-third millennium B.C. (Early Bronze Age II-III) strata at Khirbet Kerak and Jericho (Hennessy 1967) in the Jordan River Valley.

Reconstructable pieces of a hand-made, flared rim ovoid jar with a sand tempered, high-fired ("metallic") reddish-grey ware, vertical strap handles, and

decorated with parallel groups of grey painted stripes (Fig. 11:13) were found on the floors of the upper two strata (Strata 2, 1). This unusual, probably non-local, ware, form, and decoration may be related to the late Early Bronze Age "scrabbled ware" found in coastal Lebanon (Ehrich 1939:35) and central Syria (Collon *et al.* 1975:38, Pl. XIX), or the "multiple-brush painted ware" found in northern Syria (Mellaart 1981:156). Body sherds of a similar non-local metallic ware with a white "reserved slip" decoration were found on the surface of the Sounding. This style has been found in Amuq G strata (Braidwood and Braidwood 1960:275f, Figs. 218-219) and across northern Syria (Mellaart 1981:154-55; Sanlaville 1985:105). The presence of these foreign "metallic wares" indicates that the settlement at Tell el-Handaquq had some connections with Syria during the mid-third millennium B.C. (Early Bronze Age III).

Comparisons with other stratified ceramic sequences from the Jordan River Valley thus indicate that the five strata of cultural deposits encountered so far in the Sounding at Tell el-Handaquq date from near the beginning to the middle of the third millennium B.C. (late EB I/early EB II - early EB III). Stratum 5 yielded ceramic types known from stratified EB I-B and EB II contexts; common EB II types were found in Strata 4 and 3, EB II and III types appeared together in Stratum 2, and EB III types predominated in Stratum 1 (Table 2). The sequence so far encountered in the Sounding is therefore roughly equivalent to Khirbet Kerak II-IV, the middle and upper parts of the sequence at Tell esh-Shuna North, Beth Shan XIII-XI, Umm Hammad Stage 4, Tell Maḥruq 3-1, Garstang's Jericho IV-III, and Kenyon's EB I-III at Jericho.

### *Lithic Artifacts*

The most common type of chipped stone artifact found on the surface and in the Sounding was the typical third millennium B.C. (Early Bronze Age) "Canaanite sickle blade" with a triangular or

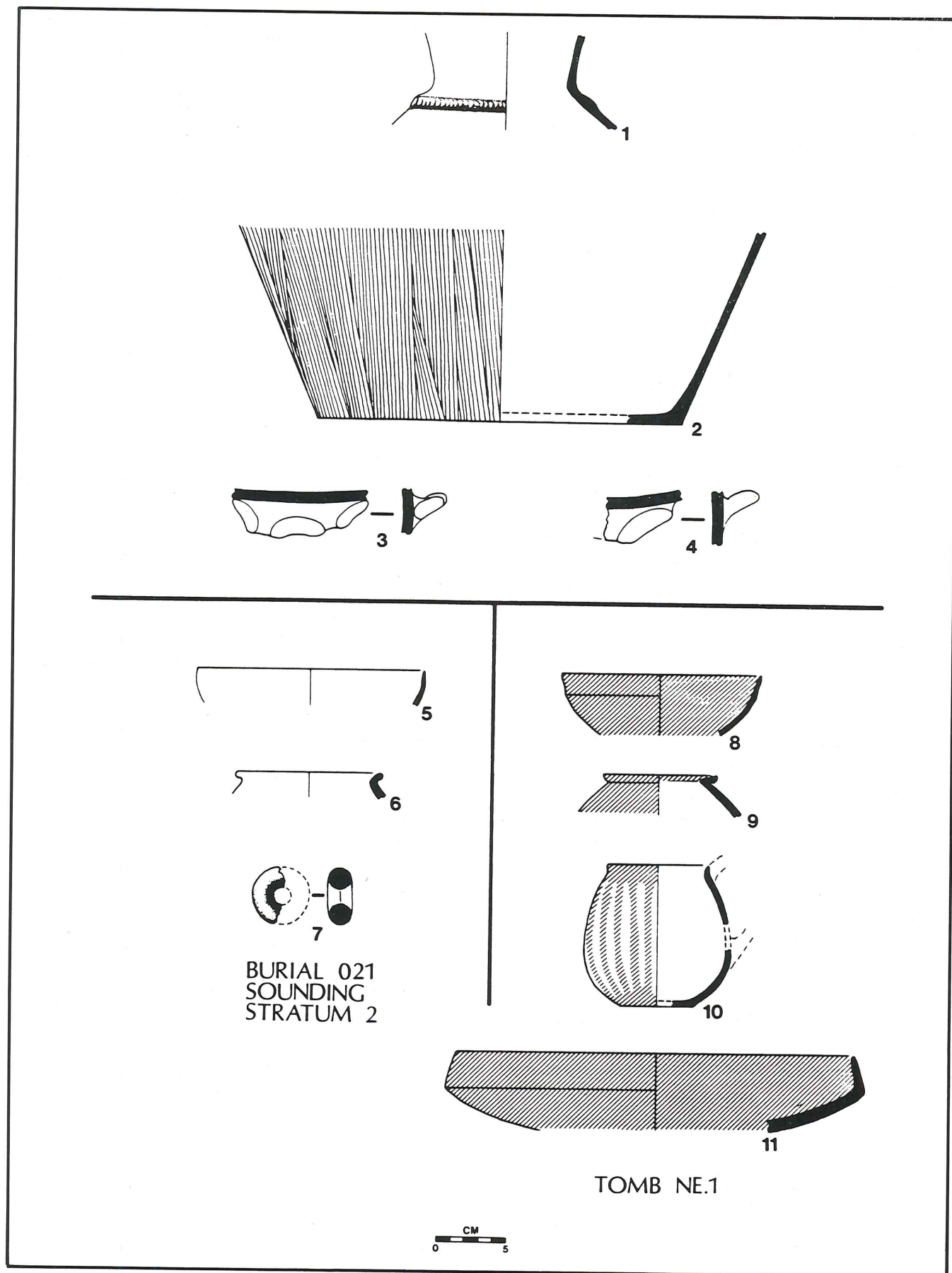


Fig. 12. Late third millennium B.C. (Early Bronze Age IV) ceramic artifacts; ceramic and lithic artifacts from burial 021, Sounding Stratum 2; and ceramic artifacts from Tomb NE.1.

