Demidenko Y.E., Otte M. & Noiret P. (dir.) - *Siuren I rock-shelter. From Late Middle Paleolithic and Early Upper Paleolithic to Epi-Paleolithic in Crimea.*
Liège, ERAUL 129, 2012, p. 27-48.

3 - SIUREN I: STRATIGRAPHIC AND ARCHAEOLOGICAL SEQUENCES FOR THE 1990s EXCAVATIONS

Alexandre I. YEVTUSHENKO†

Stratigraphy

In the course of the 1994-1997 fieldwork at Siuren I, the site's stratigraphic sequence was analyzed using formal archaeological approaches; the strata and lenses of deposits were documented according to color, degree of scree content and superposition. In total, the Siuren I stratigraphy was studied on the basis of seven profiles (see fig. 6 in Chapter 2). The overall thickness of the deposits studied is more than 6 m from the present-day floor of the rock-shelter. Four longitudinal profiles of deposits (Profiles I, II, III, VI) and three transversal profiles of deposits (Profiles IV, V, VII) were exposed. A joint list of geological strata was used for stratigraphic description of all the profiles. Forty-five geological strata were recognized, the majority of which are lenses with limited spatial distribution and typically not present across the entire excavation area. The site's sedimentation in the area investigated is represented by two facies of deposits: cave sediments inside the rock-shelter and slope sediments on the platform in front of the rock-shelter. This is because our excavation area is situated under the rock-shelter's modern drip line. However, naturally, the rock-shelter's drip line changed position during the time span from Pleistocene to modern times, as the roof was continually collapsing and the rock-shelter's actual inner space was increasingly reduced. Thus, the stratigraphic situation is complex when one sedimentation type is transformed to another over a short distance in the same profiles. A high concentration of by-products from roof-fall in the sediments, such as limestone blocks, slabs, fragments and *éboulis* complicated excavations. On the other hand, the positions of these elements in the profiles clearly helped to subdivide the stratigraphic sequence in detail. Thus, the Siuren I depositional sequence is clearly separated by five levels of huge limestone blocks – the evidence of rock-fall from the roof. The *first rock-fall* was defined as Stratum 4a; the *second rock-fall* as Stratum 8; the *third rock-fall* as Stratum 13; the *fourth* as Stratum 15e; and the *fifth rock-fall* as Stratum 19.

Profile I (see fig. 4 in Chapter 2)

This is the longest profile that is actually the re-cleaned eastern profile of the trench dug by G.A. Bonch-Osmolowski in 1927. The trench was partly destroyed during the time after the 1920s fieldwork and as a result, Profile I is no longer straight after cleaning in 1994. Both cave deposit facies and slope deposit facies, as well as drip line deposits, are clearly represented. As common cave sediments, the southern part of the profile is characterized by a high concentration of limestone slabs, fragments and *éboulis* with a poor sandy component, while the northern part of the profile is contains clear silty-clay and/or clay components of the open-air slope. An unclear border between the deposition facies corresponds to the drip line of the rock-shelter and this is reflected in the central part of the profile. Sediments covered by huge limestone blocks are quite well-preserved and are clearly subdivided into different strata. The upper part of the deposits has a concave profile perhaps as a result of deformation after roof fall. Sediments of the cave deposition facies are separated by levels of rock-fall, but there are some difficulties in subdividing sediments between rock-fall levels, because of the high concentration of limestone slabs, fragments and éboulis of different sizes given the lack of sediments.

The stratigraphic sequence for Profile I can be summarized as follows:
Stratum 1. Modern humus covering back dirt of previous excavations.
Stratum 2. Mixed deposits-back dirt from previous excavations.
Stratum 2a. Mixed deposits-loamy dust with limestone fragments and historical/modern trash covering the Pleistocene deposits inside the rock-shelter. During previous archeological investigations at Siuren I, the 1920s Upper cultural layer, according to Bonch-Osmolowski's data, was excavated at this area.
Stratum 3. Humus deposited prior to previous excavations of the shelter.
Stratum 4. Yellowish-brown silty clay with rounded limestone *éboulis*.
Stratum 4a. Limestone block (*the first rock-fall level*).
Stratum 5. Dark-brown silty clay with root remains.
Stratum 6. Yellowish-gray carbonated sediments, the product of limestone weathering erosion.
Stratum 7. Humiferous silty clay loam with many angular and sub-

angular limestone pebbles and cobbles covered by carbonates.
Stratum 8. Limestone blocks (*the second rock-fall level*).
Stratum 8a. Yellowish-brown sandy clay loam with carbonated limestone slabs and *éboulis* of different size.
Stratum 9. Yellowish-brown silty clay loam with small uncarbonated *éboulis* below a huge limestone block from rock-fall covering this stratum, and with small carbonated *éboulis* on the slope. The different sized limestone slabs, fragments and *éboulis* under limestone blocks correspond to cave facies of the stratum.
Stratum 9a. A lens of unsorted small *éboulis*.
Stratum 10. Yellowish-brown silty clay with angular limestone slabs and *éboulis*.
Stratum 11. Light yellowish-brown granulated silt with sand and angular limestone *éboulis*.
Stratum 12. Yellowish-brown silty clay with rare *éboulis* of different size.
Stratum 12a. A lens of sorted and rounded small *éboulis* of sandstone, limestone, quartz, etc. These are alluvial sediments, probably from an ancient stream.
Stratum 12b. Yellowish-brown silty clay with limestone é*boulis* of different size.
Stratum 13. Limestone blocks (*the third rock-fall level*). The white carbonated sand with limestone é*boulis* and slab fragments is characteristic for the stratum in the slope deposit facies.
Stratum 14. Light yellowish sand with limestone *éboulis* of different size.
Stratum 15. Light brown sandy sediment with angular limestone slabs and é*boulis*.
Stratum 15b. Limestone blocks, found only in the cave deposit facies.
Stratum 15c. Densely deposited limestone slabs and blocks that correspond to Stratum 15 in the cave deposit facies.
Huge limestone slabs and blocks are exposed at the bottom of the trench. It is highly likely that these can be correlated with the rock-fall level of Stratum 15e in Profile IV.

Profile II (see fig. 5 in Chapter 2)

This is the western cleaned profile of the 1927 trench, in part of the tunnel. Today, Profile II is located beneath the modern drip line, but deposits represented here contain both cave and slope sediments. In many basic details, Profile II is comparable to the stratigraphic sequence of Profile I, although some strata are absent here.
Stratum 1. Modern humus.
Stratum 2. Mixed deposits-back dirt from previous excavations.
Stratum 3. Humus.
Stratum 7. Humiferous silty clay loam with a number of angular and sub-angular limestone pebbles and cobbles covered by carbonates.
Stratum 8. Limestone blocks (*the second rock-fall level*).
Stratum 9. Yellowish-brown silty clay loam with small uncarbonated *éboulis* under a rock-fall block covering this stratum and with small carbonated *éboulis* in the slope deposit facies.
Stratum 9a. A lens of unsorted small *éboulis*.
Stratum 10. Yellowish-brown silty clay with angular limestone slabs and *éboulis*.
Stratum 11. Light yellowish-brown granulated silt with sand and angular limestone *éboulis*.
Stratum 12. Yellowish-brown silty clay with rare *éboulis* of different size.
Stratum 12a. A lens of sorted and rounded small *éboulis* of sandstone, limestone, quartz, etc. These are alluvial sediments, probably from an ancient stream.
Stratum 12b. Yellowish-brown silty clay with limestone é*boulis* of different size.
Stratum 13. Limestone blocks (*the third rock-fall level*). White carbonated sand with limestone é*boulis* and slab fragments correspond to this stratum in the slope deposit facies.
Stratum 14. Light yellowish sand with limestone *éboulis* of different size.
Stratum 14a. Lens of white sand.
Stratum 15. Light brown sandy sediment with a number of limestone angular slabs and é*boulis*.
Stratum 15a. A lens of unsorted *éboulis* of different size.
Stratum 16. Light yellowish sandy sediment with a number of slabs and *éboulis* of different size.

Profile III (fig. 1)

This is the western profile of our excavation area. In the main details, its stratigraphic sequence corresponds well to the sequences of Profiles I and II, but there are some additional strata and lenses, while some sediments of the upper part of the sequence (Strata 4-6) are absent.

The stratigraphic sequence of Profile III is as follows (fig. 1, profile III is combined, to the right, with profile 4 in a cabinet projection system):
Stratum 1. Modern humus covering the back dirt from previous excavations.
Stratum 2. Mixed deposits-back dirt from previous excavations.
Stratum 3. Humus.
Stratum 4a. Limestone blocks (*the first rock-fall level*).
Stratum 7. Humiferous silty clay loam with angular and subangular limestone pebbles and cobbles covered by carbonates.
Stratum 8. Limestone blocks (*the second rock-fall level*).
Stratum 8a. Yellowish-brown sandy clay loam with carbonated limestone slabs and *éboulis* of different size.
Stratum 9. Yellowish-brown carbonated silty clay loam with small *éboulis*.
Stratum 9b. A lens of sorted and rounded *éboulis*. This stratum corresponds to Stratum 9a, but also contains unsorted and unrounded *éboulis*.
Stratum 9c. Yellowish-brown silty clay loam with uncarbonated limestone *éboulis* of different size.
Stratum 9d. Yellowish-brown sandy clay with limestone block, slabs and uncarbonated *éboulis*. Sediment in this stratum probably corresponds to deposition processes of Stratum 9 in the cave facies in Profile I.
Stratum 9e. A lens of sorted and rounded small *éboulis* underlying Stratum 9d.
Stratum 10. Yellowish-brown silty clay with angular limestone slabs and *éboulis*.
Stratum 10a. A lens of sorted and rounded small *éboulis*.
Stratum 11. Light yellowish-brown granulated silt with sand and angular limestone *éboulis*.

Stratum 11a. Light yellowish-brown loamy sand with *éboulis* of different size.
Stratum 12. Yellowish-brown silty clay with rare *éboulis* of different size.
Stratum 12b. Yellowish-brown silty clay with limestone é*boulis* of different size.
Stratum 12c. A lens of sorted and rounded small *éboulis*.
Stratum 13. Limestone blocks (*the third rock-fall level*).
Stratum 13a. White sand with *éboulis* of different size.
Stratum 14. Light yellowish sand with limestone *éboulis* of different size.
Stratum 14a. Lens of white sand.
Stratum 15. Light brown sandy sediment with angular limestone slabs and é*boulis*.
Stratum 15d. Brown sandy sediment with different-sized limestone slabs and *éboulis*.
Stratum 16. Light yellowish sandy sediment with limestone slabs and *éboulis*.
Stratum 16b. Light sandy sediment contains many *éboulis*.
Stratum 17. Dark yellowish-brown clay with rare limestone *éboulis*.
Stratum 18. Yellowish-brown sandy sediment reached by limestone slabs and *éboulis*.
Stratum 19. Limestone blocks (*the fifth rock-fall level*).

