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ABSTRACT

Archaeologists from the Texas Department of Transportation (TxDOT), formerly the State Department of Highways and Public Transportation (SDHPT), performed subsurface test investigations at two burned rock midden sites in northwest Bexar County in 1990 after award of contract. Sites 41BX791 and 41BX845 are situated within the proposed State Highway 211 highway right-of-way (ROW) between S.H. 16 and F.M. 471. Based on diagnostic artifact types, the sites were occupied during the late Early Archaic to Late Prehistoric periods. No activity areas were identifiable at either site, and no radiocarbon samples were obtainable to substantiate site chronology. Site 41BX791 offered only shallow subsurface cultural deposition, while testing results from 41BX845 suggest a great deal of mixing and displacement of cultural strata due to previous disturbance by brush clearing and relic collectors. Considering the condition of both sites, neither of the site areas within the State Highway 211 right-of-way warrant consideration as a State Archaeological Landmark, and no further work is recommended at either site.

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INTRODUCTION

On May 29, 30, and June 7, 1989, archaeologists from the SDHPT conducted a cultural resource survey of the proposed S.H. 211 from Culebra Road (F.M. 471) to S.H. 16. The location of the project is in northwestern Bexar and northeastern Medina Counties, south of San Geronimo, Texas. This segment of the loop is slated for the first phase of construction and represents an area where no road previously existed.

Members of the SDHFT archaeological staff inspected a ROW 400 ft. (125.9 m) wide and approximately 7.4 miles (11.9 km) long. In the course of the 1989 survey, six prehistoric sites were identified. The sites consist of 41ME36, 41ME37, 41ME38, 41BX790, 41BX791, and 41BX792. None of the sites were recommended as candidates for the State Archaeological Landmark (SAL) designation. No further work was recommended, with the stipulation that if cultural materials were discovered during construction, archaeologists from the SDHPT would need to evaluate the resources.

Archaeologists from the SDHPT and Texas Antiquities Committee (TAC) returned to the project on February 27, 1990 for a reappraisal of site 41BX791 (Figure 1). Clearing and grubbing in the right-of-way had uncovered evidence of a burned-rock midden at the site. When the SDHPT archaeologists recorded the site in 1989, they observed only "a light scatter of lithic debris" with few pieces of burned limestone present on the ground surface. The investigators saw patches of exposed bedrock across the site area, and thus interpreted the potential cultural deposition as thin and shallow. Some areas contained dense stands of juniper and oak which prevented total visibility of the ground surface. The midden at 41BX791 was concealed by such a stand of vegetation.

After consultation with the TAC, the SDHPT agreed to hand-excavate the midden at 41BX791. Work at the site began on March 15, 1990, under the direction of Barbara J. Hickman, SDHPT staff archaeologist. Principal investigator for the project was Frank A. Weir of the SDHPT.

While testing 41BX791, Weir and Hickman identified another burned-rock midden site along the project service road approximately 5500 ft. (1676.4 m) south of 41BX791, which construction grubbing and clearing had exposed. The second site was recorded as 41BX845. After determining that 41BX845 also required subsurface testing, Hickman initiated investigations at 41BX845 on April 12, 1990, again using hand-dug test units. John Fogerty and Gerald Hewitt of the SDHPT San Antonio District headquarters assisted Hickman at both 41BX791 and 41BX845.

Testing during the S.H. 211 archaeological inventory followed all applicable historic preservation laws and standards of professional practice. The objective of the testing program was to evaluate the sites' potential significance within the framework of a regional management plan. To this end, testing at the sites was designed to provide enough information to assess SAL criteria and to determine the necessity of an excavation phase.

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ENVIRONMENTAL SETTING

The project area is situated in the Edwards Plateau physiographic province of Texas. Blair (1950:112) referred to northern Bexar County as a part of the Balconian biotic province, bordered by the Balcones Fault zone. The southern portion of Bexar County separates into the Rio Grande Plain and the Blackland Belt at the Balcones Fault (Taylor et al. 1966:119). Blair has designated these two regions as the Texan and Tamaulipan biotic provinces, respectively (Blair 1950:100, 102). It may well be that the local environment of 41BX791 and 41BX845 represents an ecotone with aspects of all three biotic provinces.

The surface geology of the project area is characterized by Edwards Limestone, undivided, of Lower Cretaceous age (Barnes 1974). Limestone rock typically dominates the landscape of the Edwards Plateau. Edwards Limestone may include Georgetown formation material above it, offering many secondary sources of fine-grained chert.

The topography associated with this geologic setting is highly dissected by erosion into steep, rugged uplands cut by branching ephemeral drainages. These drainages are fed by seasonal storm runoff and small springs seeping through the limestone. San Geronimo Creek, a permanent drainage, flows west of the project area no closer than 1.1 miles (1.7 km) to the sites. Both sites are situated close by ephemeral drainage channels, however.

Local vegetation (Taylor et al. 1966:30; Gould 1969; Gould 1978) includes grasses such as dropseed (Sporobolus spp.), sideoats grama (Bouteloua curtipendula), buffalograss (Buchloe dactyloides), bluestem (Andropogon spp.), Texas cupgrass (Eriochloa sericea), indiangrass (Sorghastrum nutans), plains lovegrass (Eragrostis intermedia), green sprangletop (Leptochloa dubia), and Texas wintergrass (Stipa leucotricha). Indiangrass and bluestem are two of the four most critical grasses in the true tall-grass prairie habitat of the southern plains and were important for game animal foraging before the introduction of domestic animals. Other brush and tree species (Vines 1984) observed are prickly pear cactus (Opuntia spp.), live oak (Quercus virsiania), shin or scrub oak (Quercus mohriana), agarita (Mahonia trifoliolata), and Ashe juniper or mountain cedar (Juniperus ashei).

Sites 41BX791 and 41BX845 are located in surface exposures of Tarrant series soils (Taylor et al. 1966:30). The Tarrant series materials are thinly deposited, darkly colored, stony soils. Taylor et al. (1966:30) describe the Tarrant soils on the surface as fine, subangular blocky clay loam with a calcareous component present. The black to dark grayish brown soils extend about 10 in. (25.4 cm) into the subsurface over weathering limestone exfoliating from bedrock. The soil matrix above the fractured limestone contains fragments of limestone from pebble to boulder-size pieces.

The site location for 41BX791 lies within the zone for Tarrant association, gently undulating. The soils are typical of the Tarrant series. The topography is marked by moderately steep slopes adjoining nearly flat prairie lands. The site lies along the confluence of small ephemeral drainages, and the Tarrant association soils follow the watercourses to San Geronimo Creek. The shallow, rocky soils are prone to erosional loss.

Tarrant association, hilly is the surface material type at 41BX845. The association often exhibits rocky escarpments on ridgetops and steep slopes. Bedrock exposures are commonly seen, perhaps forming as much as 20% of the surface. Erosion is enhanced by rapid runoff. The site lies along a small

drainage to the northwest of a northeast-southwest-trending ridgeline. Bedrock is exposed across most of 41BX845, with more apparent soil deposition near the drainage.

The environmental conditions in the modern era have limited agricultural land use in the San Geronimo area. However, this section of the county has experienced rapid population growth due to the development of subdivisions in the countryside. While ranching activities have continued, more construction of powerlines and pipelines to serve the residential areas have altered the landscape.

PREVIOUS INVESTIGATIONS

In the past 20 years, a number of investigations by professional archaeologists have occurred in the northern half of Bexar County, mainly as a result of contracted cultural resource management. In the immediate area, Vance Holliday and Tom Dillehay conducted an archaeological survey of Government Draw in the 1972 San Antonio Ranch project. They recorded approximately 19 prehistoric sites in the course of the survey, most of which are burned-rock middens. Government Draw is the next canyon system east paralleling the Loop 211 project area, between 1 to 2 miles away.