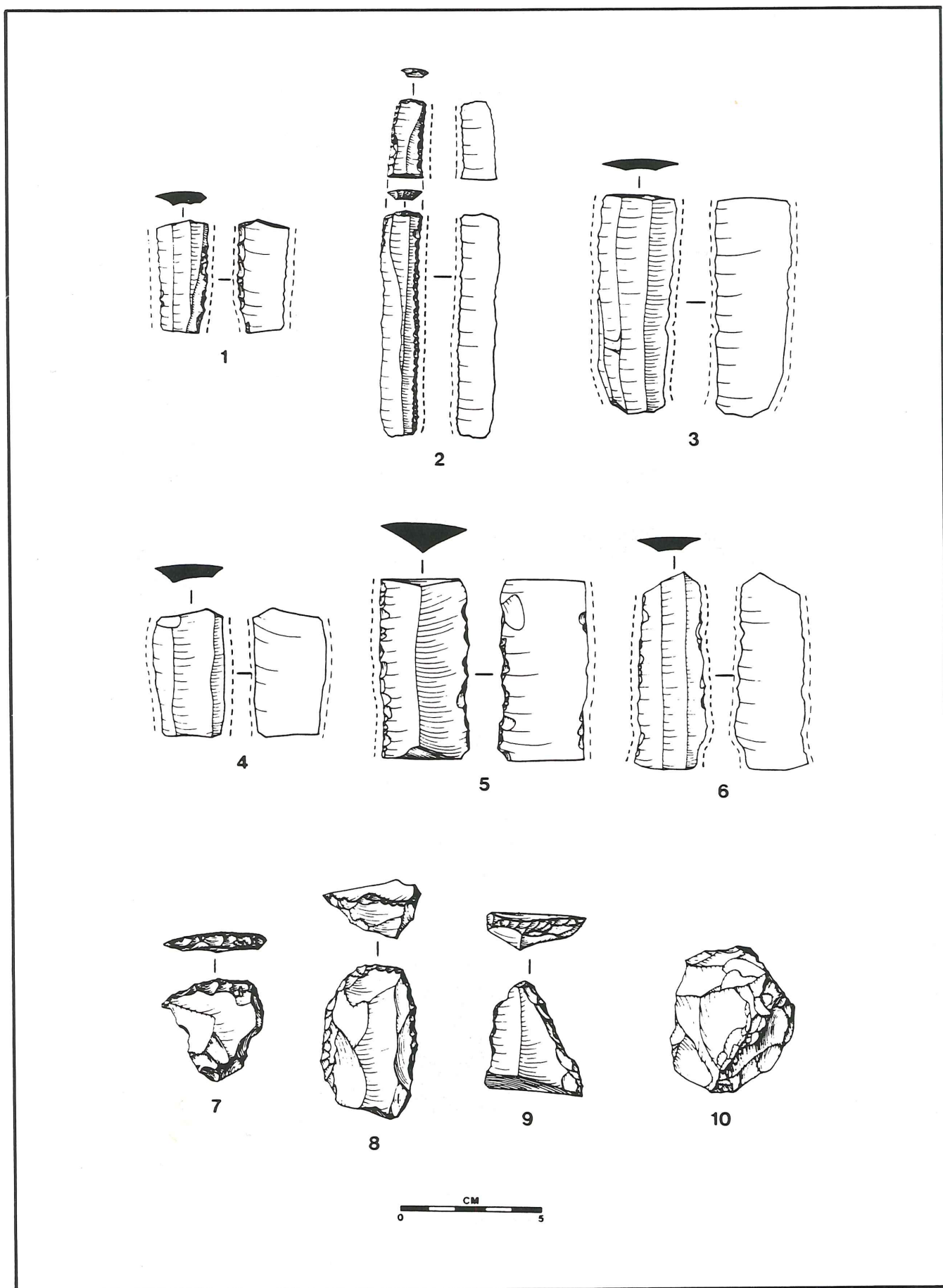


Fig. 13. Late fourth-late third millennium B.C. (Early Bronze Age I-IV) chipped stone artifacts.