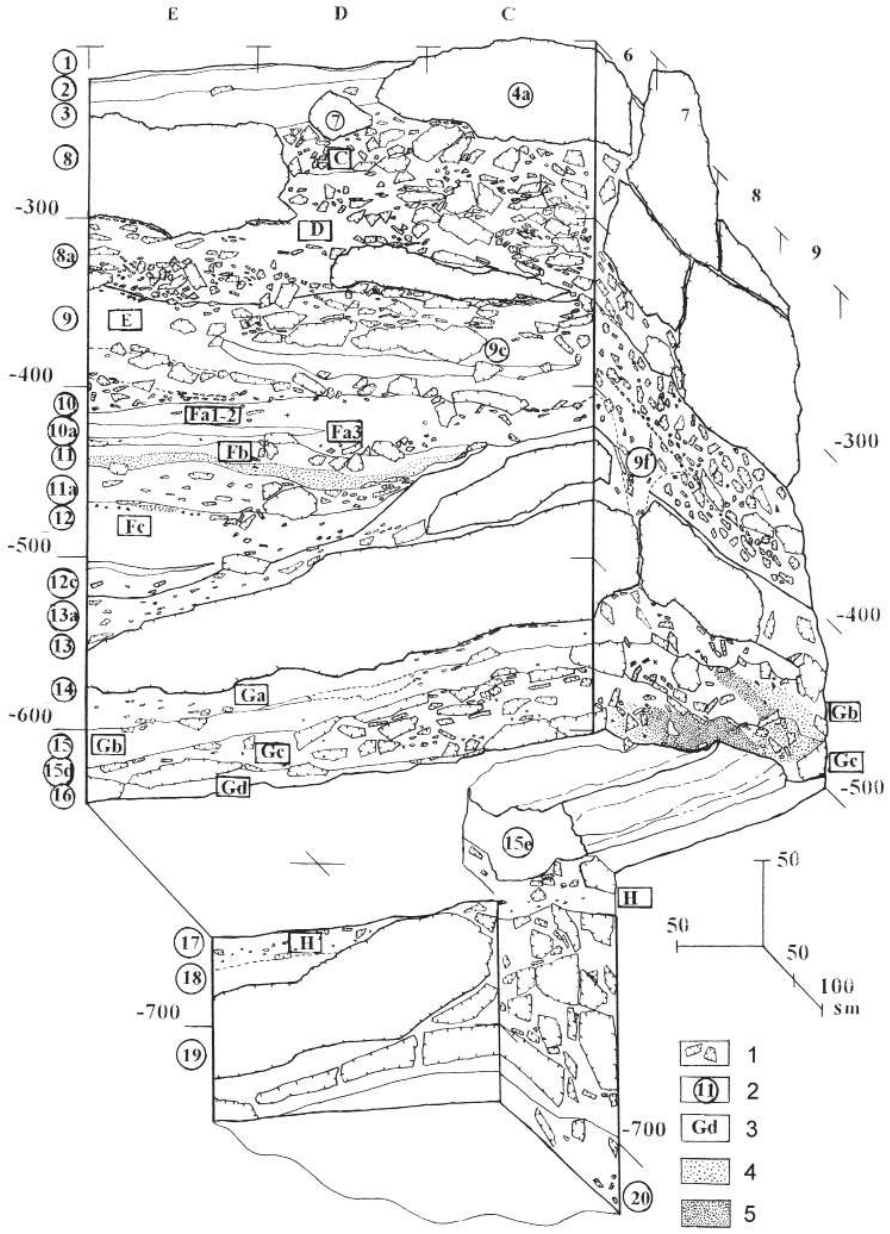

Figure 1 - Siuren I. Combined Profiles III and IV of the 1990s excavations. 1, limestone slabs and éboulis; 2, lithological strata defined in the 1990s; 3, archeological units and levels defined in the 1990s; 4, charcoal pieces; 5, hearth/ashy lenses.

Profile IV (fig. 2)

This is the northern profile of our excavation area, located directly under the modern drip line of the rock-shelter. The sequence is clearly represented by sediments which are characteristic for both drip line deposition and cave deposition, but slope sediments are absent.

The stratigraphic sequence of Profile IV is as follows (fig. 2):
Stratum 1. Modern humus.
Stratum 4a. Limestone blocks (the first rock-fall level).
Stratum 8. Limestone blocks (*the second rock-fall level*).
Stratum 8a. Yellowish-brown sandy clay loam with carbonated limestone slabs and *éboulis* of different size.
Stratum 9. Yellowish-brown silty clay loam with small carbonated *éboulis* on the border with profile III and uncarbonated sediments closer to the trench.
Stratum 9f. Lens of yellowish-brown clay sediment with *éboulis* of different size.
Stratum 10. Yellowish-brown silty clay with angular limestone slabs and *éboulis*.
Stratum 11. Light yellowish-brown granulated silt with sand and angular limestone *éboulis*.
Stratum 12. Yellowish-brown silty clay with rare *éboulis* of different size.
Stratum 13. Limestone blocks (*the third rock-fall level*).
Stratum 13a. White sand with *éboulis* of different size.
Stratum 14. Light yellowish sand with limestone *éboulis* of different size.
Stratum 15. Light brown sediment with angular limestone slabs and é*boulis*.
Stratum 15d. Brown sandy sediment with different-sized limestone slabs and *éboulis*.
Stratum 15e. Limestone blocks (*the fourth rock-fall level*).
Stratum 16. Light yellowish sandy sediment with slabs and *éboulis*.
Stratum 17. Dark yellowish-brown clay with rare limestone *éboulis*.
Stratum 18. Yellowish-brown sandy sediment.
Stratum 19. Limestone blocks (*the fifth rock-fall level*).

Profile V (fig. 3)

This is the southern profile of our excavation area. The upper part of the deposits (above Stratum 10) was excavated in a wider square than the area under investigation and is absent in this stratigraphic profile. The sediment sequence of Profile V is represented by drip line and cave deposition, while slope deposition is not represented. Strata 18 through 20 are known only from the 1996 test pit in squares.8, 9-E. It is very important that sequence deposits of Profile V are strictly connected to Profiles II and III.
Stratum 10. Yellowish-brown silty clay with angular limestone slabs and *éboulis*.
Stratum 10a. A lens of sorted and rounded small *éboulis*.
Stratum 11. Light yellowish-brown granulated silt with sand and angular limestone *éboulis*.
Stratum 11a. Light yellowish-brown loamy sand with *éboulis* of different size.
Stratum 12. Yellowish-brown silty clay with rare *éboulis* of different size.
Stratum 12a. A lens of sorted and rounded small *éboulis* of sandstone, limestone, quartz, etc. These are alluvial sediments, probably from an ancient stream.
Stratum 12b. Yellowish-brown silty clay with limestone é*boulis* of different size.
Stratum 12c. A lens of sorted and rounded small *éboulis*.
Stratum 13. Limestone blocks (*the third rock-fall level*).
Stratum 13a. White sand with *éboulis* of different size.
Stratum 14. Light yellowish sand with limestone *éboulis* of different size.
Stratum 14a. Lens of white sand.
Stratum 15. Light brown sediment with angular limestone slabs and é*boulis*.
Stratum 15d. Brown sandy sediment with different-sized limestone slabs and *éboulis*.
Stratum 16. Light yellowish sandy sediment with slabs and *éboulis*.
Stratum 16a. Lens of light yellowish sandy sediment with sorted small *éboulis* within stratum 16.
Stratum 16b. Light sandy sediment reached by *éboulis*.
Stratum 17. Dark yellowish-brown clay with rare limestone *éboulis*.
Stratum 18. Yellowish-brown sandy sediment.
Stratum 19. Limestone blocks (*the fifth rock-fall level*).
Stratum 19a. White sandy sediment with number *éboulis* and fragments.
Stratum 19b. Lens of yellowish brown silty clay with *éboulis*.
Stratum 20. Brown clay with rounded *éboulis* and pebbles. The sediment of this stratum is very similar to the alluvial terrace of the Belbek River.

Profile VI (fig. 4A)

This is the western profile of the test pit dug in squares 8, 9-E during the 1996 field season from the surface of Stratum 16. In 1997, Strata 16 and 17, preserved in the other part of the excavation area, were completely excavated here.

Sediments from the lower part of the depositional sequence are represented as follows on Profile VI:
Stratum 18. Yellowish-brown sandy sediment.
Stratum 19. Limestone blocks (*the fifth rock-fall level*).
Stratum 19b. Lens of yellowish brown silty clay with *éboulis*.

Profile VII (fig. 4B)

This is the northern profile of the 1996 test pit. Only the lower strata of the stratigraphic sequence with cave sediments are represented here, while Stratum 20 is connected to alluvial deposits of the Belbek River.

The stratigraphic sequence of Profile VII is as follows:
Stratum 18. Yellowish-brown sandy sediment.
Stratum 19. Limestone blocks (*the fifth rock-fall level*).
Stratum 19a. White sandy sediment with *éboulis* and fragments.
Stratum 19b. Lens of yellowish brown silty clay with *éboulis*.
Stratum 20. Brown clay with rounded *éboulis* and pebbles.

Archaeological sequence

A specific system, based on the site's stratigraphy, was used for labeling the archaeological sequence. Humiferous sediments

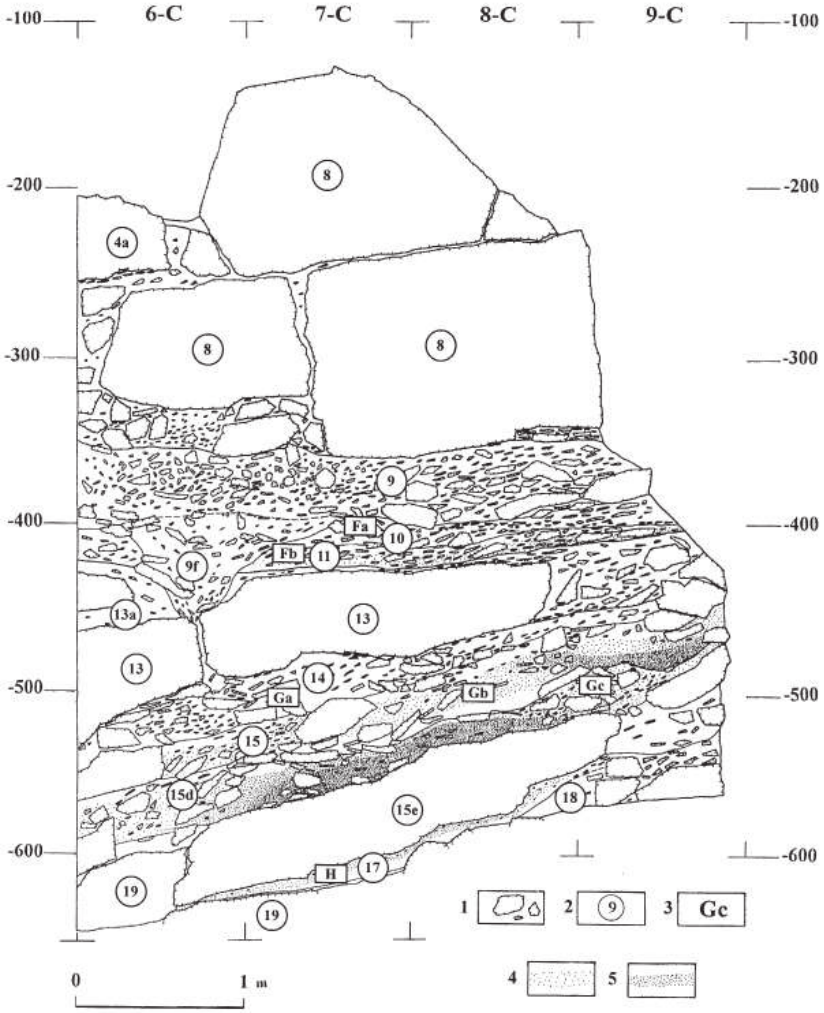

Figure 2 - Siuren I. Profile IV of the 1990s excavations. 1, limestone slabs and éboulis; 2, lithological strata defined in the 1990s; 3, archeological units and levels defined in the 1990s; 4, charcoal pieces; 5, hearth/ashy lenses.

of Stratum 3 contained pottery fragments from human activity in the rock-shelter during the 18th and 19th centuries as well as some redeposited Upper Paleolithic flint artifacts. The Paleolithic archaeological levels identified during our excavations were grouped into several units based on their position between the defined rock-fall levels. Units A, B, C and D contain disturbed levels with no real evidence of living floors between the *first* and *second rock-fall levels*. However, Units E, F, G and H were composed of a series of living floors and partially dispersed finds. Levels in Units E and F are clearly located between the *second* and the *third rock-fall levels*. Moreover, there are sterile sediments in the lower part of Stratum 9 separating the dispersed finds of Unit E from the uppermost levels in Unit F. Levels in Unit G are located between the *third* and the *fourth rock-fall levels*, while the single level of Unit H was discovered below the *fourth* and above the *fifth rock-fall levels*. No artifacts, bones, hearths, or other evidence of human activity were found below the *fifth rock-fall level*.

Thus, a total of eight archaeological Paleolithic units were studied at Siuren I during the 1990s excavations: Units A through H (from top to bottom).

Unit A was defined in Stratum 4 in an area of ca. 3.5 sq. m. The unit was subdivided into four levels, each with an average thickness of ca. 10 cm. Faunal remains were not found. The majority of artifacts, as well as limestone *éboulis*, were mostly found in vertical position. Some lithics were also found in rodent burrows. These clearly indicate that both Unit A and Stratum 4 are in disturbed stratigraphic context.

Unit B is located in Stratum 6 directly above the *second rock-fall level* of Stratum 8 and contained only some dispersed charcoal. No lithic artifacts or fauna were discovered. The thickness of Unit B is ca. 3 cm.

Unit C is represented by a single redeposited flint artifact in humiferous sediment of Stratum 7.

Unit D was defined in the upper part of Stratum 8a. Rare lithic artifacts were dispersed throughout the unit, which also filled open-work gaps in the *second rock-fall level* of Stratum 8.