Research activities at the majority of sites in the San Geronimo area are generally limited to identification and recordation, without a subsequent testing program. The more intensive work in the county has usually taken place as a result of reservoir and watershed programs.

Large data recovery projects, undertaken primarily by the University of Texas at San Antonio Center for Archaeological Research (UTSA-CAR), increased in the county since the inception of the center in 1974. CAR has done several projects relating to development of the Salado Creek watershed in the north-central region of Bexar (Hester 1974; Brown et al. 1977; McGraw and Valdez 1978a), culminating in major mitigation projects at 41BX228 (Black and McGraw 1985) and 41BX300 (Katz et al. 1987). Both 41BX228 and 41BX300 were important habitation sites with cultural components spanning the Archaic and Late Prehistoric periods.

Another major CAR project in the vicinity is the Camp Bullis block survey, with 72 sites recorded along Cibolo and Salado creeks (Gerstle et al. 1978). Located several miles east of the proposed Loop 211 project in north-central Bexar County, the survey sampled environmental ecotones quite similar to that of 41BX791 and 41BX845. Site types identified included quarries, campsites, and burned-rock middens.

CULTURE HISTORY

A systematic attempt has been made by several investigators in the past two decades to interpret the aboriginal cultural sequence of central Texas. To a certain extent, this approach involves refinements within the framework of the longstanding Paleoindian, Early Archaic, Middle Archaic, Late Archaic, and Late Prehistoric Periods (Hester 1980). Weir (1976) and later Prewitt (1981) applied the phase chronology to central Texas sites. Within the northern Bexar County area, local periods for the Salado Creek Watershed were devised (Black and McGraw 1985). The relationship between these schemes and the paleoenvironmental data is nicely summarized in the 41BX300 site report (Katz 1987:8).

For a detailed overview of the regional chronology, please refer to Hester (1980, 1981). Prehistoric occupation of the area is known from the Paleoindian Period, particularly along the Salado Creek Watershed at sites 41BX52, 41BX228, and 41BX229, with Folsom, Plainview, and Golondrina points represented. The time period is associated with big-game hunting.

The Archaic Period is further divided into Early, Middle, and Late subperiods or a series of phase names. It is during the Archaic that populations proliferate and sites increase in number, in association with climatic change. Burned-rock midden sites are characteristic of Late Archaic plant exploitation, shifting from a predominance of small-game hunting. Archaic projectile points are divers, including Marcos, Montell, Frio, and Ensor.

It is believed that the Late Prehistoric is a time of major technological change, with the bow and arrow replacing the atlatl. Projectile points become small, such as Scallorn, Edwards, and Perdiz.

PROJECT METHODOLOGY

Fieldwork

Testing at 41BX791 and 41BX845 was accomplished with manually dug test units. At least 10 1x1-m squares were placed in a grid at each site in order to sample site dimensions and integrity; before testing began, however, a means of surface control was established as a referent. A transit was used to plot a north-south baseline through the site. Although the surface was disturbed, lithic tools were collected from the surface within the northeast (NE), northwest (NW), southeast (SE), and southwest (SW) quadrants of the staked baseline. Test units dug at the sites were identified by grid coordinates.

Test units were dug in arbitrary 10-cm levels; shovels, picks, and trowels were used to remove the fill. All of the soil from the test units was sieved through a .25-in. wire screen. In addition, samples of backdirt mounded by construction equipment were also screened. Any cultural materials recovered during testing were bagged according to provenience for further analysis in the lab. Snail shells were bagged separately from lithics, and preparations were made for the recovery of specialized samples, such as charcoal.

Level records were kept for all test units, and when the test units were completed, a wall profile was drawn. Provisions were made for the collection of faunal, radiocarbon, or any other samples requiring special handling. A transit was used to map both sites, with all units and survey markers shown. Both color and black-and-white photographs were taken during the project. The photographs, notes, maps, and forms are all on file at the SDHPT lab.

Laboratory

All of the cultural materials collected during the testing phase were then processed at the SDHPT lab in Austin. Lithics, which comprised the total collection, were washed for analysis and labeled with catalog numbers. Each type of artifact was identified in order for the lithic analysis to contribute information about the two sites.

To gain such data, tool characteristics associated with morphology and function were examined. For the debitage, platform preparation and stage of decortication served as the basis of classification. Raw material attribution was not included, given the phenomenon of secondary quarries identified nearby. Typing projectile points allowed tentative chronological placement of the sites, but point type chronologies also need substantiation by radiocarbon dating.

Analysis of the debitage can assist site interpretation when relative percentages of decortication are known. For example, high percentages of primary flakes compared to tertiary flakes may suggest use of a site as a lithic resource procurement area or workshop. A preponderance of tertiary flakes may imply that prior stages of cortex removal took place elsewhere.

Definitions for artifact classification are presented below. The flaking debris and tool terms refer only to those artifact types observed in the collections from 41BX791 and 41BX845. These definitions are offered, not in an attempt to reinvent the wheel, but rather to clarify the use of terminology in the report. After all, one archaeologist's stemmed biface is another's hafted biface.

Artifact Definitions

Debris from Decortication (Debitage):

Primary Flakes - Primary flakes are detached from a cobble during the earliest sequences of cortex removal. Primary flakes have approximately 100% cortex on the dorsal surface. Typically, flake platform preparation is missing. Percentages of primary flakes are generally the highest at sites such as quarries, where the preliminary reduction occurs.

Secondary Flakes - Secondary flakes have dorsal cortication ranging from 1% to 99%. Striking platforms generally are present but are sometimes absent. The secondary category has the widest variety of forms due to cortex formation.

Tertiary Flakes - No cortex is present on the dorsal face of a tertiary flake. Striking platforms are seen on the majority of complete flakes. Tertiary flakes represent the stage at which all cortex removal from the core has occurred. Tertiary flakes are also known in the literature as interior flakes because of the absence of cortical surface.

Platform Preparation - In order to detach a flake from a core, a flat surface on the core requires preparation. Preparation forms an edge which, when struck, helps to channel the force of the blow, thus disconnecting the flake from the core. The striking platform created as a result of this process is sometimes referred to as faceted or unfaceted, based on the platform's shape. If the dorsal surface of a flake has a single dorsal arris or ridge line, the platform is called faceted (Fa); an unfaceted (Un) platform has two dorsal ridges. The faceted platform in transverse cross section forms a triangular shape, while the unfaceted platform appears U-shaped in cross section. Occasionally a platform is crushed during flake detachment, leaving the remnants of an unidentifiable platform, misshapen by damage. Primary flakes usually show no cortex removal to form a platform. In some instances, secondary and tertiary flakes may exhibit a platform which looks unprepared (unpr).

Heat Treatment/Heat Alteration - Heat treatment is limited to deliberate action intended to improve the quality of the lithic material, whereas heat alteration is an accidental result of the process for discarding exhausted cores, wornout tools, or lithic debris. Heat-altering chert leaves extensive evidence on the surface of the object in the form of crazing, with fine networks of stress cracks, or potlid fractures that produce small, circular spalls. Deliberate use of heat results in a fine-grained material with a very waxy luster. Color changes may occur in either case. Heat alteration of debris is most frequent at sites with firepit features.

Blades - A flaking platform is required in order to measure accurately the flaking angle. The measurement formula of a blade dictates a length of at least twice that of the width, yielding a long, thin form. Further, a blade measures over 3 cm in length; a microblade is less than 3 cm long. Blades are seen in both secondary and tertiary stages of decortication and usually evidence fine marginal retouch when the flake shows use.