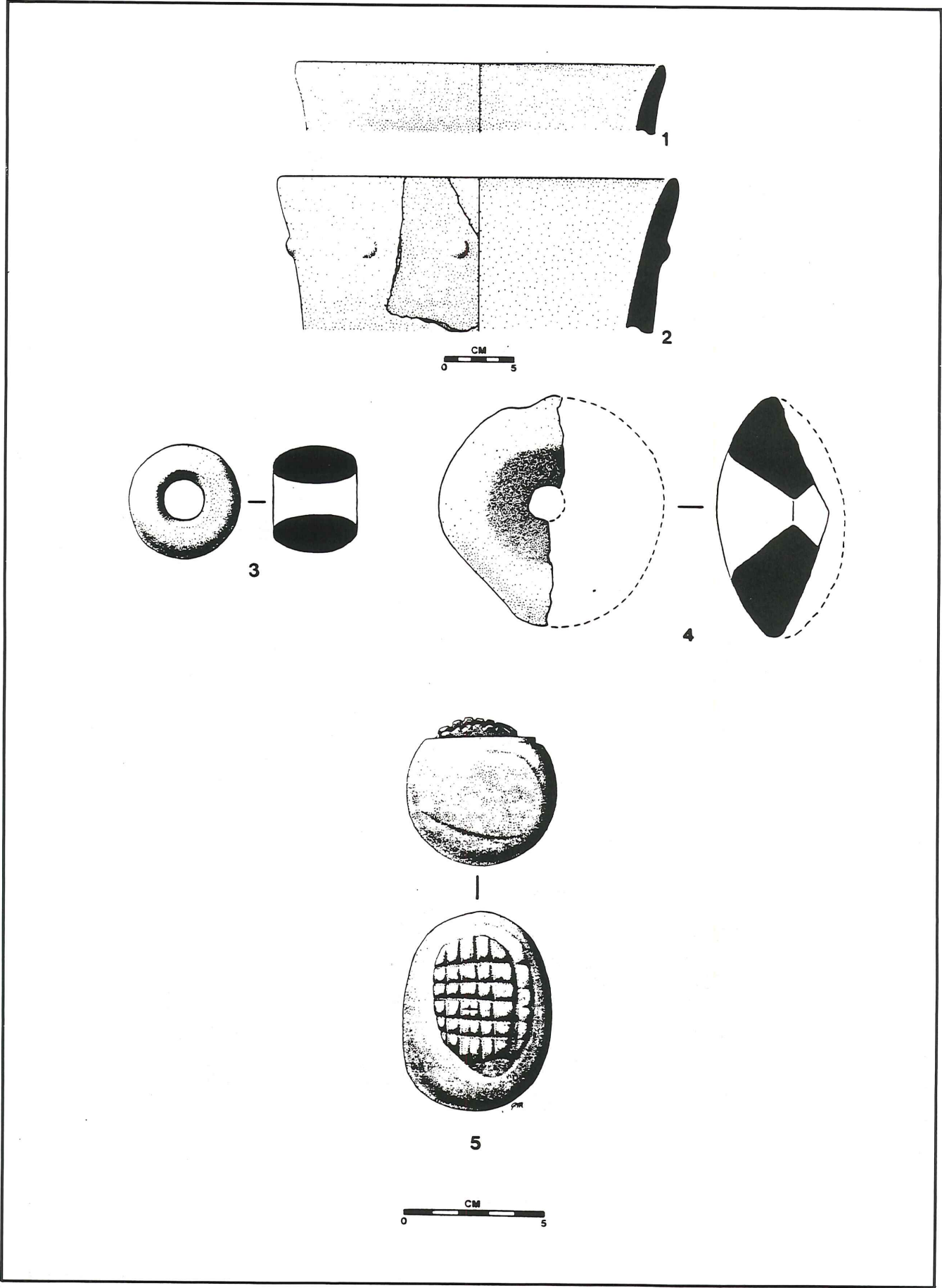


Fig. 14. Ground stone artifacts.

trapezoidal cross-section and silica polish along one or both edges (Fig. 13:1-6). One very long blade from a Stratum 2 floor in the Sounding (Fig. 13:2) was unifacially retouched. Through use, it acquired silica polish along the retouched edge before it broke into two pieces. The end of the longer fragment was then retouched again before being discarded on the same floor as the smaller fragment. Unifacially retouched fan scrapers (Fig. 13:7-9) and a heavily battered flint hammerstone (Fig. 13:10) were also found in the upper two strata (Strata 2, 1) of the Sounding.

A rim of a typical late fourth millennium B.C. (Early Bronze Age I) ground basalt "V"-shaped bowl was found on a Stratum 3 floor in the Sounding (Fig. 14:1). Another example with knobs around the exterior was found on the surface (Fig. 14:2). Ground basalt rings were found in the fill of Burial 021 in Stratum 2 in the Sounding (Fig. 12:7), and on the surface (Fig. 14:3). A fragment of a large ground limestone ring or hoe was also found on the surface (Fig. 14:4). A curious egg-shaped object (a stamp?), made of ground chalk and carved with a cross-hatched design, was found on the surface (Fig. 14:5).

### The Tombs

During March, 1988, an additional area of tombs (NE Tomb Area) 150 meters directly north of the eastern hill was brought to our attention by local gold hunters' looting. One recently robbed tomb was an enlarged natural cave (Tomb NE.1) which contained well-preserved skeletal remains and pottery, including red-slipped (Proto-Urban A) ware, and "line-painted" (Proto-Urban B) ware, usually dated to late Early Bronze Age I (Fig. 12:8-11). At least two other tombs in this area were in the process of being opened. A third area of tombs (SE Tomb Area) was discovered on the hillside south of the wadi, opposite the group of tombs (E Tomb Area) originally found by Muheisen (1987) on the north side of the wadi.

There are a total of at least 100 tombs in these three areas in the hills immediately

east of the settlement (see Fig. 2). Most are enlarged natural caves, though some are carved directly into the limestone conglomerate bedrock. Many tombs have squared and recessed openings, perhaps to fit a stone door slab originally. Many of the tombs were apparently robbed in antiquity, but because of current looting of pristine tombs, a complete survey of the tomb areas, and salvage excavation of undisturbed tombs will be top priorities during the next season of fieldwork.

### A Stamp Seal Impression

During a collection of artifacts from the surface of Tell el-Handaquq in 1988, the author found a "cross-hatched" design stamp seal impression on a sherd from the shoulder of an Early Bronze Age "grain washed" holemouth storage jar (Fig. 15). Stamp seal impressions with this distinctive cross-hatched design have been found at several Early Bronze Age sites in Jordan, consistently stamped on the handles, shoulders, rims, or bases of storage jars datable to the late fourth millennium B.C. (Early Bronze Age I).