Unit E was defined directly below the *second rock-fall level* of Stratum 8. A few flint artifacts were excavated from the upper

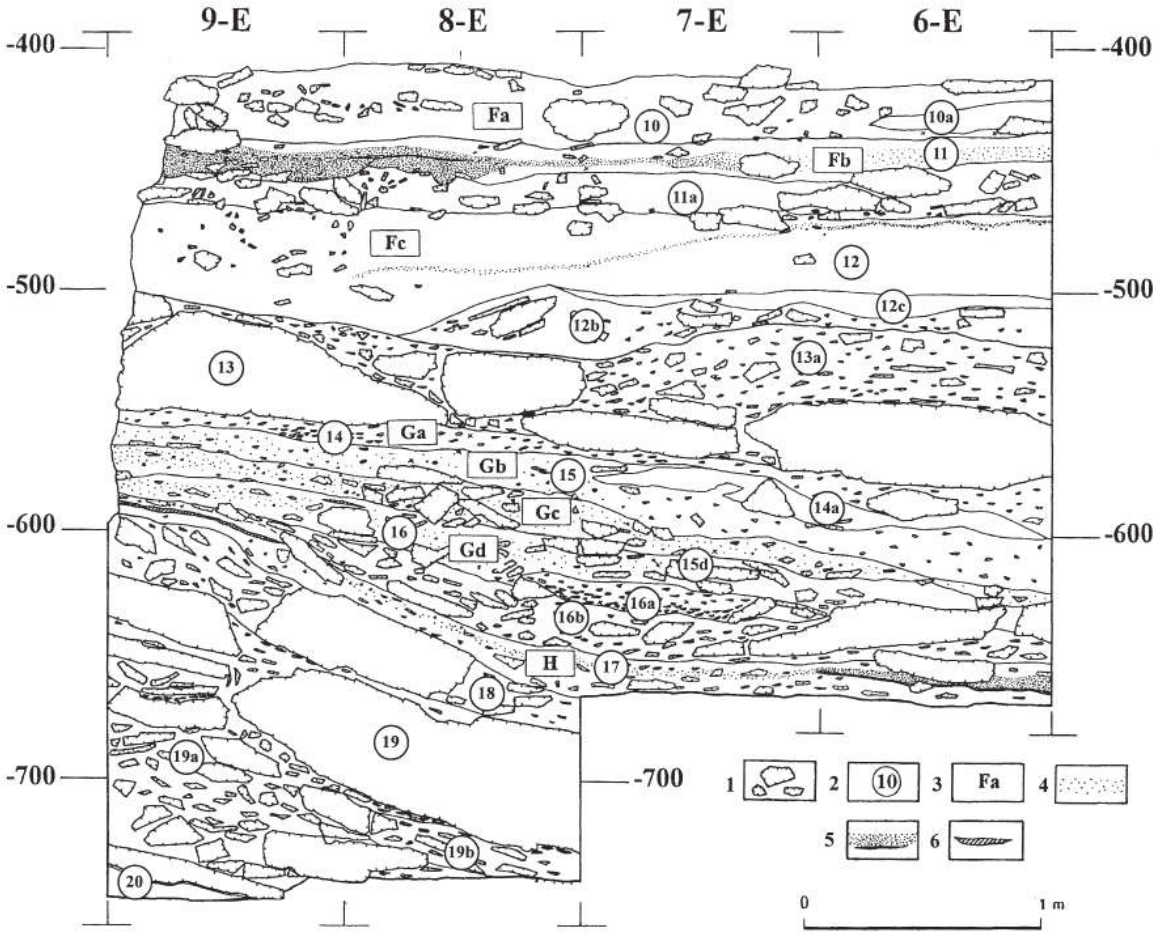

Figure 3 - Siuren I. Profile V of the 1990s excavations. 1, limestone slabs and éboulis; 2, lithological strata defined in the 1990s; 3, archeological units and levels defined in the 1990s; 4, charcoal pieces; 5, hearth/ashy lenses with burnt lower areas; 6, distinct hearth and/or fireplaces.

part of Stratum 9 and a few unidentifiable bone fragments were also found.

Unit F was subdivided into four basic archaeological levels: Fa1-Fa2, Fa3, Fb1-Fb2 and Fc. The majority of these levels are represented by carpets of artifacts, faunal remains and concentrations of charcoal and ash, deposited along the inclination angle of the strata in which they were found.

Level Fa1-Fa2 was defined in the upper part of Stratum 10. It contained rare flint artifacts and animal bones, usually deposited at different depths and frequently vertically oriented. Sub-levels Fa1 and Fa2 were defined according to depths of the finds and the inclination angle of sediments. The thickness of each sub-level is ca. 10 cm.

Level Fa3 is located directly below Stratum 10a in the lower part of Stratum 10. The level is 5-10 cm thick with finds distributed across the entire excavated area.

Level Fb1-Fb2 is associated with the middle and lower parts of Stratum 11. The difference between sub-levels Fb1 (upper) and Fb2 (lower) is the color of the sediments. Sub-level Fb2 has a more grayish color, due to the high amount of charcoal and burnt bones. Several refits of artifacts from these sub-levels, however, indicate the homogeneous nature of level Fb1-Fb2. The average thickness of this level is ca. 5-10 cm.

Level Fc is found in the upper part of Stratum 12. The thickness of this level is no more than 3 cm.

Unit G. A total of four levels belong to this unit.

Level Ga was defined in Stratum 14, directly below the limestone block of the *third rock-fall level* (Stratum 13). It is highly likely that Stratum 14 results from the dissolution of the limestone blocks from the *third rock-fall level*. If so, the finds within Stratum 14 are not a separate archaeological level, but rather the top of level Gb1-Gb2 which lies directly below. The average thickness of this level is 5-10 cm.

Level Gb1-Gb2 was observed in Stratum 15. The level is represented by two sub-levels: Gb1 (upper part of the level) and Gb2 (lower part of the level). Both consist of ashy lenses. In the north-western and central parts of the excavation area in about three squares, these sub-levels were separated by limestone slabs. Apart from this, there were no lithological markers in the rest of the excavation area suitable for subdividing the level. Therefore, sub-levels Gb1 and Gb2 could be separate living floors which accumulated without a clear sterile horizon

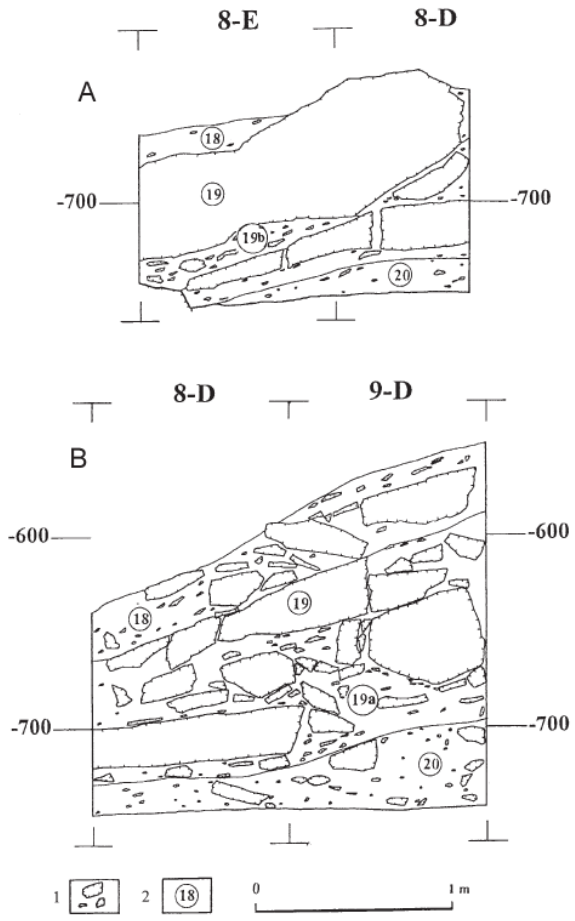

Figure 4 - Siuren I. Profiles VI (A) and VII (B) of the 1990s excavations. 1, limestone slabs and éboulis; 2, lithological strata defined in the 1990s.

between them. The thickness of sub-level Gb1 is 10-15 cm, while sub-level Gb2 is ca. 10 cm.

Level Gc1-Gc2 is located within Stratum 15d and subdivided into three sub-levels: Gc1 (upper part of the level), Gc2 and Gc2a (lower part of the level).

Level Gd is associated with the contact between Strata 16 and 16b. The average thickness of this level is ca. 5-7 cm.

Unit H is associated with Stratum 17 and is represented by a single archaeological level. The average thickness of this level is no more than 10 cm.

Our new stratigraphic classification enables us to correlate new archaeological units with Bonch-Osmolowski's "*cultural layers*". Units A-D correspond to Bonch-Osmolowski's *Upper cultural layer*, Unit F corresponds to his *Middle cultural layer* and Unit G is the analog of the *Lower cultural layer*. Unit E was not defined during the 1920s investigations as an independent cultural component. The sediments deposited directly below huge limestone blocks and slabs (i.e., the clear stratigraphic position of Unit E) were identified by Bonch-Osmolowski as the upper part of the *Middle cultural layer*, according to his archive reports (see fig. 3 in Chapter 2). But at the same time, some of the sediments excavated under the same level of blocks in the main excavation area were recognized by him as the lower part of the *Upper cultural layer*. Therefore, it is highly probable that Bonch-Osmolowski partly mixed finds from two layers that are actually independent. The presence of a few Aurignacian tools typical of the *Middle cultural layer* within the assemblage from the *Upper cultural layer* may be considered as an illustration of this likelihood.

Unit H was not discovered by Bonch-Osmolowski in his main excavation area, as he terminated his main excavations above this level at the top of limestone blocks representing our *fourth rock-fall level* of Stratum 15e. Yet he recognized that the brown silty-clay sediments (his Stratum 6) contained a few flint artifacts and saiga bones in a deep test pit in squares 13-B, Г, although these finds were not used to define a new cultural layer in his sequence. It is quite likely, however, that these finds correspond to Unit H, defined in the same brown sediments of Stratum 17 in the 1990s excavation area.

Planigraphy

Archaeological materials from Units A, B, C, and D were discovered in reworked contexts in limited excavated areas, no more 3.5-4.0 sq. m. Artifacts from Unit E are not common and did not form a spatial cluster. Much more representative materials were found in levels from Units F, G and H, but the area of our excavations (ca. 12 sq. m) did not give us an opportunity for complete estimation of artifact distribution in all site levels. However, there are specific archaeological features in most of the discovered living floors which are of define interest for describing the complexes of the site in addition to artifact descriptions. Among such features are *pits* and *evidence of fire*.

Pits are relatively simple features, while for evidence of Paleolithic fires a special classification system was used based on attributes of concentrations of fire remains and unique structural aspects of such features. Evidence of fire is subdivided into *hearths, fireplaces and ashy clusters.*

Hearths are characterized by the presence of specially prepared structures such as pits, stone borders or both. The fire remains are represented by thick lenses of ash, charcoal and/or bone coal which is sometimes possible to divide into lens zones. In general, the bottom of pits or enclosed places showed clear evidence of burned ground. Obviously, hearths were artificial constructions and used continuously during occupation.

Fireplaces are characterized by the absence of any structural details and the presence of a spatially defined ash/coal concentration and traces of burned sediment below fire remains. Ash and coal could sometimes be absent, but a zone of burned sediment neatly marked the place of an ancient fire. Fireplaces reflect a relatively discontinuous use of fire. Perhaps such features correspond to bone fires.

Ashy clusters are characterized by small concentrations of fire remains (ash, charcoal, bone coal) with no any structural details or traces of burned sediments. It is possible that some of the ashy clusters could reflect short-term bonfires and/or the use the easy fuel such as grass or small branches which did not leave

deep evidence of burned sediment. Another aspect of such features is connected to occasional weathering concentrations of ash in natural falls at the base of the site, in puddles or around stones, among others.

Planigraphic observations and descriptions of specific archaeological features are presented below for the archaeological levels in Units F, G and H.

Level Fa1-Fa2. Artifacts and bones from level Fa1-Fa2 were spread across the eastern part of the excavated area, while the western part was covered by a lens of small rounded *éboulis* (Stratum 10a) (fig. 5). The sediments with artifacts had slight traces of ashy remains. No clusters of artifacts and bones or hearths were found.

Level Fa3 was defined within sediments containing abundant ashy remains. This level is represented by a carpet of finds across the entire excavated area (fig. 6). There are three features in this level.

Feature 1 is the *fireplace* in square 8-D. It has an elongated irregular shape 0.6 m long and 0.25 m wide. The lens of ashy-coal is 2-3 cm thick in the center. The thickness of burned sediment under ash is 0.5-1.0 cm. Some fragments of burned bones were recovered from within the fireplace.

Feature 2 is the *ashy cluster* in square 8-D not far from Feature 1. The ashy zone has an ovoid shape in 0.10-0.12 m in diameter. The ashy lens contains abundant small fragments of bone coal and is around 1 cm thick in the center.