Microflakes - A microflake measures less than 1.5 cm in length, and a microflake always has a platform present. Without the platform, a specimen of flaking debris this size is a chip. Microflakes show secondary or tertiary decortication. Due to the small overall size of microdebitage, the pieces are

easily lost through the wire mesh of the screen. Thus the category may not be adequately represented always in the debitage total.

Chips - A flake fragment with a length of less than 1.5 cm, with no striking platform is called a chip. Chips and microflakes represent the smallest lithic debris collected at a site and may indicate tool manufacture and rejuvenation of worn tools requiring fine retouch.

Chunks/Shatter - Chunks are rectangular in shape and lack striking platforms. Chunks are associated with broken material left over from core/flake production. Shatter is similar to chunks but generally is identified with breakage and damage caused by heat alteration. Together, these two forms of debris constitute a category of worked materials too marginal for more analysis.

Tested Material - Cobbles offer a valuable source of workable lithic material in an area without primary quarries; knappers selected cobbles and knocked off a few primary flakes to examine the quality of the sample. In some cases, the chert cobble material was too flawed for use as a core, and the cobbles were discarded without further modification. In an area with many secondary lithic sources, tested material is common.

Bifacial Thinning Flakes - Several criteria categorize flakes of this type: The striking platform is lipped; retouch is sometimes seen on the ventral surface of the platform lip. A bifacial thinning flake often shows cortex on the dorsal proximal surface, with distal lateral expansion. Longitudinally, the cross section is markedly concavo-convex. Thinning flakes are associated with edge renewal of bifaces and may be quite small in length when removed for rejuvenation of working edges.

Chipped Stone Tools

Projectile Points - A bifacially reduced tool with a pointed distal end and a proximal end with notching or edge-grinding for hafting onto a wooden shaft is generally known as a point. This broad definition, however, also includes hafted bifacial tools not attributed to hunting. Points exhibit a wide size range. Flaking may show fine retouch and patterning typical of various point types. Differences in form and manufacture techniques make projectile points temporally diagnostic.

Bifaces - Bifaces are thinned by flake removal on both surfaces and have edge retouch. Found in an array of sizes and overall shapes, these multipurpose tools may show anything from only casual use all the way to reworked, curated pieces. The designation of "biface" is a morphological category which includes many further defined tool types (projectile points, knives, drills) on a very generalized level.

Biface Blanks and Preforms - Unfinished bifacially worked pieces are ubiquitous near secondary quarries. In the stages of biface reduction, a cobble is flaked on both faces, gradually removing all cortex, until a generalized roughout form appears. The earliest stages of this process produce biface blanks, which are marked by edge reduction, often leaving a cortical surface intact centrally on the face. The cortex is detached later in the process as the body of the cobble is reduced, using the previously knapped edge as a striking platform. Preforms continue the procedure to display an almost complete, final form of the tool but lacks fine edge retouch. Neither blanks nor preforms present any evidence of use-wear characteristic of finished tools.

Retouched Flakes - These secondary and tertiary flakes possess a line of continuous unifacial flake removals along an edge. Resharpening flake scars and use-wear are also seen. Retouch occurs unifacially on either the dorsal or ventral surface. The edge angles of retouch are not as steep as with scrapers; retouched flakes differ from utilized flakes in that the sharpened edge is deliberately rather than expediently produced. The margins of retouched flakes typically show patterned forms of retouch such as scalar, stepped, flat, or denticulate.

Utilized Flakes - Unlike retouched flakes, utilized flakes have only sporadic unifacial flake removals caused mainly by use-wear. Edge wear on utilized flakes is described as "nibbling" or "chattering" in token of the minimal effort used to shape the working edge. Some of the edge modification on flakes is inevitably edge damage associated with site disturbance rather than deliberate modification through usage.

Scrapers - Placement of retouch on the flake is on the proximal end or a lateral edge. The tool has a line of continuous retouch, often stepped, with an edge angle of greater than 45'. Angles of the cutting edge are identified as medium (50' to 75'), steep (75' to 85'), and perpendicular to overhanging (>85'). Patterns of retouch may converge at the dorsal ridge(s) or may not merge at a single locus. Continued use necessitates resharpening unifacially, leading to a quite steep, or even overhanging, working edge angle. Scrapers are found in an extensive range of generalized forms, from small endscrapers to large sidescrapers. Scrapers are usually associated with hide preparation but may have been used for processing vegetal materials.

Notches - Edge retouch may be placed on a flake margin so that a unifacial concavity is formed. A notch formed by a single blow without edge retouch is probably not due to deliberate action by a knapper. Notches are sometimes known as spokeshaves or shaft straighteners with the implied function of woodworking to shape arrow or spear shafts. Resharpening creates a step-fractured steep working edge within the notch. Other tools may incorporate notching into the unifacial flaking pattern, such as gravers, perforators, or denticulates.

Gravers - An engraving tool typically is formed on a flake by the intersection of two notches to produce a short, sharp tip. The projection usually is shaped by unifacial edge retouch, but bifacial flaking may occur. The length of the projecting beak determines whether the tool is a graver or perforator. The presumed function is woodworking. Engraving tips may also be placed on projectile point distal end fragments to form hafted gravers.

Gouges - Gouges are thought to have certain chronological affiliations prehistorically in the region. The unifacially (sometimes with bifacial retouch) worked tools are associated with phases in the central Texas late Early Archaic to early Middle Archaic Periods. The two types of gouges are the Clear Fork and Guadalupe types. The inferred function of gouges is woodworking. The tool has a working edge resembling a chisel bit. The overall shape is generally triangular, with the widest section at the distal end. Although gouges are large in overall size, the tools usually exhibit careful manufacturing techniques.

Choppers - Generally a chopper resembles a core with the addition of alternating edge retouch along an edge. A thick working edge is formed, which tends to look very battered by heavy wear. The piece is typically large and thick, retaining the appearance of its original cobble form. Choppers may have

seen use in food preparation, particularly meat and nut processing, where pounding is necessary.

TESTING RESULTS

An intensive reconnaissance of the ground surface preceded testing at both sites. Blading and grubbing had left less than a 50% ground cover by grasses and forbs. The clearing activities had obscured the extent of the midden by spreading fire-cracked rock across the .site. At 41BX791, the top of the midden was removed by the contractor with a front-end loader to fill a nearby gully before the archaeologists were notified of the site's presence. Following the confines of the grid system, surface collections of artifacts were made by quadrants. One intent of the surface collection was to identify concentrations of artifacts; another was to assist plans for effective testing of subsurface deposits. Although only tools were targeted for collection, flakes and cores were unavoidably collected and only correctly identified in the assemblage during analysis. The totals for debitage cannot be interpreted as representing more than a sample of the debris observed on the surface.

Site 41BX791

The grid at 41BX791 (Figure 2) contained the midden almost wholly within the northwest quadrant. The other three quadrants of the grid fell within the area of greatest lithic concentration within the large site. The surface collection amounted to 167 tools.

In the SE quadrant collection are 20 tools, three cores/core fragments, and 14 pieces of debitage. Only two flakes were heat-altered. Of the tools, there are four scrapers, four utilized flakes, eight biface blanks, and four biface fragments.

Six cores/core fragments and 36 tools were found in the SW quadrant, including seven biface blanks, a scraper, 19 utilized flakes, four retouched flakes, three biface fragments, and two projectile points. One point fragment is a possible Montell base; the second is an unidentifiable blade fragment.

Forty tools and 17 flakes were retrieved from the NW quadrant. The tools collected are four projectile points, six biface fragments, 11 biface blanks, a chopper, six scrapers, two retouched flakes, and 10 utilized flakes. Two of the projectile points are large unidentifiable fragments, while the other two points are Frio and Castroville types.