In the eastern Jordan River Valley, this type of impression has been found at Kataret es-Samra (Leonard, p.c.), Tell Umm Hammad esh-Sharqiya (Helms 1984:47, Fig. 11:15-17; 1987:55, Fig. 4; Leonard 1988, Pl. XXXV:4), Tell Mafluq (Leonard 1988, Pl. XXXV:3), and now at Tell el-Handaquq. Early Bronze Age I sherds with the same type of stamped impression have also been found at Sbeihah in the lower Wadi ez-Zarqa (Hanbury-Tenison 1984, Fig. 5:48), and at Jawa in the eastern desert (Helms 1981:227 Fig. B4:6). Use of the cross-hatched stamp seal design thus connected a string of late fourth millennium B.C. settlements from Jabal ed-Druze, through Wadi ez-Zarqa, to the apparent center of their use in the Jordan River Valley.

This cross-hatched design appears to have been standardized, as among all of the known impressions, only three minor variations are noticeable. No stamp impressions with this design have been found

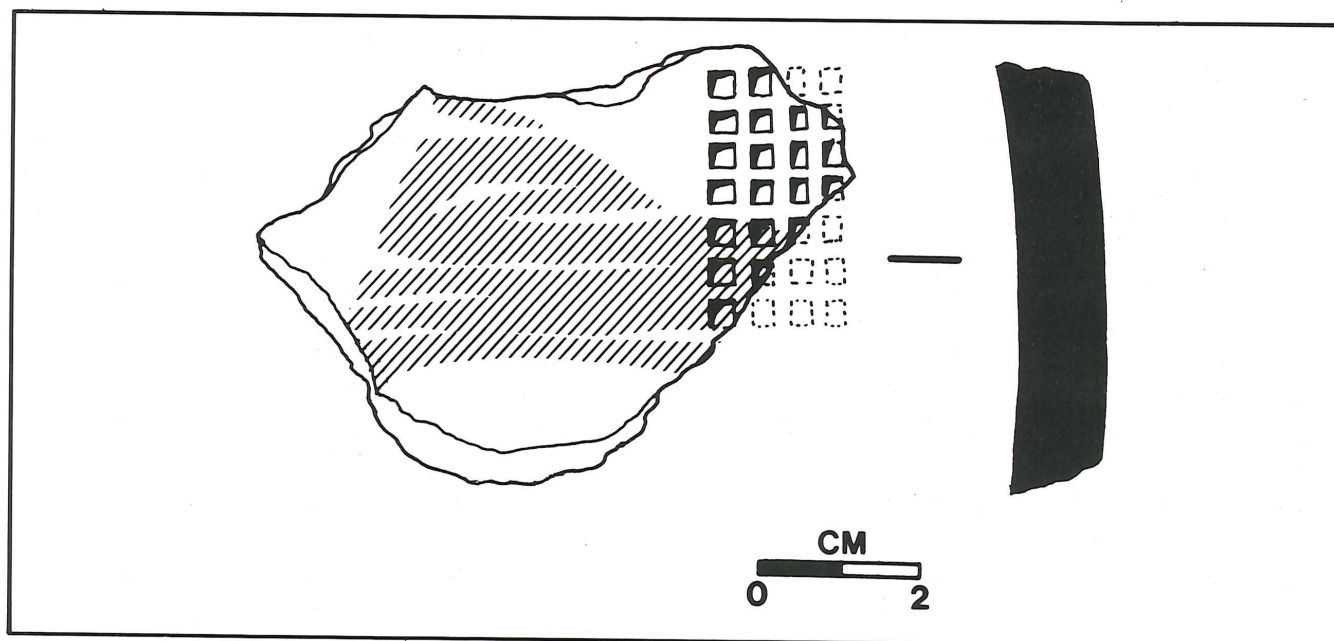


Fig. 15. Stamp seal impression.

west of the Jordan River to date, though the impressions of spiral and animal design stamps have been found. Stamp seals, and this particular motif, have parallels from Syria dating back to at least the sixth millennium B.C., while the earliest stamp seals and impressions found in the southern Levant date to the early fourth millennium B.C. (Mabry n.d.). This pattern suggests that stamp seals spread from the northern to the southern Levant, where they became widely used by the non-urban, pre-literate society of the southern Levant during the last centuries of the fourth millennium B.C.

Widespread use of a standardized glyptic symbol to mark only large storage vessels is an intriguing pattern that suggests developed concepts of property, the passing of goods out of the owner's hands, and differential access to whatever valuable commodity the vessels contained (probably agricultural surpluses in this case). Helms (1987a:41-43; 1987b) has argued that these stamp seals functioned as "economic control devices" by signifying ownership, a specific commodity, or place of origin. Logically, stamp seal impressions could have been used for a variety of purposes, including 1) potter's trademarks, 2) marks of ownership, 3) labels of contents, 4) seals of quality, 5) place of production tags, or

6) addresses of destination. It is likely that such symbols conveyed some combination of these meanings.

The spread of stamp seal use in the southern Levant during the late fourth millennium B.C. coincided with, and may have been related to, the development of highland rain-fed horticultural production, intensification of lowland irrigated cereal and flax production, increase in long distance trade with Egypt, and a trend toward nucleation into fortified towns. Though a number of reconstructions can be considered, it seems likely that emerging elite classes in the developing towns of the southern Levant borrowed the use of seals from the more advanced Syrians, first to organize local agricultural production, and eventually, long distance trade in these surpluses with the Egyptians. The shift from the use of simple stamp seals to cylinder seals with more complicated designs in the early third millennium B.C. was probably due to a necessity to transmit additional information in order to manage increased long distance trade (Mabry, n.d.). At the very least, the use of standardized stamp seals at Tell el-Handaquq linked this settlement to other late prehistoric towns in Jordan, and may imply organized trade in agricultural surpluses, and some social stratification.