Feature 3 is the *ashy cluster* in square 8-E. It has an elongated ovoid shape 0.47 m long and 0.3 m wide. The ashy lens contains abundant small fragments of both charcoal and bone coal. The lens is around 1 cm thick in the center and is covered by a limestone slab.

Level Fb1-Fb2 was investigated through two excavation sublevels (fig. 7). The upper part of the level (Fb1) is full of ash and is distributed almost throughout the entire excavation area. The lower part of the level (Fb2) is represented by a high concentration of ash and charcoal/bone coal within sediments. There are eleven features stratigraphically associated with the Fb2 sublevel: three hearths, three fireplaces, three ashy clusters and two pits. Two clear concentrations of artifacts and faunal remains are noted in the spatial distribution of materials from this level. The richest concentration is situated in the south-eastern part of the excavation area and corresponds spatially to several fires located here. The other artifact concentration is situated in the south-western part of the excavation area and is associated with a large ashy cluster. It should be noted that artifact distribution is strongly associated with the distribution of ash within the sediments. There are no any finds outside the ashy borders.

In the south-eastern corner of the excavation area, five fire features (1-5) in sub-level Fb2 show a complete sequence of use that was determined by micro-stratigraphic observations on supplementary balks preserved at the main ashy zones (figs. 8 and 9).

Feature 1 is a huge *ashy cluster* (figs. 8, 9: a, b, c) located in the south-eastern part of the excavation area in squares 7, 8, 9-D, E. Most of the ashy cluster was not excavated as it continues outside the excavated area. The ashy cluster likely had an ovoid shape. In any case, its maximal length is 2.1 m and maximal width is 1.5 m. The maximal thickness of the ashy lens is 5 cm. The lens contains ash, charcoal and small fragments of burned bones. Thin streaks of yellow silty clay were found in the lower part of the ash lens. This ashy cluster directly overlaid Features 2-5.

Feature 2 is the *fireplace* located in square 8-E and has an elongated sub-ovoid shape 0.36 m long and 0.31 m wide. The lens of ashy-coal is 10 cm thick in the center. Specific structural details were not observed, but the feature is situated in natural fall. The limestone slabs, discovered at the bottom of the fire, had clear traces of burned surfaces.

Feature 3 is the *hearth* located in the southern part of square 8, 9-E. The construction of the hearth is represented by an artificial pit 14 cm deep. The shape of the hearth is unknown because most of it is outside of the excavation area. Its maximal length is ca. 0.7 m along Profile V where the hearth's cross-section is represented. The pit fill contains ash, charcoal, bone coal and tiny fragments of reddish ochre. The thickness of burned sediment under the lens is greater than 1 cm. The southwestern part of Feature 3 cuts the edge of Feature 4.

Feature 4 is the *hearth* located in square 8-E and partly in square 9-E. The hearth zone has an ovoid shape 0.6 m long and 0.55 m wide, although its southern end is outside the excavation area. The artificial pit is 9 cm deep and the concave bottom of the pit is uneven. The pit fill contained ash and charcoal. A streak of burned sediment 0.7-1.0cm thick at the bottom of the pit was noted in the central part of the hearth. Transversal cross sections of the hearth are represented in Profile V and its longitudinal section was observed in the supplementary balk that goes along Features 4 and 5.

Feature 5 is the *hearth* found mainly in square 8-E and partly in squares 9-E, 8-D and 9-D. It has an elongated ovoid shape 0.7 m long and 0.5 m wide. The structure is represented by the artificial pit 16-20 cm deep with concave bottom and the stone border of 13 limestone slab fragments. The stone border can be seen around the pit from west and south. Some stones were in vertical position. The pit fill consists of two lenses. The upper plano-convex lens 4-8 cm thick contained light gray ash. The lower concave-convex lens over 12 cm thick contained dark gray ash with small fragments of black charcoal. The lenses are separated by a streak of burned sediment 2-3 mm thick and thin lenses of small-sized limestone *éboulis*, no more than 3 cm in size. The bottom of the pit is burned sand 2-5cm deep. The southern part of the hearth was destroyed by the pit of Feature 4. Cross sections of the hearth are visible on the respective drawings.

Feature 6 is the small *ashy cluster* in square 8-C and has a sub-ovoid shape ca. 0.16 m in diameter. The ash lens is 1 cm thick (fig. 8).

Feature 7 is the *fire place* represented by a zone of burned sediment 1 cm thick with no ash located mostly in the south-eastern

part of square 7-C with the southern part of the zone in square 7-D. It has an elongated ovoid shape 0.38 cm long and 0.28 cm wide (fig. 8).

Feature 8 is the *fireplace* of elongated irregular, close to sub-ovoid shape 0.7 m long and 0.4 m wide. It is located mostly in the south-western part of square 8-C but also partly in squares 7, 8-D and 7-C. The dark gray ashy lens is more than 1.5 cm thick in the center. The burned sediment under the lens is 1 cm thick. It is possible that Features 7 and 8 actually represent a single Paleolithic fireplace, but there is now a clear border between their burned zones (fig. 8).

Feature 9 is a large *ashy cluster* located in squares 6, 7-D, E with an irregular shape with a maximum length of 1.1 m and maximum width of 0.6 m. The gray ashy lens is 4 cm thick. The northern

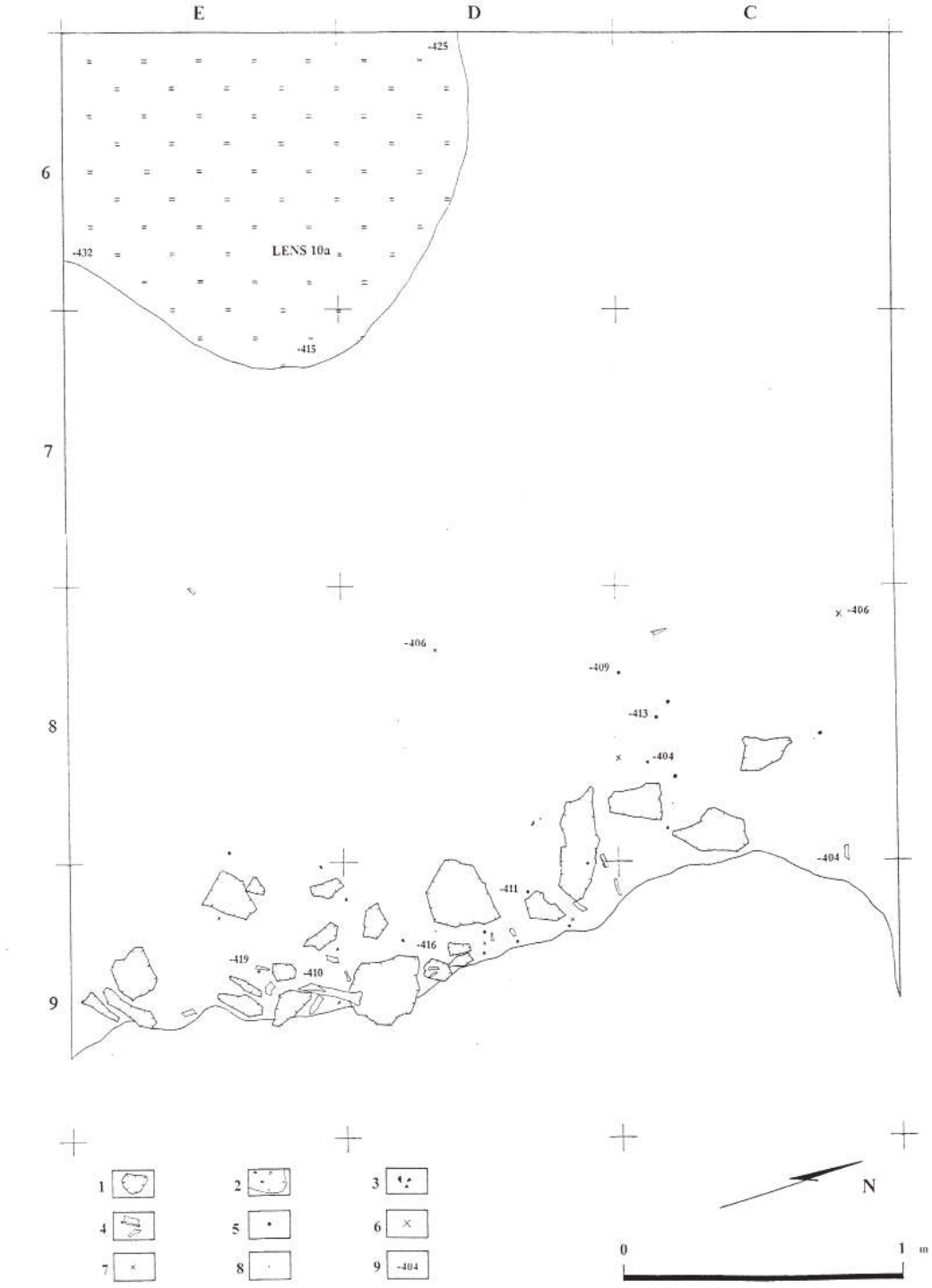

Figure 5 - Siuren I. The 1990s excavation plan of the level Fa1-Fa2 living floor. 1, limestone slabs; 2, lens of small rounded éboulis; 3, charcoal pieces; 4, animal bones; 5, flake; 6, blade; 7, bladelet; 8, chip; 9, elevation mark below datum point.

part of the zone is darker colored than its southern part (fig. 8; fig. 9: d).

Two pits – Features 10 and 11 (fig. 8; fig. 9: e) – are found at the southern part of Feature 9 in square 7-E under the ashy lens.

Feature 10 is an elongated ovoid *pit* 22 cm long and 12 cm wide. The bottom of the pit is uneven, sloping from east to west. in the western part, the pit is 9 cm deep from the base of sub-level Fb2. The pit fill contains dark gray ash and small fragments of charcoal, as well as some artifacts and bone. The artifacts

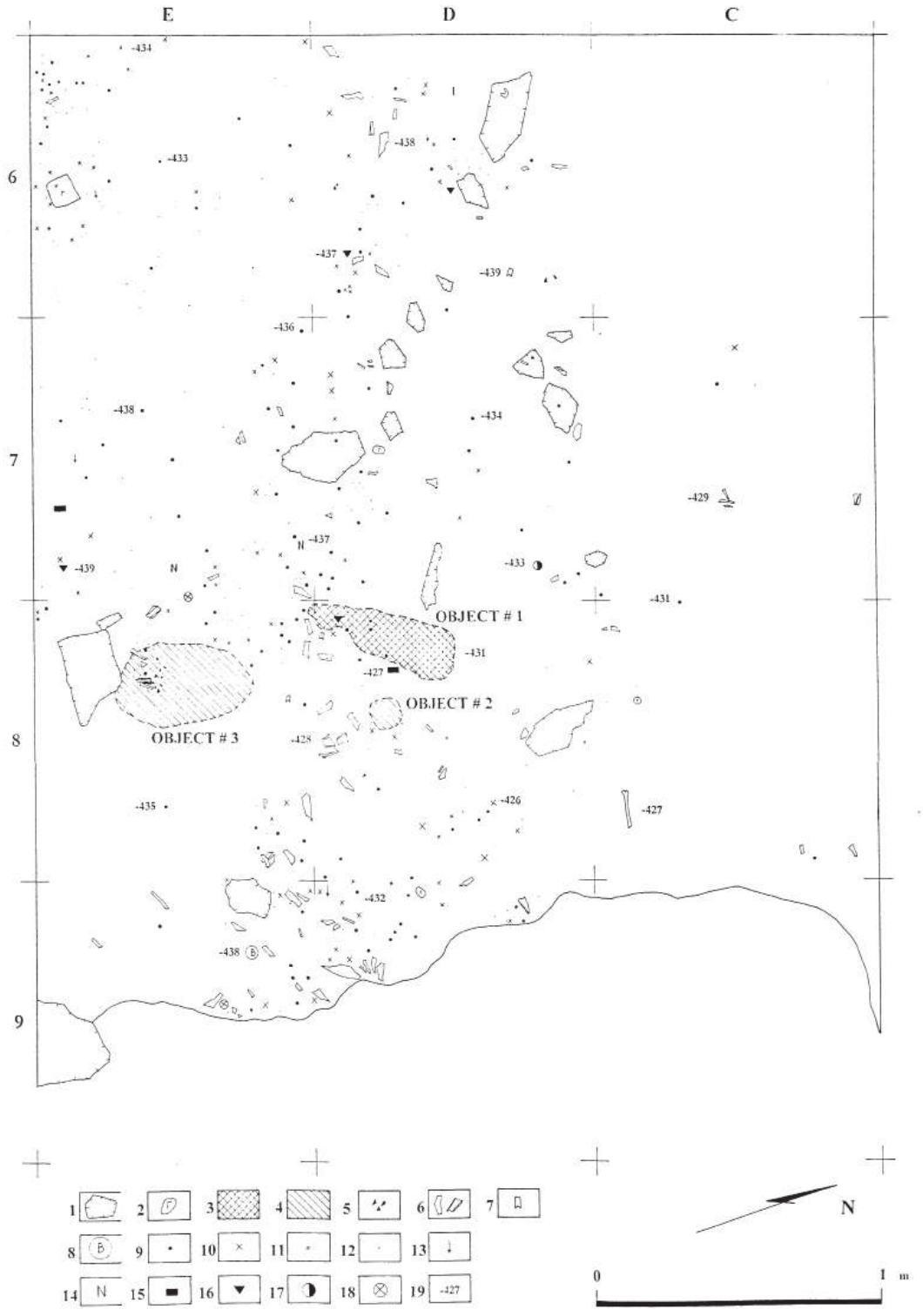

Figure 6 - Siuren I. The 1990s excavation plan of the level Fa3 living floor. 1, limestone slabs; 2, pebble; 3, fireplace; 4, ashy cluster; 5, charcoal pieces; 6, animal bones; 7, animal tooth; 8, bone tool; 9, flake; 10, blade; 11, bladelet; 12– chip; 13, burin spall; 14, core-like piece; 15, end-scraper; 16, burin; 17, composite tool; 18, retouched flake; 19, elevation mark below datum point.