The NE quadrant surface offered 65 tools, six core fragments, one tested cobble, and seven pieces of debitage. There are four retouched flakes, four scrapers, one notch, 15 biface blanks, eight biface fragments, a chopper, a handaxe, and four projectile point fragments. Two base fragments may be from Montell points, while the other two fragments are unidentifiable.

Eleven 1x1-m test units were dug at 41BX791, Test Unit 1 was opened in the grid at S90/E100 within the eastern portion of the burned-rock midden. On the surface, TU 1 showed disturbance from the blading and clearing. Consequently, Level 1 was dug to a 15-cm depth to remove the mixed deposit. Fourteen snail shells and 52 flakes were recovered from the level, 10 of which were heat-altered. The matrix was a heavy, wet, black loamy clay with a dense concentration of burned-rock cobbles and pebbles. Uniformity of fill was seen throughout the level.

In Level 2 (15-25 cm) of TU 1, smaller rocks of exfoliating limestone were present along with larger pieces of fire-cracked rock. A yellow root from an agarita tree (Mahonia trifoliolatg), an edible barberry, was encountered during diggiig. The soil was a black loamy clay above flat slabs of bedrock

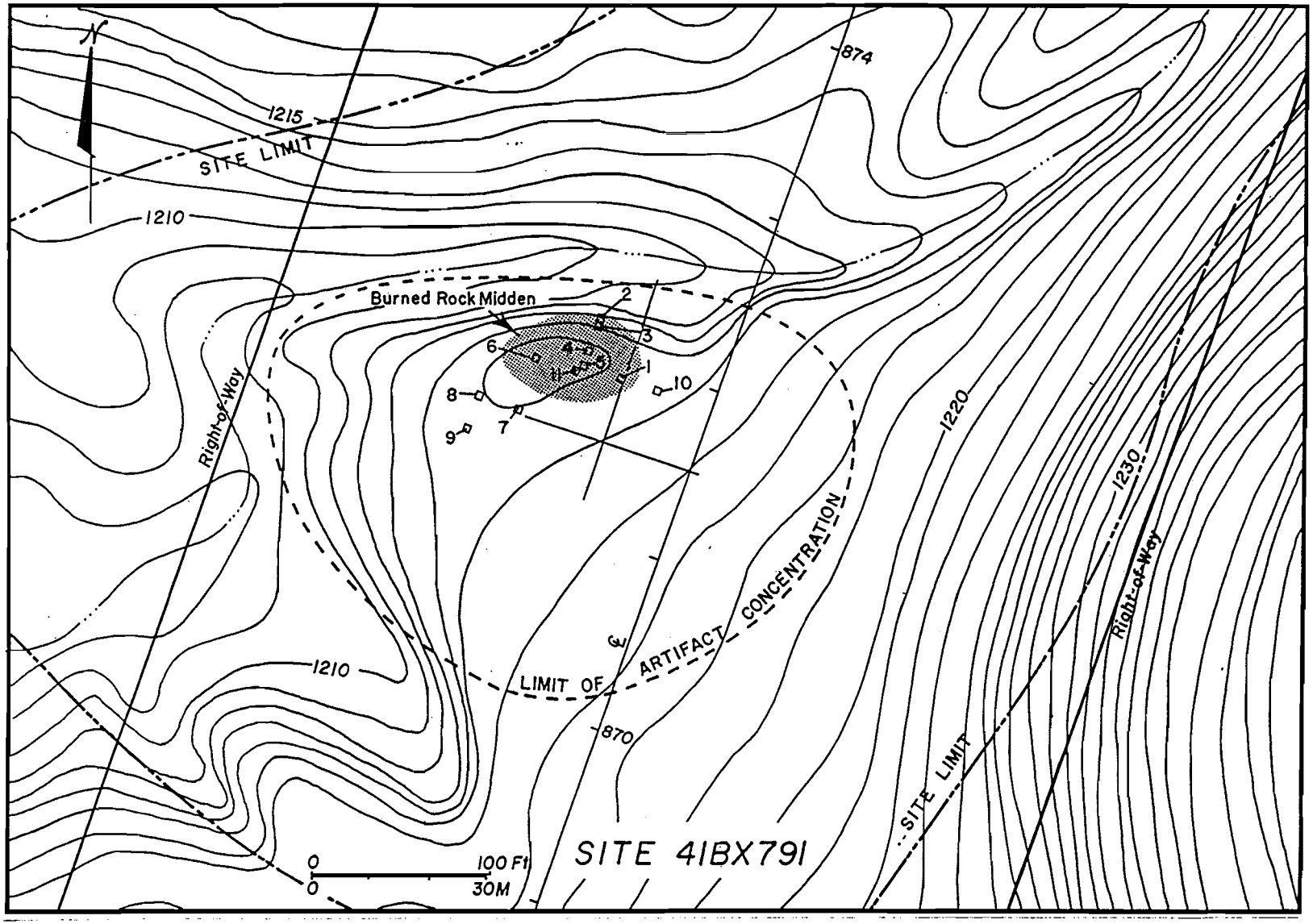


FIGURE 2. Site map of 41BX791, Bexar County, Texas.

across the pit floor at 25 cm. More flakes were found than in Level 1, and three tools, all utilized flakes, are recorded. Testing halted at bedrock, and the unit was abandoned after drawing a wall profile (Figure 3).

Test Unit 2, located approximately 9 meters northwest of TU 1, was placed north of the 41BX791 midden proper. Located at grid S81/E94, the unit lay on a north-facing slope of an ephemeral drainage; surface disturbance was apparent in this portion of the site as well. In Level 1 (0-10 cm), the matrix was a dark gray silty clay loam with small fragments of fire-cracked rock and roots. Looser and less compacted than in S90/E100, the soil was screened more easily. The fill was uniform except for roots. The bottom of the level at 10 cm (0 cm in the NW corner) was broken by large, dead tree roots and grass rootlets. Removal of the remaining tree stump left a sizeable hole in the NE corner which continued into the next level. Six snail shells, one core fragment, six tools. and 69 pieces of debitage were found in Level 1, but no tools were recovered. Only 16 of the flakes were heat-altered. The tools consisted of one scraper, one biface fragment, and four utilized flakes.

Level 2 (10-20 cm) also had large tree roots throughout the fill. A brown-to-dark-gray clay loam with small gravel, fire-cracked rocks, and roots gave a homogeneous appearance. A large hole from the tree removal was still present in the NE corner at 20 cm in Level 2 (remaining at 0 cm in the NW corner). Two core fragments, five tools, and 67 flakes were distributed evenly, it seemed, in the fill. The tools consisted of a biface tip fragment, a notch, two utilized flakes, and a scraper fragment.

Soil in Level 3 (20-30 cm) became a brownish gray loamy clay with exfoliating limestone fragments, small gravel, fire-cracked rock, and roots Slabs of bedrock were found at 30 cm in the SW corner and 0 cm in the NW, necessitating closure of the unit. One tool, a heat-altered drill fragment, appeared in the level collection. Additionally, 40 pieces of debitage, five of which were heat-altered, were found.

Test Unit 3 (S82/E94) was opened adjacent to and south of TU 2 on the disturbed slope. The soil in Level 1 (0-10 cm) was a loose, dark gray silty clay loam with roots, small gravel, and fire-cracked rocks, which were uniformly distributed through the level. Cultural materials collected include four tools and 62 flakes (14 heat-altered); the tools amounted to a biface fragment, a scraper, a chopper, and one utilized flake.

The fill in Level 2 (10-20 cm) of TU 3 remained the same. Many roots were present throughout the uniform level fill. The 10-cm-deep level measured 20 cm below the ground surface in the SW corner and 10 cm in the NW corner. Three cores, two biface blanks, and 40 pieces of debitage (eight heat-altered) were identified in Level 2.