## Summary

Tell el-Ḥandaquq is an important example of early town development and community water management in Jordan. Surface finds indicate uninterrupted occupation of the site from the early fourth to the mid-third millennium B.C., followed by occasional encampments during the late third millennium B.C. The fortifications, large "public" buildings, intramural precincts, large-scale water management features, and the stamp seal impression, all indicate that this settlement was an internally organized community, capable of sustained communal effort and sophisticated engineering. If a density of 200 people per hectare is assumed, the population reached a peak of at least 5000-6000 by the time the settlement was fortified during the early third millennium B.C. Rough calculations also indicate that the reservoir could have easily supported this population by storage of only part of the present amount of flood runoff. The cycle of wadi incision which breached the dams and prevented further flood diversion was probably the cause of the town's abandonment during the mid-third millennium B.C. The material culture found in the South Cut and the Sounding links this settlement with other early fortified towns in the southern Levant which relied on hydraulic and administrative technology.

The discoveries at Tell el-Ḥandaquq should not be unexpected, given the geographical and hydrological conditions in the Jordan River Valley. Even before any major archaeological fieldwork had been done in this region, Albright (1924) suggested that fortified towns, based on water management, developed in the Jordan Valley earlier than anywhere else in the southern Levant. At least he was right when he predicted, "It would be extremely interesting to learn more about the civilization of the Jordan Valley in the third millennium... without a doubt we have some great surprises in store for us" (Albright 1924:73).

## Future Investigations

The preliminary fieldwork reported

here suggests several goals for future investigation, including:

1. Continuation of the Sounding to the basal cultural deposits in order to obtain a complete stratified sequence of household material culture. This would provide a better understanding of the entire occupational history of the site, would help fill in gaps in the existing regional ceramic chronology for the late prehistoric periods, and would allow comparisons of the plant remains and faunal assemblage in each stratum.
2. Expansion of the area of excavation to provide greater exposure of the architecture and activity areas of each stage of occupation.
3. Opening of an additional sounding to determine the function of the monumental buildings on the western summit, and clearing of the probable gate area on the southeast corner of the western hill.
4. Further investigation of the construction and functions of the reservoir, dams, and other water management features.
5. Survey of the several tomb areas east of the settlement, and salvage excavation of any undisturbed tombs remaining.

## Acknowledgements

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## Appendix A: Artifact Descriptions

Fig. 3: Early fourth millennium B.C. (Late Chalcolithic) ceramic and chipped stone artifacts.

1. Wadi terrace. Everted jar rim, low-fired, very pale brown 10YR8/4 ware, very coarse grit temper, wet-smoothed.
2. Surface. Everted jar rim, medium-fired, pink 5YR7/4 ware, coarse grit temper, wet-smoothed.
3. Surface. Thickened jar rim, low-fired, very pale brown 10YR8/3 ware, very coarse grit temper.
4. Surface. Thickened jar rim, low-fired, very pale brown 10YR8/3 ware, very coarse grit temper.
5. Wadi terrace. Medium-fired, reddish yellow 5YR7/6 ware, coarse grit and grog temper, raised and indented band of decoration, red 10R4/6 trickle paint exterior.
6. Surface. Low-fired, grey 5YR6/1 ware, coarse grit temper, raised and indented band of decoration, red 10R4/2 trickle paint exterior.
7. Surface. Low-fired, pink 7.5YR8/4 ware, very coarse grit temper, raised and indented band of decoration, red 10R4/6 trickle paint exterior.
8. Surface. Chisel with trapezoidal cross-section and ground distal end.
9. Surface. Chisel/scrapper with trapezoidal cross-section and abruptly retouched distal end.
10. Wadi terrace. Bladelet backed with steep unifacial retouch.
11. Surface. Tabular flint fan scraper with remaining cortex and uniaxially retouched edge.
12. Surface. Tabular flint fan scraper with remaining cortex and bifacially retouched edge.

Fig. 4: Late fourth millennium B.C. (Early Bronze Age I) ceramic artifacts.

1. Surface. Holemouth jar, medium-fired, very pale brown 10YR8/4 ware, fine grit temper, incisions around rim.
2. Surface. Holemouth jar rim, medium-fired, pink 7.5YR7/4 ware, coarse grit temper, incisions around rim, pushed-up lug handles below rim.
3. Surface. Rolled jar rim, low-fired, pink 7.5YR7/4 ware, coarse grit temper, incisions below rim, wet-smoothed.
4. Surface. Rolled jar rim, low-fired, pinkish white 7.5YR8/2 ware, coarse grit and grog temper, incisions around top of rim, red 10R5/6 slip exterior.
5. Surface. Inverted bowl rim, medium-fired, reddish yellow 5YR6/6 ware, indented decoration around carination.
6. Surface. Straight bowl rim, low-fired, pink 5YR7/4 ware, coarse grit temper, indented decoration below rim, wiped exterior.
7. Surface. Everted jar rim, medium-fired, light red 2.5YR6/6 ware, dark grey N4/0 core, coarse grit temper, raised decoration below rim.
8. Surface. Plain ledge handle, low-fired, pink 7.5YR8/4 ware, medium grit temper, red 2.5YR5/6 slip exterior.
9. Surface. Plain ledge handle, low-fired, pink 7.5YR8/4 ware, medium grit temper.
10. Surface. Plain ledge handle, low-fired, very pale brown 10YR8/3 ware, fine grit temper, reddish brown 2.5YR5/4 slip exterior.
11. Surface. Plain ledge handle, medium-fired, pink 7.5YR8/4 ware, coarse grit temper.