Figure 7 - Siuren I. The 1990s excavation plan of the level Fb1-Fb2 living floors. 1, limestone slabs; 2, pebble; 3, spatial distribution of different object; 4, charcoal pieces; 5, animal bones; 6, animal tooth; 7, bone tool; 8, ochre; 9, flake; 10, blade; 11, bladelet; 12, chip; 13, burin spall; 14, core-like piece; 15, end-scraper; 16, burin; 17, retouched blade; 18, retouched microlith; 19, composite tool; 20, retouched flake; 21, elevation mark below datum point.

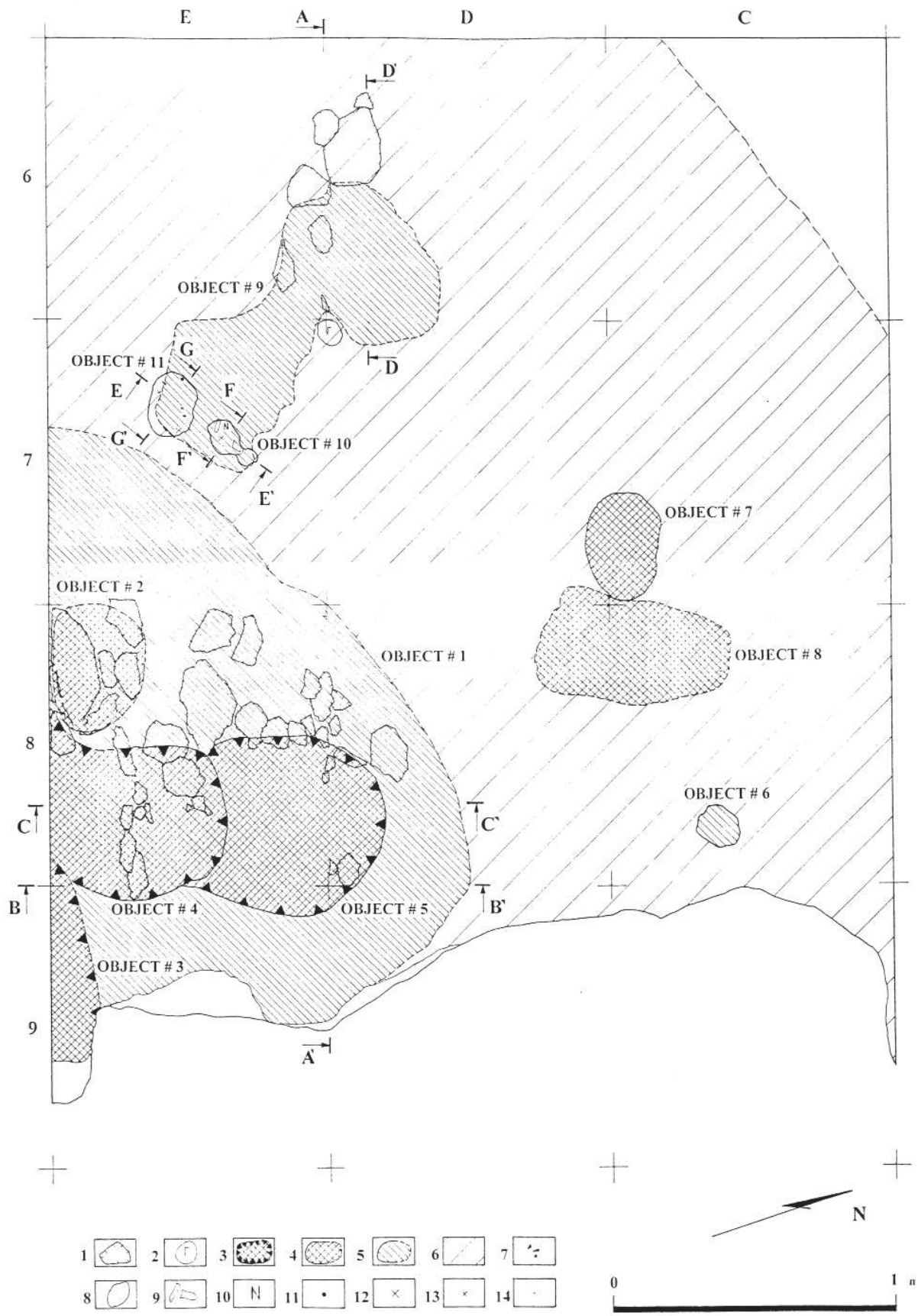

Figure 8 - Siuren I. The 1990s excavation plan of the level Fb1-Fb2 living floors. 1, limestone slabs; 2, pebble; 3, hearth indications; 4, fireplace indications; 5, ashy cluster; 6, distribution of the level Fb1-Fb2 living floors; 7, charcoal pieces; 8, spatial distribution of different objects; 9, animal bones; 10, core-like piece; 11, flake; 12, blade; 13, bladelet; 14, chip.

include a core, a bladelet and some chips. It should to be noted that a core was found in vertical position near the northern inner edge of the pit.

Feature 11 is an ovoid *pit* 23 cm long, 16 cm wide and 6 cm deep from the base of sub-level Fb2. The bottom of the pit is concave. The pit fill contains light gray ash and small fragments of charcoal, as well as some artifacts, including a blade, a flake and two bladelets.

The stratigraphic observations of the groups of Features 1 through 5 enable reconstruction of the sequence of their use in Level Fb1-Fb2 (fig. 9). The clearest part of the sequence can be seen for three of the hearths. Feature 5 was the earliest to be made. It was partly destroyed by the pit of Feature 4. At the same time, Feature 4 was destroyed by the pit of Feature 3. It is likely that Feature 2 is synchronous to Feature 4. The huge ashy cluster (Feature 1) covers all the other fire features. Thus, this group of Paleolithic fires reflects a relatively long period of use by the human occupants of level Fb1-Fb2 at Siuren I that allows us to consider the possibility that this level represented a continuous settlement.

Level Fc was identified within the sediments with some ash. Rare artifacts and faunal remains were mainly distributed relatively irregularly in squares 7, 8-C, D, E, while no other material was present in other parts of the excavation area (fig. 10). There are three features in the level – one fireplace and two ashy clusters.

Feature 1 is the *fireplace* at the border of squares 8-C and 8-D. The fireplace has an ovoid shape 0.48 m long and 0.33 m wide. The dark gray ash lens with small fragments of charcoal is more than 2 cm thick. The thickness of burned sand under the ash lens is 0.5 cm deep.

Feature 2 is the *small ashy cluster* at the border of squares 8-C and 9-C near Feature 1. It has an irregular shape 0.15 m long and 0.1 m wide. The thickness of the lens is 0.5 cm in the center of the zone.

Feature 3 is the *ashy lens* partly located in square 6-E. The rest of the cluster is outside of the excavation area and can be seen in stratigraphic Profiles III and V. The ashy cluster is 1.0 m long and 0.7 m wide, with a maximum thickness of 1 cm.

Level Ga is present in the eastern part of the excavation area (fig. 11). Artifacts and faunal remains were distributed relatively regularly in squares 8, 9-C, D, E, while a few finds were also found in the central and western parts. There are no features in this level.

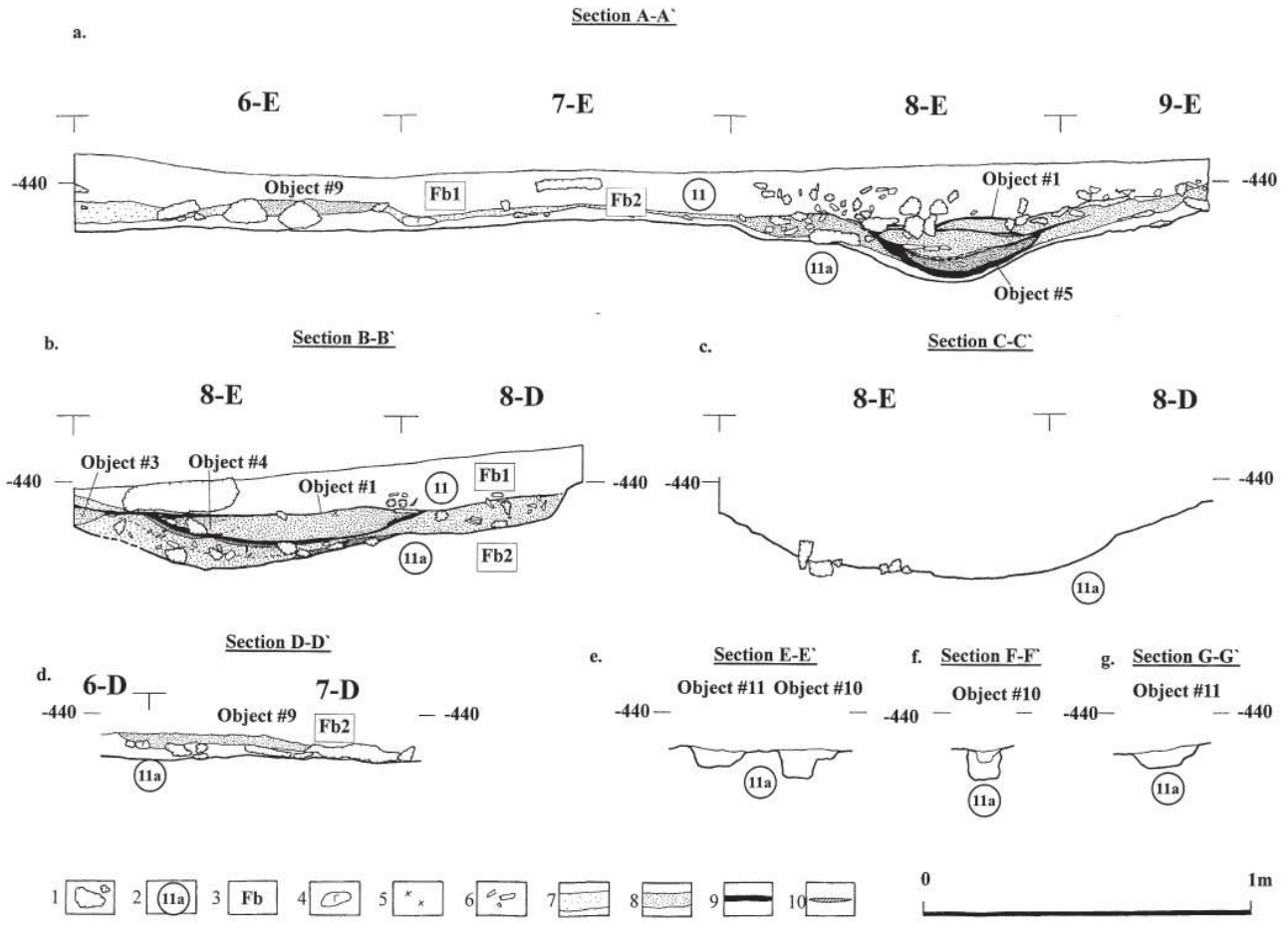

Figure 9 - Siuren I. The 1990s excavations: various object sections of sub-level Fb2. 1, limestone slabs; 2, lithological strata defined in the 1990s; 3, archeological sub-levels defined in the 1990s; 4, pebble; 5, flint artifacts; 6, animal bones; 7, charcoal pieces; 8, ashy lenses; 9, black ashy-charcoal lenses; 10, burnt sediment.