Bedrock was reached in Level 3 (20-30 cm) at 30 cm on the south wall and 20 cm on the north wall. The dark gray clay loam contained roots and fire-cracked rock. One scraper and 26 flakes were collected. None of the debitage was heat-altered. The unit was closed after drawing a wall profile (Figure 3).

Testing at 41BX791 moved south 4 meters to S86/E94 (Test Unit 4). The loose, disturbed soil was a tannish gray clay loam with fire-cracked rock and a few roots. Level 1 (0-10 cm) was quite rocky with burned limestone, but few artifacts were observed. Only debitage was found, totalling 16 flakes. None of the chert was fire-affected.

In Level 2 (10-20 cm) of TU 4, The fill was uniform and continued to contain many fire-cracked rock fragments. The loose, tannish gray clay loam also had small roots present. Four snail shells, one scraper, and 25 flakes

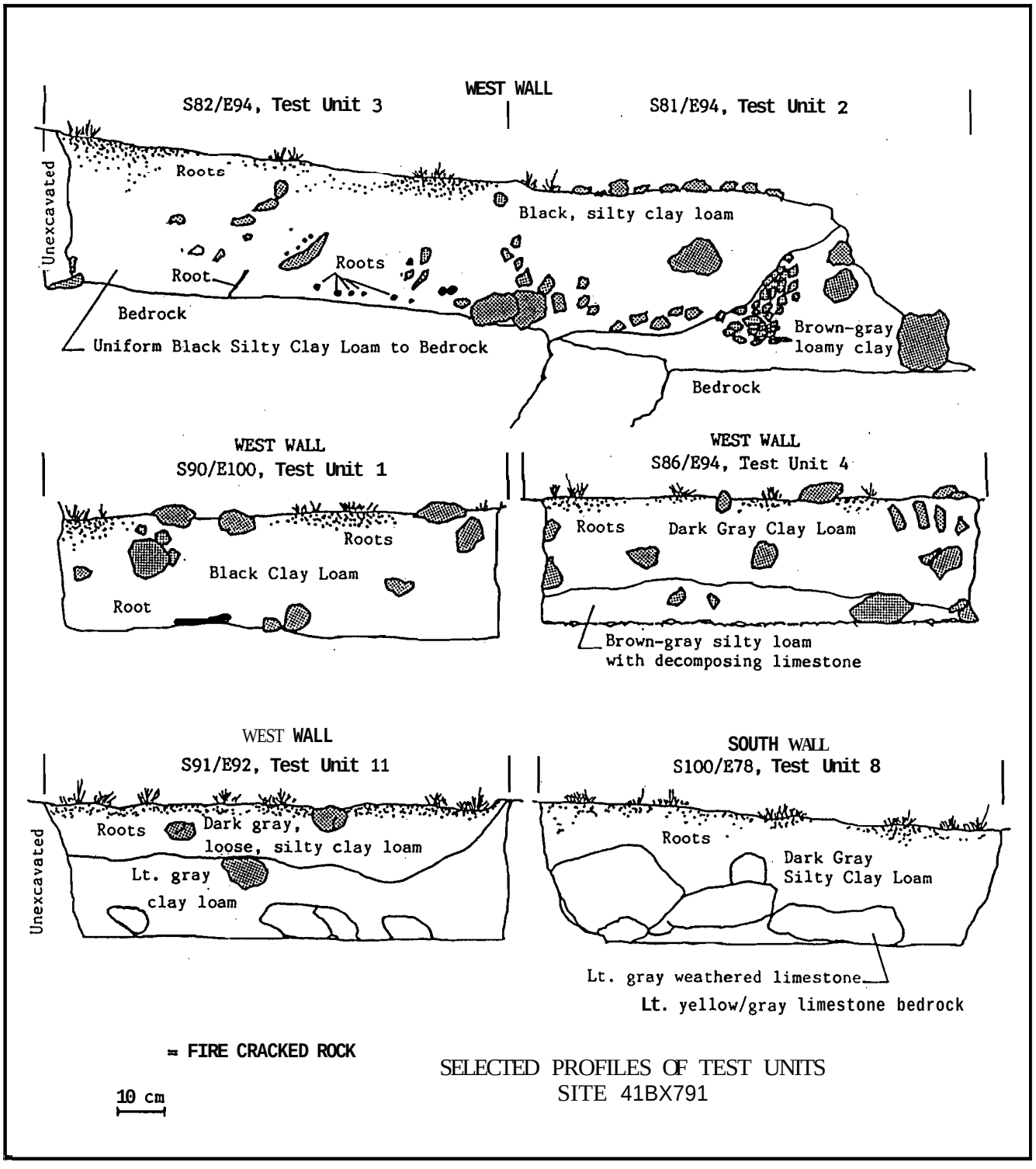


FIGURE 3. Selected profiles of test units at 41BX791.

were collected; only two flakes were heat-altered.

Level 3 (20-30 cm) consisted of brown silty clay with fire-cracked rock and many fragments of exfoliated red limestone. The matrix had become more compacted and difficult to shovel than the upper levels. Bedrock was visible at 30 cm (Figure 3). The level yielded three snail shells, two tools, and 12 pieces of debitage. The tools were identified as a biface fragment, and what is probably a reworked Nolan type projectile point.

Test Unit 5 (S90/E93) at 41BX791 was located 2 meters south of TU 4 to the south and west in what was perhaps in the area of deepest blading across the midden. Level 1 (0-10 cm) offered two snail shells and seven pieces of debitage, all unburned. The soil was a loose, gray clay loam with a lot of fire-cracked rock and a few roots; a uniform fill was present through the level. It looked as if an oak tree (Quercus spp.) had grown approximately 3 meters west of TU 5, and the roots extended into the square.

Level 2 (10-20 cm) had a brownish gray clay loam containing fire-cracked rock which graded into loose, exfoliating fragments of bedrock. The matrix at 20 cm showed large cobbles of red limestone. A few large roots were also seen in the fill. One scraper and 13 flakes were retrieved, and none of the artifacts were heat-altered. Testing was halted at TU 5 with Level 2; a wall was drawn in profile, and the unit was closed.

Work resumed at Test Unit 6 (S91/E85), located 7 meters west of TU 5. Fire-cracked rock was prominent on the ground surface at the unit. Large tree roots appeared in the dark gray clay loam fill along with fire-cracked rock in Level 1 (0-10 cm). The level provided four snail shells, four tools, and 81 pieces of debitage. Twelve flakes were heat-altered. Two of the tools collected are biface fragments, while the other two are utilized flakes.

Level 2 (10-20 cm) consisted of mainly reddish tan exfoliating limestone over bedrock with scant deposition of gray clay loam. A sloping slab of bedrock was seen at 20 cm on the north wall and 10 cm along the south wall. The artifact collection decreased in Level 2, with two tools and 37 flakes (five chips were heat-altered). One retouched flake and one projectile point were found in the level. The point base fragment resembles a Langtry regional variant. The unit was closed at the end of Level 2.

Eight meters south of TU 6 lay Test Unit 7 (S100/E85). A black gumbo-like clay matrix constituted the Level 1 (0-10 cm) fill. Rootlets and fire-cracked rock were scattered through the level. The soil showed evidence of a strong shrink/swell potential and a high plasticity index. The surface was cracked, allowing flakes on the surface to fall down into the subsurface. Two core fragments, five tools, and 104 pieces of debitage (of which 20 flakes were heat-altered) were recovered from the level. The level collection consists of one biface blank, three utilized flakes, and an unidentifiable projectile point.

Level 2 (10-20 cm) was composed of the same black clay gumbo. Digging and screening were made difficult by the dense, sticky clay. No cultural materials were observed, and the level is believed to lie below the cultural deposit. The unit was abandoned for lack of artifacts.