Fig. 6: Ceramic artifacts from South Cut by stratum

1. Stratum 7. Everted jar rim, medium-fired, very pale brown 10YR7/4 ware, very coarse grit temper, wet-smoothed exterior.
2. Stratum 7. Everted jar rim, low-fired, light brown 7.5YR6/4 ware, very coarse grit temper, wet-smoothed exterior.
3. Stratum 6. Everted jar rim, low fired, pink 7.5YR7/4 ware, very coarse grit temper, wet-smoothed exterior.
4. Stratum 5. Everted jar rim, medium-fired, grey 10YR5/1 ware, very coarse grit temper, wet-smoothed exterior.
5. Stratum 5. Medium-fired, red 2.5YR5/6 ware, medium grit temper, raised and indented decoration exterior.
6. Stratum 5. Medium-fired, pink 5YR7/4 ware, medium grit and grog temper, raised decoration, red 10R5/6 wash exterior and part of interior.
7. Stratum 4. Thickened holemouth jar rim, low-fired, pinkish grey 7.5YR6/2 ware, coarse grit temper, red 10R5/6 "grain wash" exterior.
8. Stratum 4. Rolled jar rim, medium-fired, light brown 7.5YR6/4 ware, coarse grit temper, red 10R5/6 "grain wash" exterior.
9. Stratum 4. Flat jar base, medium-fired, pink 7.5YR7/4 ware, coarse grit temper, red 10R4/6 slip exterior.
10. Stratum 4. Plain bowl rim, medium-fired, pink 5YR8/4 ware, fine grit temper, red 10R5/6 wash interior, dark red 10R3/6 slip exterior.
11. Stratum 3. Beveled holemouth jar rim, high-fired, pink 7.5YR7/4 ware, very coarse grit temper.
12. Stratum 3. Thickened holemouth jar rim, medium-fired, reddish brown 2.5YR5/4, coarse grit temper.
13. Stratum 3. Flared jar rim, high-fired, light red 2.5YR6/6 ware, grey 5YR5/1 core, medium grit temper, white 10YR8/2 slip, dark red 10R3/6 paint exterior and interior.
14. Stratum 1. Everted bottle rim with pierced vertical lug handles on neck, high-fired, very pale brown 10YR8/4 ware, no temper.

Fig. 9: Ceramic artifacts from Sounding Strata 5 and 4.

1. Stratum 5.  
Locus 037. Thickened holemouth jar rim, medium-fired, very pale brown 10YR7/3 ware, grey 10YR5/1 core, weak red 10R4/2 "grain wash" exterior.
2. Stratum 5.  
Locus 037. Thickened and everted jar rim, low-fired, very pale brown 10YR7/3 ware, very coarse grit temper, wet-smoothed exterior.
3. Stratum 5.  
Locus 037. Thickened and everted jar rim, low-fired, pink 5YR7/4 ware, very coarse grit temper, wet-smoothed exterior.
4. Stratum 5.  
Locus 037. Flattened holemouth jar rim, low-fired, reddish-yellow 5YR6/6 ware, coarse grit temper, red 10R5/6 slip exterior.
5. Stratum 5.  
Locus 037. Vertical strap jar handle, low-fired, pink 7.5YR7/4 ware, very coarse grit temper, red 10R5/6 slip exterior.
6. Stratum 5.  
Locus 037. Everted juglet rim, high-fired, pink 5YR7/4 ware, fine grit temper, light red 10R6/6 slip with vertical burnished stripes exterior.
7. Stratum 4.  
Locus 036. Thickened holemouth jar rim, low-fired, very pale brown 10YR7/3 ware, grey 10YR5/1 core, coarse grit temper, weak red 10R4/2 "grain wash" exterior.

8. Stratum 4.  
Locus 034. Thickened holemouth jar rim, low-fired, light grey 10YR7/2 ware, smoothed exterior.
9. Stratum 4.  
Locus 034. Thickened holemouth jar rim, low-fired, pink 7.5YR8/4 ware, grey N6/0 core, smoothed exterior.
10. Stratum 4.  
Locus 036. Thickened and everted jar rim, low-fired, pink 5YR7/4 ware, grey 5YR5/1 core, wet-smoothed exterior.
11. Stratum 4.  
Locus 034. Thickened and everted jar rim, low-fired, pink 5YR8/4 ware, very coarse grit temper, wet-smoothed surfaces.
12. Stratum 4.  
Locus 034. Flared jar rim, medium-fired, very pale brown 10YR7/4 ware, coarse grit temper, dark grey 10YR7/4 ware, coarse grit temper, dark grey 10YR4/1 "grain wash" exterior.
13. Stratum 4.  
Locus 036. Flat jar base, medium-fired, pink 7.5YR7/4 ware, coarse grit temper.
14. Stratum 4.  
Locus 034. Flat jar base, low-fired, pink 5YR7/4 ware, reddish grey 5YR 512 core, smoothed exterior.
15. Stratum 4.  
Locus 034. Flat jar base, medium-fired, reddish yellow 5YR7/6 ware, pinkish grey 5YR6/2 core, fine grit temper, red 10R5/8 "grain wash" exterior.
16. Stratum 4.  
Locus 036. Plain bowl rim, medium-fired, very pale brown 10YR7/3 ware, dark grey 10YR4/1 exterior, wet-smoothed interior and exterior, light red 10R6/6 trickle paint interior.
17. Stratum 4.  
Locus 036. Horn of animal (bull?) figurine, medium-fired, pink 7.5YR8/4 ware, grey N6/0 core, very fine grit temper, red 10R6/ polished slip exterior.
18. Stratum 4.  
Locus 036. Inverted platter-bowl rim with groove below carination, pale red 10R6/4 ware, fine grit temper, weak red 10R4/4 burnished slip exterior.
19. Stratum 4.  
Locus 036. Inverted platter-bowl rim, medium-fired, reddish yellow 5YR6/6 ware, very pale brown 10YR7/4 core, fine grit temper.