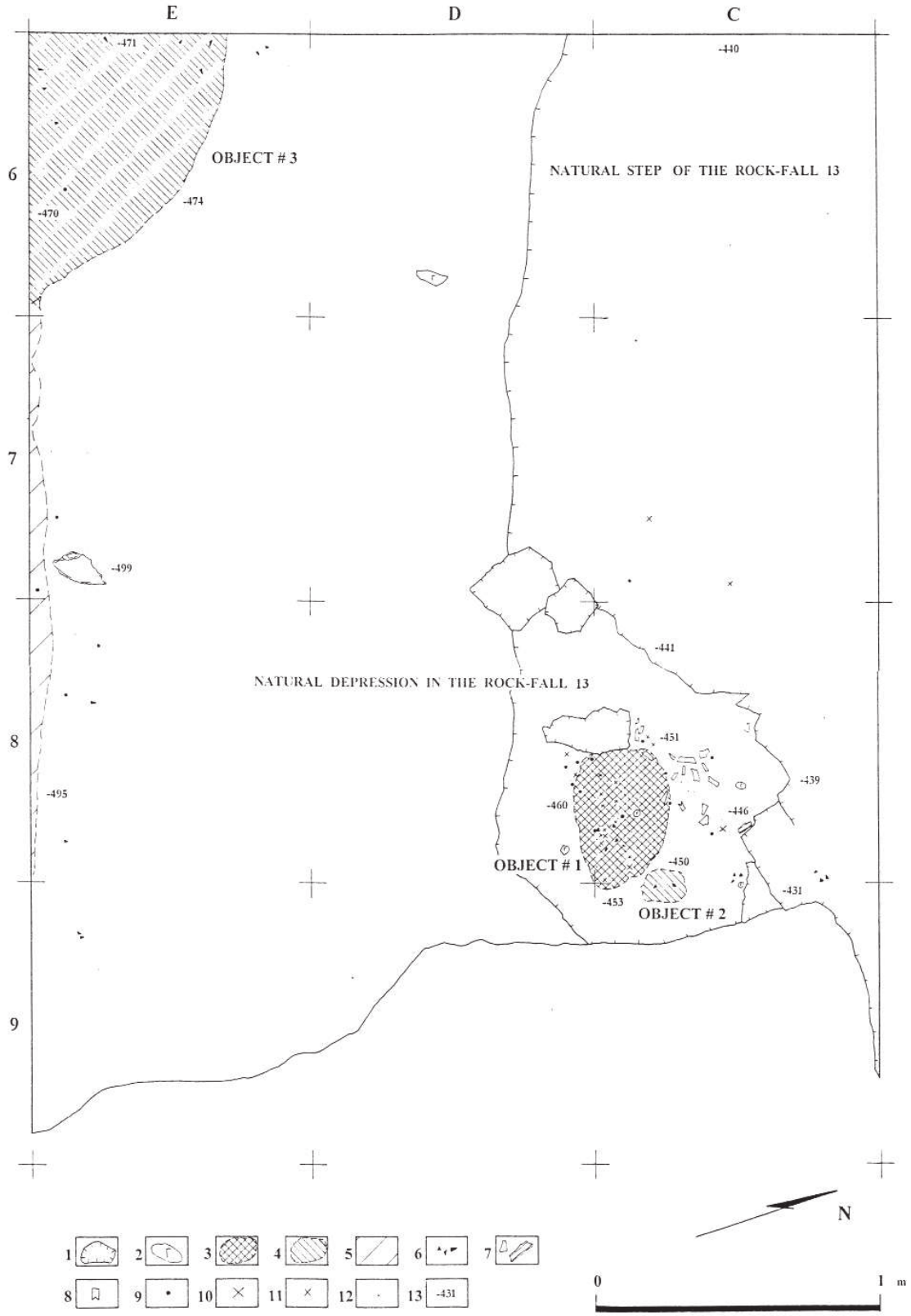

Figure 10 - Siuren I. The 1990s excavation plan of the level Fc living floor. 1, limestone slabs; 2, pebble; 3, fireplace indications; 4, ashy cluster; 5, ashy lens; 6, charcoal pieces; 7, animal bones; 8, animal tooth; 9, flake; 10, blade; 11, bladelet; 12, chip; 13, elevation mark below datum point.

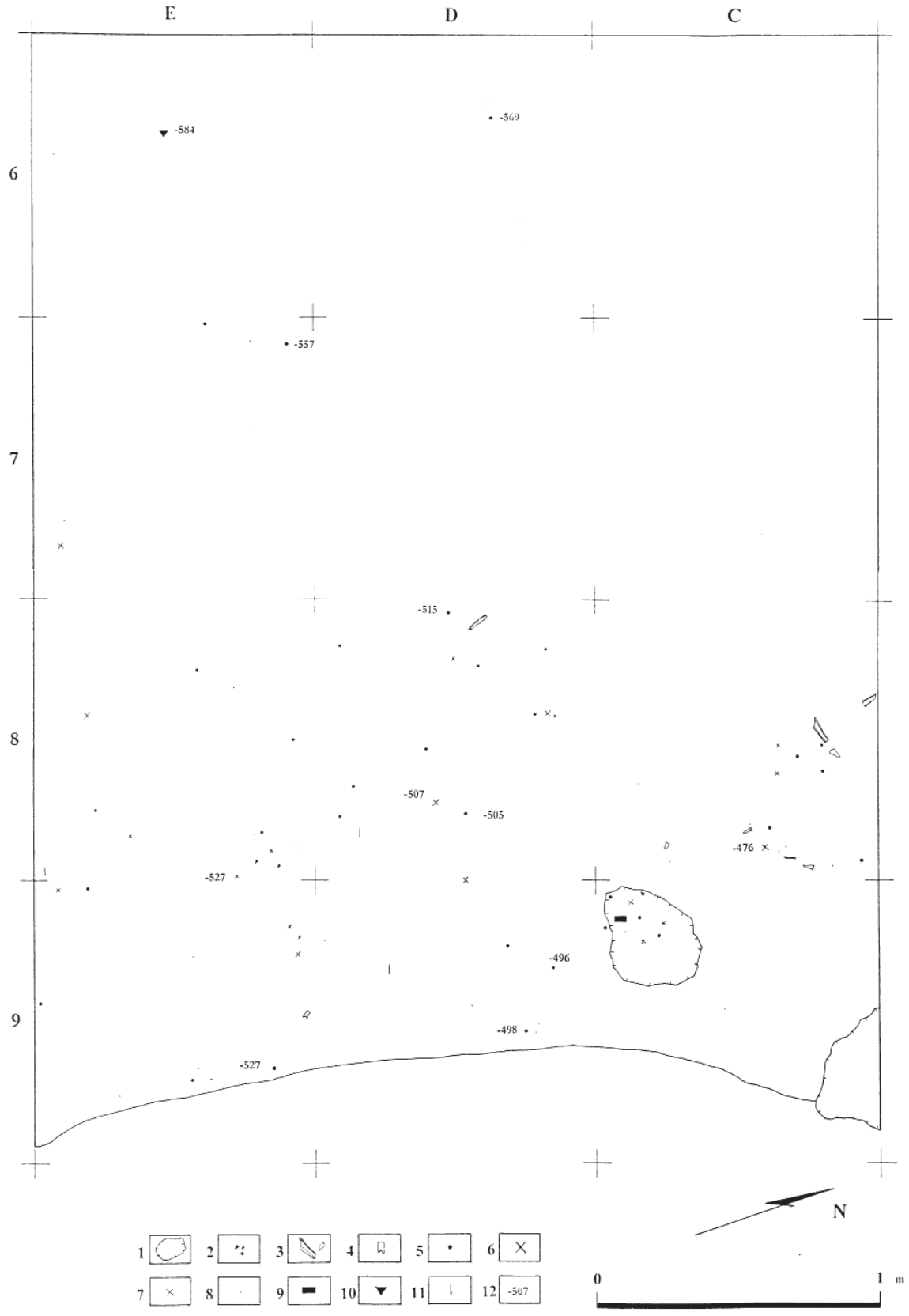

Figure 11 - Siuren I. The 1990s excavation plan of level Ga. 1, limestone slab; 2, charcoal pieces; 3, animal bones; 4, animal tooth; 5, flake; 6, blade; 7, bladelet; 8, chip; 9, end-scraper; 10, burin; 11, retouched microlith; 12, elevation mark below datum point.

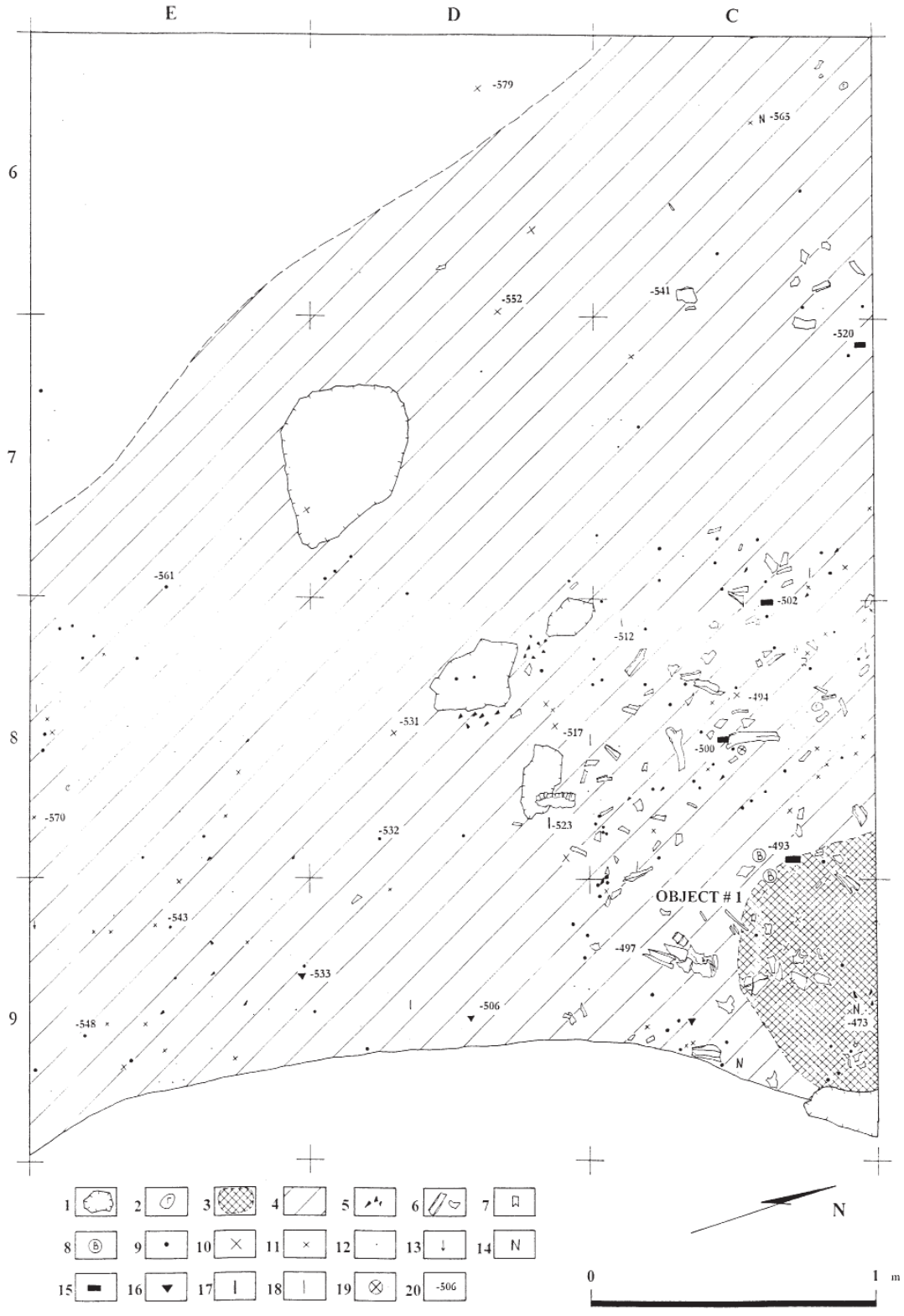

Figure 12 - Siuren I. The 1990s excavation plan of the sub-level Gb1 living floor. 1, limestone slabs; 2, pebble; 3, fireplace indication; 4, spatial distribution of the sub-level finds; 5, charcoal pieces; 6, animal bones; 7, animal tooth; 8, bone tool; 9, flake; 10, blade; 11, bladelet; 12, chip; 13, burin spall; 14, core-like piece; 15, end-scraper; 16, burin; 17, retouched blade; 18, retouched microlith; 19, retouched flake; 20, elevation mark below datum point.