Moving west 6 meters, Test Unit 8 was located at S100/E78 in the grid. A dark gray clay loam formed the matrix of Level 1 (0-10 cm); it had many pieces of fire-cracked rock, and rootlets were also common. Exfoliating limestone increased toward the bottom of the level. An inventory of materials collected from the level includes two snail shells, one core fragment, five tools, and

61 flakes (seven heat-altered). The tools are four utilized flakes and one biface fragment. The biface was found in the NWSW of the unit at 10 cm.

Level 2 (10-20 cm) had loose, dark gray clay loam with roots, fire-cracked rock, and exfoliating limestone present in the fill. Two tools and 30 process of debitage were found. No heat-alteration of the artifacts was apparent The two tools consist of a utilized flake and a biface fragment. Digging in TU 8 was stopped at the end of the second level due to the presence of bedrock slabs at 20 cm (Figure 3).

Test Unit 9 (S105/E78) was the southwesternmost unit dug at 41BX791. Placed 4 meters south of TU 8, the matrix in Level 1 (0-10 cm) was a black loamy clay denser than that in TU 8. Roots, small gravel, and fire-cracked rock were observed in the unit, but there were fewer fragments of fire-cracked rock at S105/E78 than within the main midden scatter. The fill was homogeneous and lacked any soil mottling. Three snail shells, one core, 10 utilized flakes and 140 pieces of debitage were recovered from the level. Eighteen flakes were heat-altered.

Level 2 (10-20 cm) contained a gray clay loam with fire-cracked rock, roots and exfoliating limestone. The fill was uniform, and the volume of fire-cracked rock remained less than in units to the northeast. Collection recovered three tools, and 24 flakes. One biface blank, a scraper, and an unidentifiable projectile point base fragment accounted for the tools. A Darl point had also been found near the surface of TU 9 during the surface collection the SW quadrant. Slab bedrock was uncovered at 20 cm, and work at the unit ceased after profiling a wall.

Test Unit 10 was placed 5 meters east of TU 1 outside the midden. The fill seemed so disturbed that Level 1 was dug from 0 to 20 cm. Disturbance from the bulldozer had pulled fire-cracked rock over the spot while blading. Although there was a good deal of fire-cracked rock on the surface, little was present underneath. Bedrock stuck up from the surface of TU 10. Burned rock was seen only in the NW corner of the unit. The matrix was a gray clay loam. One biface blank and nine pieces of debitage were found, all unburned. Digging stopped when boulders of bedrock were exposed.

Testing shifted back into the midden area with Test Unit 11 (S91/E92). TU 11 was diagonally adjacent to TU 5 on the SW corner. A loose, dark gray silty clay loam comprised the matrix in Level 1 (0-10 cm), with fire-cracked rock and roots found in the fill. Far fewer flakes were collected in Level 1 than in TU 5: nine pieces of debitage and no tools were identified. Five of the flakes were heat-altered.

Level 2 (10-20 cm) provided one snail shell, three tools, and 18 pieces of debitage. One utilized flake and two scrapers were found in the level. three flakes showed heat-alteration. The fill was still a dark gray, loose silty clay loam with roots and fire-cracked rock.

Level 3 (20-30 cm) of TU 11 had a shift in soil content to gray loamy clay. Fire-cracked rock was sparse but remained present. Roots continued to appear in the uniform matrix. Bedrock protruded into the level at 30 cm, and no further digging was attempted (Figure 3). Five snail shells and six flakes (two heat-altered) were recovered.

Testing at 41BX791 was discontinued after 11 test units were dug. Given the circumstances of extensive surface disturbance, results of the testing program remained equivocal; the shallow subsurface cultural deposition and marginal artifact level counts failed to suggest relevant directions for excavation at the site. At no time did there ever appear to be any subsurface

rock alignments encountered in the test units. Fire-cracked rock, while always present, was loosely spread through the fill without pattern or concentration. The only observable difference was the rapid decrease of fire-cracked rock outside the immediate midden area.

Site 41BX845

Work then shifted to 41BX845 (Figure 4), a burned-rock midden recorded during the testing at 41BX791. Unlike 41BX791, site 41BX845 lay along the edge of the bladed right-of-way; presumably there may be an intact portion of the site on private land outside the project area. Part of the site was visible on the surface across the boundary fence on private land, however, testing occurred only in the right-of-way. All the test units were located north of the service road.

A north-south grid was plotted with a transit at 41BX845 before an intensive surface reconnaissance was performed. It was immediately apparent that the site had been visited by amateur relic collectors, as there were potholes visible on the ground surface and piles of flakes atop the boulders that dot the site. In addition to blading and grubbing activities, trees and brush had been mounded for burning. Charcoal from the recent fires was scattered across the site.

The SE portion of the site within the right-of-way contained most of the slope of the ephemeral drainage, unlike the more level terrace on the rest of the site. The service road has also disturbed the central area of the site, obscuring the SE and SW quadrants, and making the surface manifestation of site limits between the easement area and the right-of-way difficult to see.

Artifact collection from the surface of the SW quadrant yielded 22 tools: 12 utilized flakes, six biface blank fragments, one stemmed biface, a drill fragment, a scraper, and one graver. In addition, two flakes and two core fragments were collected.

Quadrant NW provided six pieces of debitage, one core fragment, and 18 tools. The tools include five utilized flakes, eight biface blank fragments, three choppers, one possible gouge, and one scraper.

In the NE quadrant, nine tools and five flakes were retrieved. The tool inventory amounts to one graver, one scraper, one drill fragment, a chopper, two biface fragments, and three utilized flakes.

The SE quadrant collection contained 19 tools and 15 pieces of debitage One graver, one scraper, one projectile point preform, four utilized flakes, eight biface blanks, and four biface fragments were found on the surface. The preform is not identifiable by point typology.

Sixty-eight tools were collected from the surface of 41BX845. As the collection totals from the quadrants suggest, similar tool counts were obtained in the SW, SE, and NW quadrants of the site. Only the NE quadrant possessed a much sparser distribution of tools scattered across the surface. Indeed, the cultural materials seemed to concentrate along the drainage first terrace surface rather than on the uplands to the northeast closer to the centerline of the right-of-way.

Given the presumed pattern of the lithic scatter and burned rock concentration, Test Unit 1 was opened in the SE quadrant at grid S104/E108. The Level 1 (0-10 cm) matrix was a somewhat greasy dark clay loam with fire-cracked rock, small gravel, and tree roots. The burned rock occurred in large