Fig. 10: Ceramic artifacts from Sounding Strata 3 and 2.

1. Stratum 3.  
Locus 032. Thickened holemouth jar rim, medium-fired, very pale brown 10YR7/3 ware, grey 10YR6/1 core, weak red 10R5/4 "grain wash" exterior.
2. Stratum 3.  
Locus 028. Thickened holemouth jar rim, medium-fired, very pale brown 10YR8/3 ware, grey 10YR5/1 core, coarse grit temper, red 10R5/6 "grain wash" exterior.
3. Stratum 3.  
Locus 028. Indented ledge handle, medium-fired, reddish yellow 5YR7/6 ware, light grey 10YR7/2 core, coarse grit temper, weak red 10R5/3 "grain wash" exterior.
4. Stratum 3.  
Locus 032. Flat jar base, medium-fired, pink 7.5YR8/4 ware, grey 10YR6/1 core, coarse grit temper.
5. Stratum 3.  
Locus 032. Everted jar rim, high-fired light yellowish brown 10YR6/4 ware, vertically burnished self slip exterior, horizontally burnished red 10R4/6 slip on rim top and interior.
6. Stratum 3.  
Locus 028. Everted bowl rim, high-fired, pink 5YR8/4 ware, light red 10R6/6 slip exterior and rim interior.
7. Stratum 2.  
Locus 026. Beveled holemouth jar rim, medium-fired, pink 5YR7/4 ware, light grey 10YR7/1 core, coarse grit temper, grey 5YR5/1 "grain wash" exterior.
8. Stratum 2.  
Locus 026. Thickened holemouth jar rim, medium-fired, pale brown 10YR7/3 ware, coarse grit temper, light red 10R6/6 "grain wash" exterior.
9. Stratum 2.  
Locus 026. Thickened holemouth jar rim, medium-fired, very pale brown 10YR8/3 ware, weak red 10R5/3 slip exterior.

10. Stratum 2.  
Locus 019. Folded jar rim, low-fired, pale brown 10YR6/3 ware, fine grit temper, red 10R4/6 slip exterior.
11. Stratum 2.  
Locus 026. Folded jar rim, medium-fired, grey N5/0 ware, medium grit temper, red 10R4/6 "grainwash" exterior.
12. Stratum 2.  
Locus 019. Indented ledge handle, high-fired, reddish grey 10R5/1 ware, medium grit temper, pale yellow 2.5YR8/4 slip exterior.
13. Stratum 2,  
Locus 019. Flat jar base, medium-fired, pale brown 10YR6/3 ware, grey 10YR6/1 core, coarse grit and grog temper, smoothed exterior.
14. Stratum 2.  
Locus 019. Flat jar base, medium-fired, pink 7.5YR7/4 ware, very fine grit temper, white 10YR8/2 slip and weak red 10R4/4 painted stripes exterior.
15. Stratum 2.  
Locus 019. Flat jar base, high-fired, pink 7.5R7/4 ware, coarse grit temper, red 10R4/6 slip exterior.
16. Stratum 2.  
Locus 026. Inverted bowl rim, high-fired, brown 10YR5/3 ware, no temper, red 10R5/6 slip exterior.
17. Stratum 2.  
Locus 026. Inverted platter-bowl rim, medium-fired, weak red 10R5/3 ware, grey 10YR5/1 core, horizontally burnished interior and exterior.

Fig. 11: Ceramic artifacts from Sounding Stratum 1.

1. Stratum 1,  
Locus 012. Grooved holemouth jar rim, medium-fired, pink 7.5YR5/2 ware, brown 7.5YR5/2 core, coarse grit temper.
2. Stratum 1,  
Locus 012. Beveled holemouth jar rim, medium-fired, light reddish brown 2.5YR6/4 ware, very coarse grit temper.
3. Stratum 1,  
Locus 012. Thickened holemouth jar rim, medium-fired, pink 7.5YR7/4 ware, coarse grit temper, reddish brown 2.5YR5/4 slip exterior.
4. Stratum 1,  
Locus 012. Flared jar rim, high-fired, pink 7.5YR7/4 ware, medium grit temper, yellowish red 5YR5/6 "grain wash" exterior.
5. Stratum 1,  
Locus 012. Flared jar rim, high-fired, light red 2.5YR6/6 ware, pale brown 10YR6/3 core, coarse grit temper, greyish brown 10YR5/2 "grain wash" exterior.
6. Stratum 1,  
Locus 005. Flared jar rim, high-fired, very pale brown 10YR7/4 ware, medium grit temper, grey N5/0 "grain wash" exterior.
7. Stratum 1,  
Locus 012. Indented ledge handle, medium-fired, very pale brown 10YR7/4 ware, coarse grit temper, red 10R5/6 painted stripe exterior.
8. Stratum 1,  
Locus 012. Flat jar base, medium-fired, light red 2.5YR6/6 ware, grey 10YR5/1 core, coarse grit temper, white 5YR8/1 slip and red 10R4/6 paint exterior.
9. Stratum 1,  
Locus 005. Flat jar base, medium-fired, greyish brown 10YR5/2 ware, coarse grit temper, red 10R5/6 slip exterior.
10. Stratum 1,  
Locus 012. Flat jar base, high-fired, reddish yellow 5YR6/6 ware, fine grit and grog temper.
11. Stratum 1,  
Locus 012. Inverted platter-bowl rim, high-fired, light reddish brown 5YR6/4 ware, very fine grit temper, horizontally burnished interior and exterior.
12. Stratum 1,  
Locus 012. Ledge-handled platter-bowl rim, medium-fired, pinkish grey 7.5YR6/2 ware, coarse grit temper, vertically burnished interior.
13. Stratum 1,  
Locus 002. Flaring rim ovoid jar with two vertical strap handles, very high-fired ("metallic ware"), dark reddish grey 5YR4/2 ware, fine sand temper, white 10YR8/2 slip and parallel groups of grey 5YR5/1 painted stripes exterior.