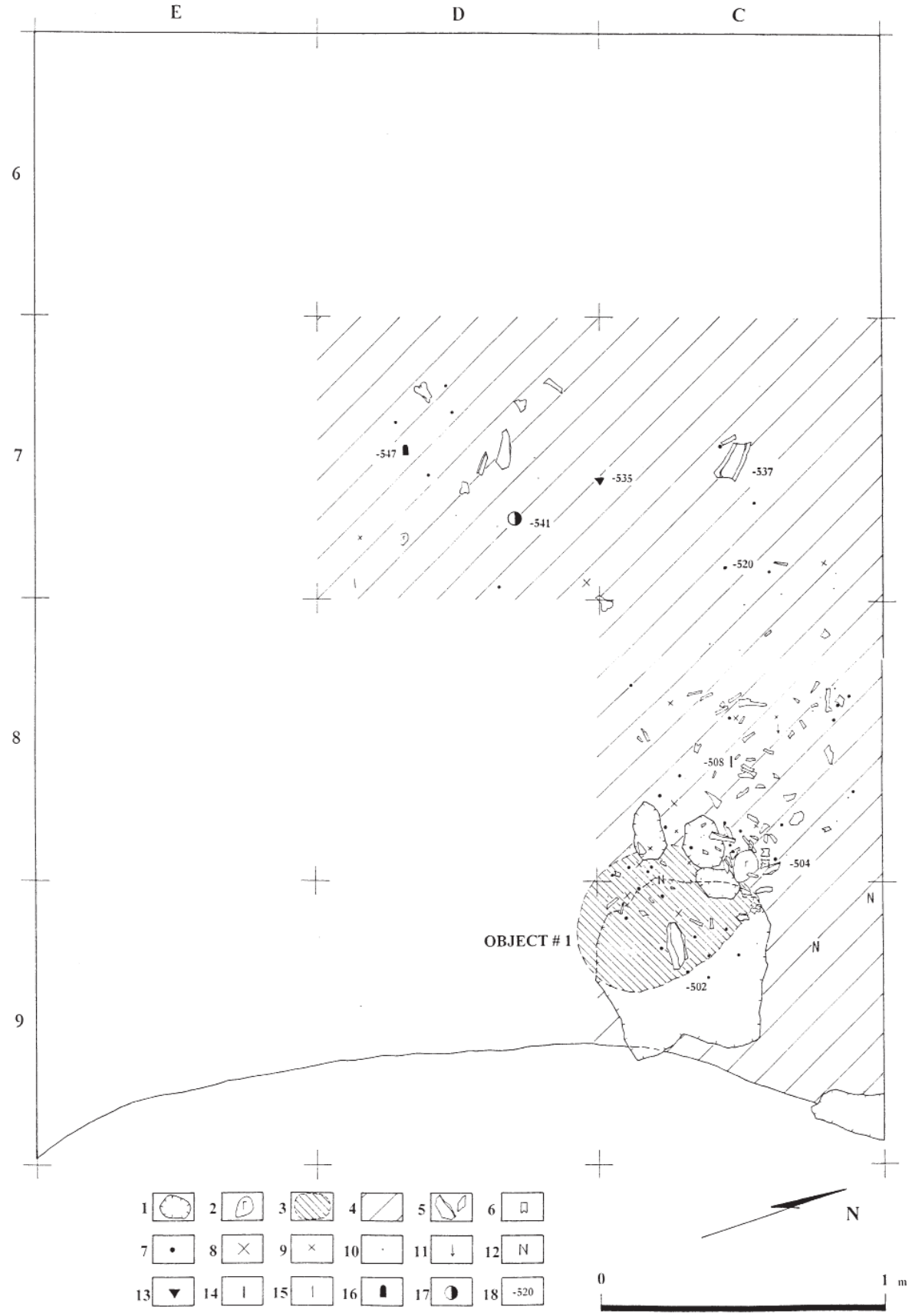

Figure 13 - Siuren I. The 1990s excavation plan of the sub-level Gb2 living floor. 1, limestone slabs; 2, pebble; 3, ashy cluster; 4, spatial distribution of the sub-level finds; 5, animal bones; 6, animal tooth; 7, flake; 8, blade; 9, bladelet; 10, chip; 11, burin spall; 12, core-like piece; 13, end-scraper; 14, retouched blade; 15, retouched microlith; 16, side-scraper; 17, composite tool; 18, elevation mark below datum point.

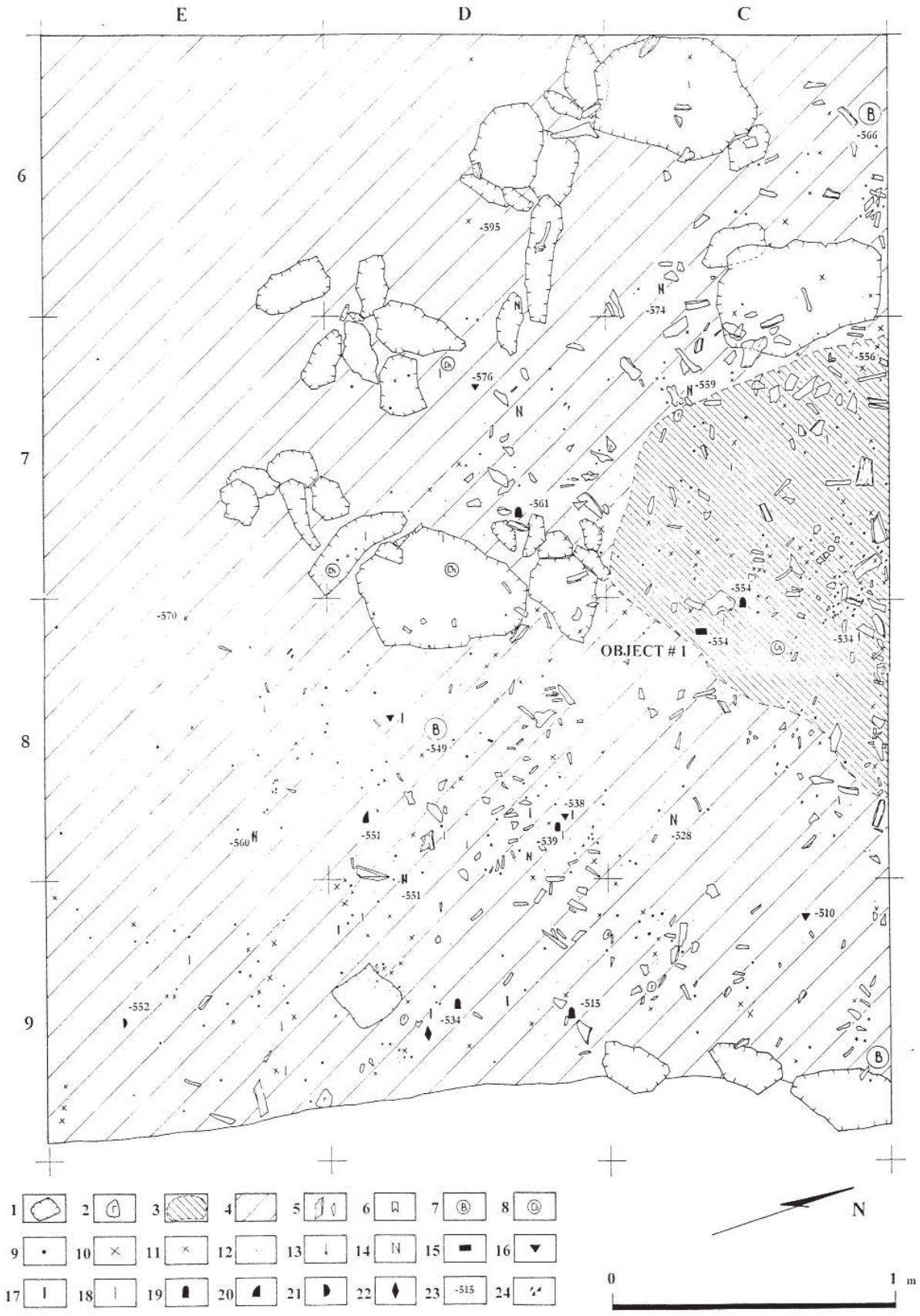

Figure 14 - Siuren I. The 1990s excavation plan of the sub-level Gc1 living floor. 1, limestone slabs; 2, pebble; 3, ashy cluster; 4, spatial distribution of the sub-level finds; 5, animal bones; 6, animal tooth; 7, bone tools; 8, ochre; 9, flake; 10, blade; 11, bladelet; 12, chip; 13, burin spall; 14, core-like piece; 15, end-scraper; 16, burin; 17, retouched blade; 18, retouched microlith; 19, side-scraper; 20, convergent tool; 21, notched tool; 22, bifacial tool; 23, elevation mark below datum point; 24, charcoal pieces.

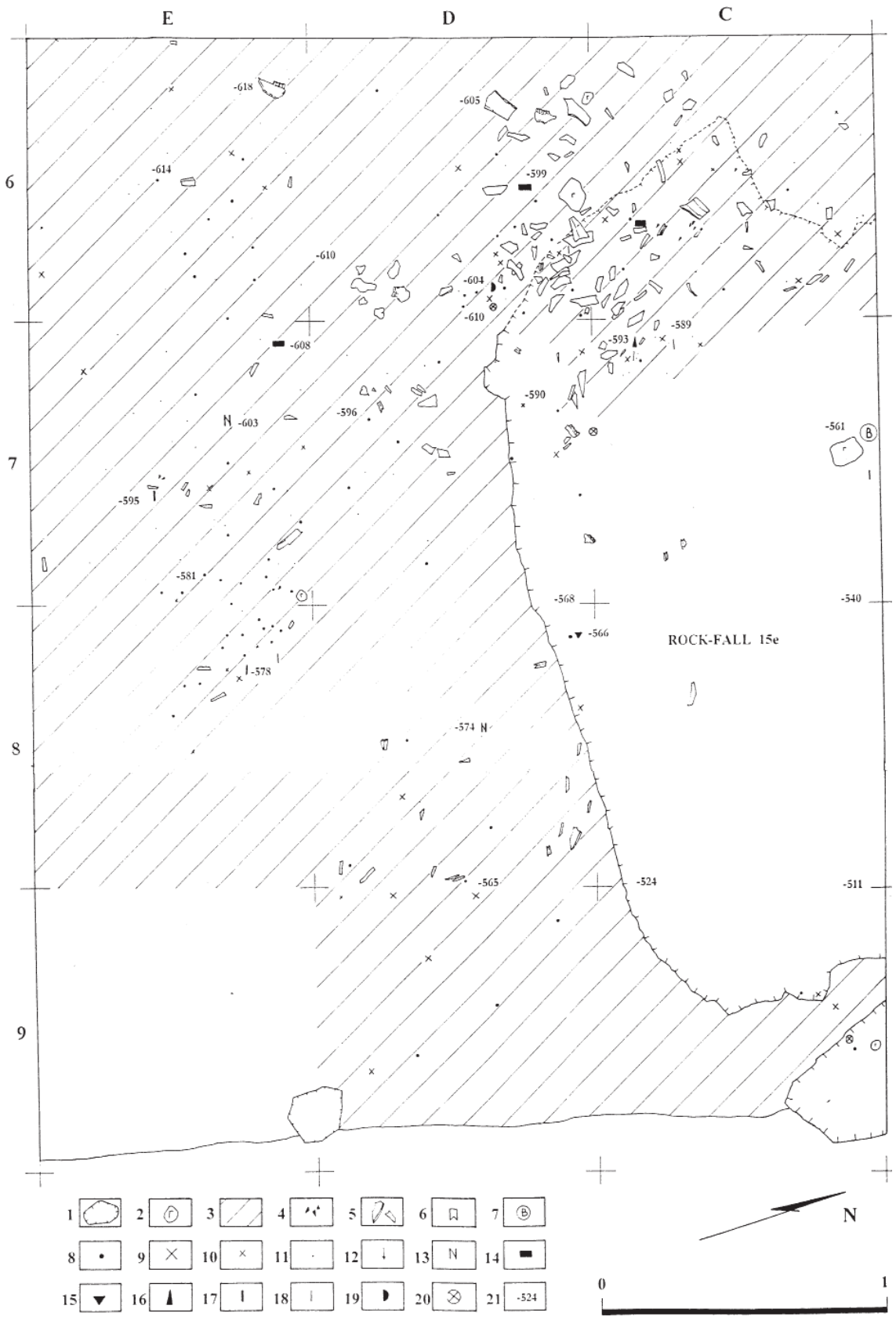

Figure 15 - Siuren I. The 1990s excavation plan of the livng floors of sub-levels Gc2-Gc2a. 1, limestone slabs and éboulis; 2, pebble; 3, spatial distribution of the sub-level finds; 4, charcoal pieces; 5, animal bones; 6, animal tooth; 7, bone tools; 8, flake; 9, blade; 10, bladelet; 11, chip; 12, burin spall; 13, core-like piece; 14, end-scraper; 15, burin; 16, perforator; 17, retouched blade; 18, retouched microlith; 19, notched tool; 20, retouched flake; 21, elevation mark below datum point.