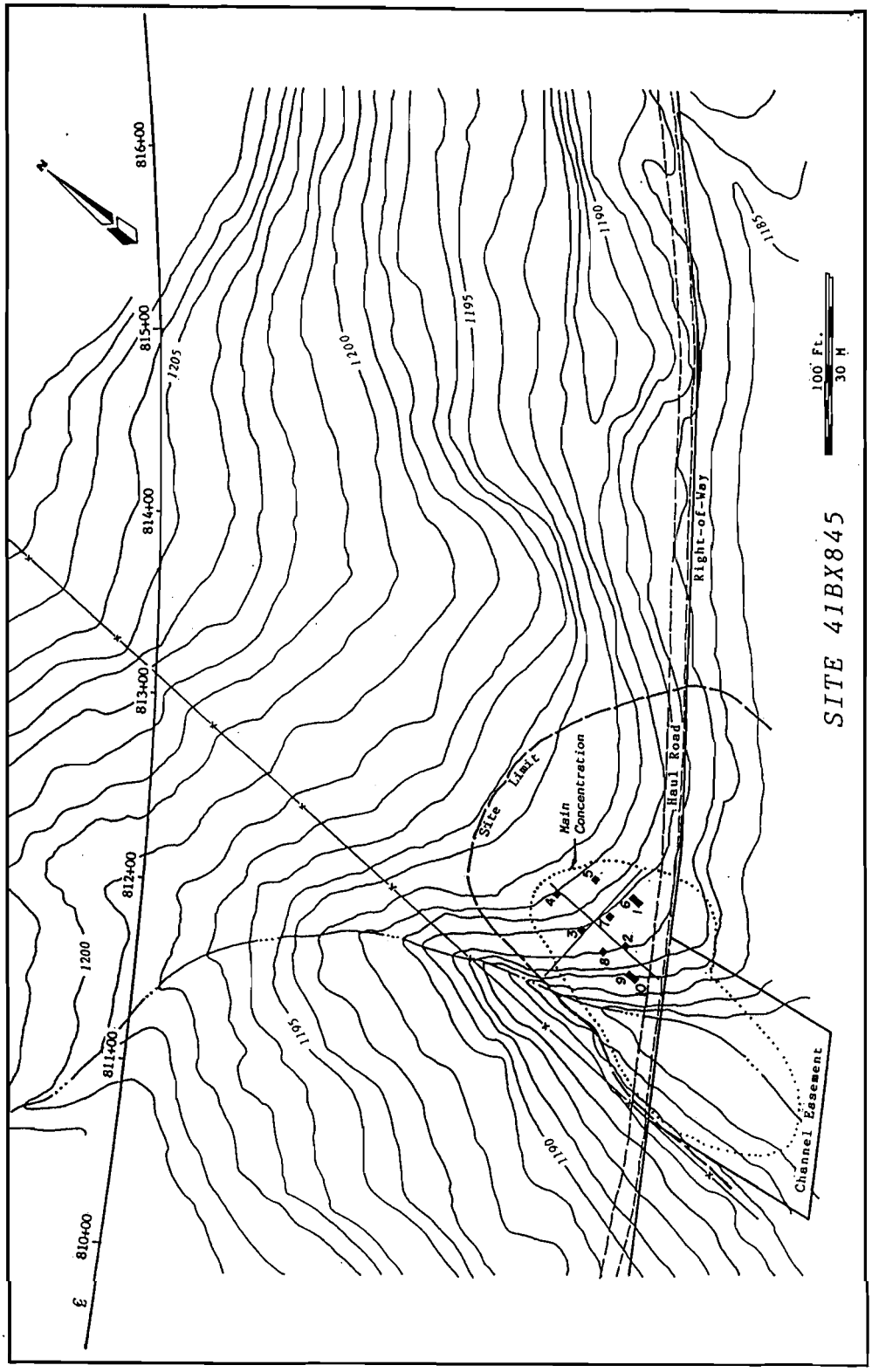


FIGURE 4. Site Map of 41BX845, Bexar County, Texas.

cobble-sized pieces. The matrix at 10 cm was featureless and uniform. The soil lacked any mottling.

Collected from the Level 1 fill were 12 tools and 85 pieces of debitage. Twenty-nine of the flakes are heat-altered. As for the tools, there are two projectile points, seven utilized flakes, and three biface fragments. One of the points is an apparent Frio, while the other is a large, reworked Marcos fragment. The Marcos base fragment has a burin-like spall removed from a lateral edge of the blade.

Level 2 (10-20 cm) contained the same matrix as in Level 1. The greasy clay loam fill was difficult to screen. Four tools, including two biface blank fragments and two utilized flakes, were recovered. Another 235 pieces of debitage were also collected, of which 78 flakes are heat-altered.

Level 3 (20-30 cm) offered seven tools, 201 flakes (56 heat-altered), and one snail shell. Two biface fragments, a biface preform, one graver, and two utilized flakes made up the artifact totals. The soil became a dark gray mottled loamy clay with fire-cracked rock, small gravel, and roots; the heavy, greasy fill was quite difficult to screen. TU 1 testing ended at exfoliating bedrock spalls at about 30 cm.

Work moved to Test Unit 2 (S107/E101), 6 meters southwest of TU 1, where fire-cracked rock thickly covered the surface. The soil in Level 1 (0-10 cm) was a loose, dark gray silty clay loam with fire-cracked rock, small gravel, and roots. Two core fragments, three tools, and 167 pieces of debitage (27 heat-altered) were found. The tools include one utilized flake, one biface fragment, and one biface blank.

Level 2 (10-20 cm) contained a loose, dark gray silty clay loam matrix with fire-cracked rock, small gravel, and roots. The soil content was easily screened although many large rocks were present in the fill. The fill at 20 cm was uniform in appearance, featureless and without indications of staining. No tools and 48 pieces of debitage were recovered from this level. The heat-altered component of the debitage totals nine flakes. These few flakes constitute the only artifacts found in the level. The artifact counts are a dramatic reduction in comparison to Level 1 totals and contrast clearly with TU 1.

Level 3 (20-30 cm) also was filled with larger burned rocks. The matrix continued to be a loose, dark gray silty clay loam with fire-cracked rock, gravel, and roots. Only 44 flakes (18 heat-altered) and no tools were found. The test unit was closed with this level when fractured bedrock was visible at 30 cm; little soil remained between the rocks to screen.

Test Unit 3 was placed at grid S100/E98 toward the creek about 6 meters northwest of TU 2 (Figure 5). The matrix was a dark gray clay loam mottled with brown. The usual fire-cracked rocks, roots, and small gravel were all seen in the fill. The soil was compacted and greasy, unlike TU 2; the unit seemed to contain more larger-sized flakes than in the previous unit. The many tree roots stemmed from a juniper or mountain cedar (Juniperus ashei) stump uncovered in the NE corner of the pit. Eighteen tools, 10 snail shells, and 697 flakes were collected. The tools amount to one scraper fragment, four utilized flakes, six biface blanks, one possibly hafted biface fragment, and six biface fragments. Heat-fractured flakes total 235 pieces.

Bedrock was exposed in the bottom of Level 2 at 20 cm, however. The matrix remained the same, with the fill still greasy and compacted; the soil clods were difficult to break apart. A pick was needed to dig the hard fill in the unit. Five snail shells, two pieces of hematite (soft iron ochre), five