Fig. 12. Late third millennium B.C. (Early Bronze Age IV) ceramic artifacts; ceramic and lithic artifacts from burial 021, Sounding Stratum 2; and ceramic artifacts from Tomb NE.1.

- 1-2. Surface. Flared jar rim and flat base (same vessel), very high-fired ("metallic ware"), reddish yellow 5YR7/6 ware, grey 10YR6/1 core, fine sand temper, white 10YR8/2 slip exterior and rim interior, raised decoration below neck, combed decoration on lower body.
3. Surface. Folded "envelope" ledge handle, high fired, grey 10YR5/1 ware, fine sand temper.
4. Surface. Folded "envelope" ledge handle, high-fired, reddish yellow 5YR7/6 ware, fine sand temper.
5. Sounding, Stratum 2, Burial 021. Plain bowl (lamp) rim, high-fired, pink 5YR7/4 ware, uncertain temper, horizontally burnished red 10R4/6 slip interior and exterior, soot on rim.
6. Sounding, Stratum 2, Burial 021. Everted jar rim, high-fired, pale red 10R6/4 ware, medium grit temper, burnished self-slip exterior and rim interior.
7. Sounding, Stratum 2, Burial 021. Ground and drilled basalt ring fragment.
8. Tomb NE.1. Carinated bowl rim, medium-fired, reddish yellow 5YR7/6 ware, no temper, burnished dark red 10R3/6 slip interior and exterior.
9. Tomb NE.1. Folded jar rim, medium-fired, very pale brown 10YR7/3 ware, fine grit temper, weak red 10R5/4 slip exterior and rim interior.
10. Tomb NE.1. Cup (with loop handle?), medium-fired, pink 5YR7/4 ware, no temper, red 10R4/4 "line-painted" stripes exterior.
11. Tomb NE.1. Inverted platter-bowl rim, low-fired, very pale brown 10YR7/3 ware, medium grit temper, burnished weak red 10R4/3 slip interior and above carination exterior, burnished reddish brown 5YR5/4 slip below carination exterior.

Fig. 13. Late fourth-late third millennium B.C. (Early Bronze Age) chipped stone tools.

1. Sounding, Stratum 2, Locus 026. Bifacially retouched trapezoidal blade fragment, silica polish along both edges.
2. Sounding, Stratum 2, Locus 012. Unifacially retouched blade, silica polish along retouched edge, broken end of longer fragment retouched.
3. Sounding, Stratum 2, Locus 001. Trapezoidal blade fragment, silica polish along both edges.
4. South Cut, Stratum 1. Trapezoidal blade fragment, silica polish along both edges.
5. Surface. Triangular blade fragment, silica polish along one edge.
6. Surface. Trapezoidal blade fragment, silica polish along both edges.
7. Sounding, Stratum 4, Locus 036. Unifacially retouched fan scraper.
8. Sounding, Stratum 1, Locus 002. Unifacially retouched fan scraper.

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|---|---|
| 9. Sounding,<br>Stratum 1,<br>Locus 001.  | Unifacially retouched scraper fragment. |
| 10. Sounding,<br>Stratum 2,<br>Locus 019. | Flint hammerstone with battered edges.  |

Fig. 14. Ground stone artifacts.

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|--|--|
| 1. Sounding,<br>Stratum 3,<br>Locus 028. | Ground basalt bowl rim.                                |
| 2. Surface.                              | Ground basalt bowl rim with knobs around the exterior. |
| 3. Surface.                              | Ground and drilled basalt ring.                        |
| 4. Sounding,<br>Stratum 4,<br>Locus 036. | Ground and drilled limestone ring (or hoe) fragment.   |
| 5. Surface.                              | Ground chalk stamp(?) with carved crossed-line design. |

**Appendix B: Sounding Loci Descriptions by Stratum.**

<i>Stratum</i>	<i>Locus</i>	<i>Description</i>
5	037	fill?
4	036	floor/surface
	035	stone wall foundation
	034	floor/surface
3	033	fill
	032	floor/surface
	031	stone wall foundation
	030	mudbrick superstructure of wall 031
	029	stone wall foundation
	028	floor/surface
2	027	fill of walls 022, 025
	026	floor/surface
	025	stone wall foundation
	024	hearth area with burned soil, ashes, and charcoal
	023	stone pile
	022	stone wall foundation
	021	burial fill and skeletal remains
	020	floor/surface
	019	floor/surface
	018	mud wall?
	017	mudbrick wall
	015	mudbrick superstructure of wall 022
	010	stone wall foundation (also used in Str. 1)
	006	mudbrick superstructure of wall 025
1	014	floor/surface
	013	fill of wall 003
	012	floor/surface
	011	stone wall foundation
	010	stone wall foundation (also used in Str. 2)
	009	fill
	008	stone line
	007	clay fill
	005	floor/surface
	004	stone line
	003	stone wall foundation
post- occupation	002	colluvium
	001	plow zone

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