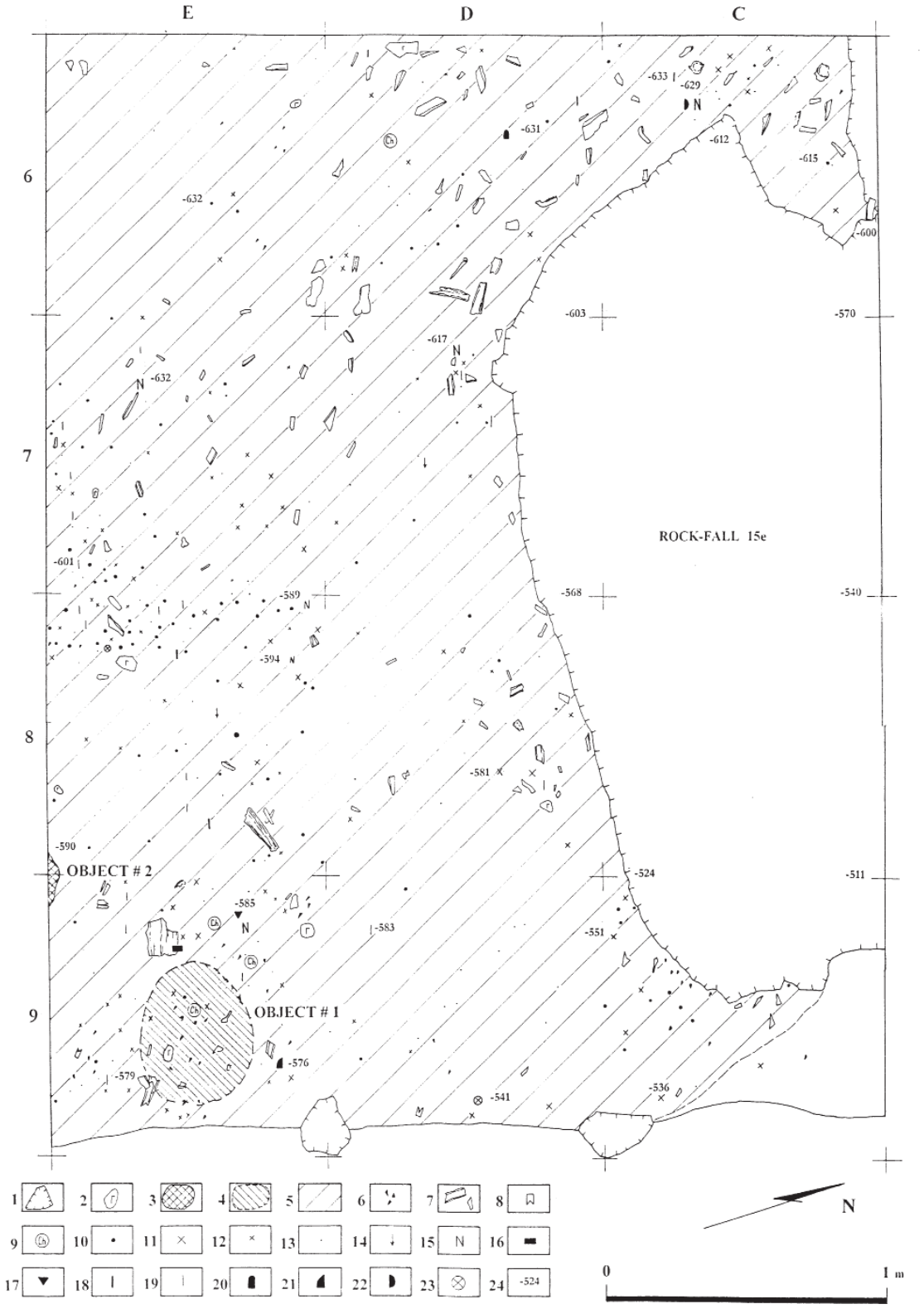

Figure 16 - Siuren I. The 1990s excavation plan of the level Gd living floor. 1, limestone slabs; 2, pebble; 3, fireplace indication; 4, ashy cluster; 5, spatial distribution of the level finds; 6, charcoal pieces; 7, animal bones; 8, animal tooth; 9, ochre; 10, flake; 11, blade; 12, bladelet; 13, chip; 14, burin spall; 15, core-like piece; 16, end-scraper; 17, burin; 18, retouched blade; 19, retouched microlith; 20, side-scraper; 21, convergent tool; 22, notched tool; 23, retouched flake; 24, elevation mark below datum point.

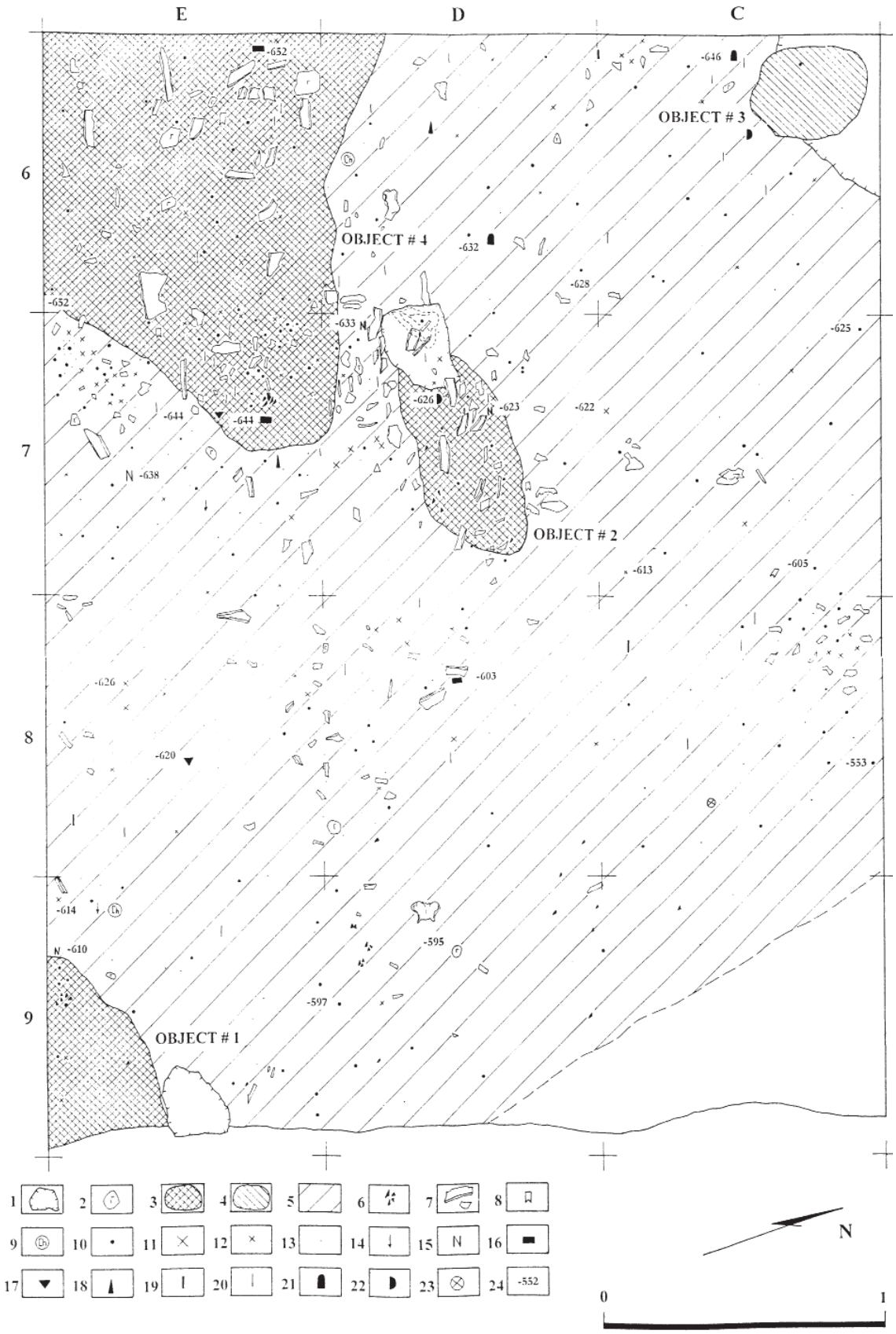

Figure 17 - Siuren I. The 1990s excavation plan of the Unit H living floor. 1, limestone slabs; 2, pebble; 3, fireplace indication; 4, ashy cluster; 5, spatial distribution of the level finds; 6, charcoal pieces; 7, animal bones; 8, animal tooth; 9, ochre; 10, flake; 11, blade; 12, bladelet; 13, chip; 14, burin spall; 15, core-like piece; 16, end-scraper; 17, burin; 18, perforator; 19, retouched blade; 20, retouched microlith; 21, side-scraper; 22, notched tool; 23, retouched flake; 24, elevation mark below datum point.

Sub-level Gb1 is found in the north-eastern part of the excavation area in squares 7, 8, 9-C, D. Only a few artifacts and bones were found outside these squares (fig. 12). There is one feature in the sub-level.

Feature 1 is the large *fireplace* partly located in squares 8, 9-C, the rest outside of the excavation area. The observed part of the fireplace has a semi-ovoid shape 0.92 m long (see Profile IV) and 0.47 m wide. The thickness of the ashy lens is 8 cm. The bottom is concave. The burned sediment is 8 cm thick under the ash.

Sub-level Gb2 is present in the same area as sub-level Gb1, but below it (fig. 13). There is one feature in this sub-level.

Feature 1 is the *ashy cluster* at the border of squares 8, 9-C, D. It has an elongated sub-ovoid shape 0.66 m long and 0.45 m wide. The cluster is naturally limited from the north-west and west by several small limestone slabs. The ashy lens is more than 3 cm thick.

Sub-level Gc1 covered most of the excavation area (fig. 14). The distribution of artifacts is associated with sediments containing abundant ash. There is one feature in this sub-level.

Feature 1 is the *ashy cluster* partly situated in squares 6, 7-C, while the rest is outside the excavation area. The observed part of the zone has a semi-ovoid shape 1.65 m long (see Profile IV) and 0.98 m wide. The ashy lens is 10-15 cm thick.

Sub-level Gc2 is present mostly in the north-western part of the excavation area above the huge limestone slab of the *fourth rock-fall level* (Strata 15e), while **Sub-level Gc2a** is occurred near this slab from south (fig. 15). Both sub-levels are associated with easy ashy sediments, but there are no any special features there.

Level Gd is present around a huge limestone slab and is clearly below level Gc1-Gc2 (fig. 16). The artifacts and faunal remains covered the entire area near the base of the slab. There are two features in this level.

Feature 1 is the *ashy cluster* in square 9-E with an ovoid shape 0.48 m long and 0.4 m wide. The gray ashy lens is 0.5 cm thick.

Feature 2 is the fireplace visible in stratigraphic Profile V at the border of squares 8-E and 9-E. The observed lens of reddish burned sediment in profile is 0.17 m long and more than 1 cm thick.

Level H covered nearly the entire excavation area. There are three features in this level (fig. 17).

Feature 1 is the *fireplace* partly located in the south-eastern corner of the excavation area (square 9-E), continuing into the unexcavated part of the site. As seen in Profile V, the fireplace is represented by a lens of strongly burned reddish clay sediment over 2 cm thick with some small charcoal fragments. Its cross section is visible in Profile V.

Feature 2 is the *fireplace* in square 7-D and has an elongated ovoid shape 0.78 m long and 0.33 m wide. The ashy lens is more than 3 cm thick. The reddish burned clay under the ashy lens is 1 cm thick.

Feature 3 is the *ashy cluster* located in the north-western corner of the excavation area in square 6-C. The ashy zone has an ovoid shape 0.4 m long and 0.34 m wide and 3 cm thick.

Feature 4 is the *fireplace* in the south-western corner of the excavation area in squares 6, 7-D, E, continuing outside of the excavation area. The ashy zone has an irregular shape with a maximum length of 1.5 m and maximum width of 1.25 m. The gray ashy lens is 7 cm thick. The reddish burned clay under the ashy lens is 1 cm thick. Two cross sections of the fireplace are visible in Profiles III and V.