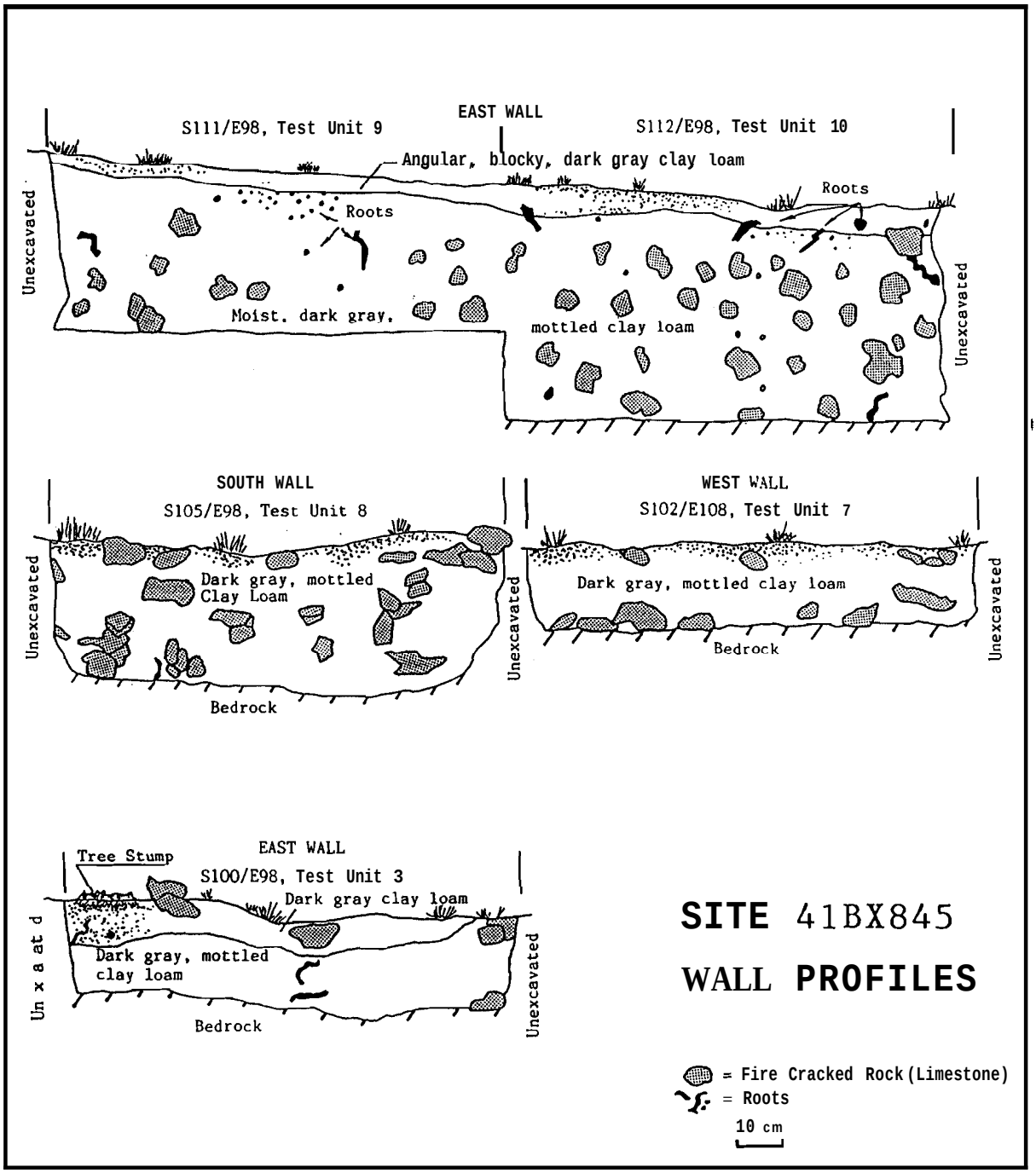


FIGURE 5. Selected profiles of test units at 41BX845.

tools, and 458 flakes (128 heat-altered) were found in the level. Two biface blanks, one retouched flake, and two biface fragments are the tools identified. TU 3 provided the only specimen of hematite found at 41BX845. TU 3 testing ended at 20 cm upon reaching bedrock. A wall profile of the unit was drawn at completion.

Two snail shells, no tools, and 12 pieces of debitage were retrieved in Level 1 (0-10 cm) at Test Unit 4, located in grid S100/E98. TU 4 was placed six meters east and north of TU 3. It is the unit fartherest to the north at the site. Bedrock was seen just a few centimeters below the surface; the matrix was a dark gray silty clay loam with roots, small gravel, and fire-cracked rock. The fractured bedrock was exposed across the unit at 10 cm, and the unit was abandoned.

Test Unit 5 (S96/E106) was established southeast of TU 4 by approximately 6 meters. The fill was a dark gray silty clay loam with a high content of leaf mold and roots present. Fire-cracked rock and small gravel remained at the same quantities. The matrix was loose and passed easily through the screen.

Eleven tools, five snail shells, and 43 flakes were found in Level 1 (0-10 cm) of TU 5. The identified tools include three utilized flakes, one notch, one graver, one biface blank, two biface fragments, one bifacial composite tool, and two projectile points. The two base fragments represent a possible Figueroa point and a Frio point.

Level 2 (10-20 cm) of TU 5 also contained a matrix of dark gray silty loam with heavy leaf mold, roots, small gravel, and fire-cracked rock present. The fill was loose and screened easily. Large pieces of fractured bedrock began to appear in the SE quarter of the unit, and bedrock was reached at 20 cm. Very few artifacts were seen in Level 2; only six flakes (two heat-altered) were found.

Test Unit 6 (S103/E108) was located west of and adjacent to TU 1 in the SE quadrant of 41BX845. One core, six tools, and 69 pieces of debitage were observed in Level 1 (0-10 cm). Three utilized flakes, two heat-altered biface fragments, and a projectile point preform comprise the tool collection. Twenty-eight of the flakes showed evidence of heat alteration. The fill was greasy and dense within the level; the soil was a clay loam of dark gray color mottled with brown. Fire-cracked rock, small gravel, and roots were present.

In Level 2 (10-20 cm), the matrix remained the same as in Level 1. Digging proceeded only with difficulty through the dense soil, using a pick. Bedrock was uncovered just below 20 cm, and the unit was abandoned at that point. Four utilized and four retouched flakes were collected, as well as 29 (11 heat-altered) pieces of debitage.

Moving 4 meters to the west, work started at Test Unit 7 (S102/E103). Level 1 (0-10 cm) had a matrix which was a mottled dark gray clay loam with fire-cracked rock, small gravel, and rootlets. Large fragments of rock filled the level; slab bedrock was exposed just below 10 cm. The greasy soil had hardened into subangular blocky clods. Many artifacts were recovered from this level, however. A total of 536 (143 heat-altered) pieces of debitage and 11 tools were found. The tools included five utilized flakes, two biface blanks, and four biface fragments. Nine snail shells were also collected. A wall profile was drawn of TU 7, and the unit was closed (Figure 5).

Testing then shifted approximately 4 meters to Test Unit 8 in the southwest portion of the site. TU 8 was placed 4 meters west of TU 3. The unit lay in the area of 41BX845 much compressed by use as a two-track road branch-

ing north toward the centerline from the haul road. The dark gray clay loam was hard, greasy, and formed subangular blocky clods in the upper 4 cm of the level.

Fire-cracked rock, small gravel, and rootlets were present, as always. There was far less leaf mold noticeable than in the SE quadrant of the site. The fill was uniform at 10 cm. Two snail shells, four core fragments, nine tools, and 963 pieces of debitage (277 heat-altered) were found. This level contained the only quartzite flake observed from either site. The tools include four utilized flakes, two biface blanks, two biface fragments, and one projectile point fragment, a heat-altered, small Edwards-like arrowpoint.

In Level 2 (10-20 cm), the soil content became looser and easier to screen. The number of flakes present was still high but less than in Level 1. There were 720 pieces of debitage , two core fragments, 15 tools, and two snail shells collected. Heat-altered flakes numbered 206 pieces. One scraper, seven utilized flakes, qne biface preform, four biface fragments, a biface edge trimming, and an unidentifiable projectile point preform were retrieved from the level.

Bedrock appeared as fractured slabs in the bottom of Level 3 (20-30 cm) just below 30 cm in depth. The fire-cracked rock seen in the level fill was in large cobbles. The dark gray, mottled clay loam still screened well, without the angular blocky structure on the surface. Small gravel and roots were evident in the matrix. Nine snail shells, one core fragment, five tools, and 323 pieces of debitage (89 heat-altered flakes) were collected. Three of the tools are utilized flakes, while the remaining two specimens are a biface blank and a biface fragment. Due to the presence of bedrock in Level 3, work halted at TU 8 (Figure 6).

Digging began then at Test Unit 9 (S111/E98), a square set 5 meters south of TU 8. The unit was located within the two-track ruts through the site of 41BX845. Artifact totals again were increased. Nineteen tools, 19 snail shells, and 783 flakes were found in Level 1 (0-10 cm). Heat-altered debitage amounted to 198 flakes. In general, flakes collected in the level tend to be large. The tools include seven utilized flakes, three biface blanks, five biface fragments, one scraper, a retouched flake, one projectile point preform, and a heat-altered, possible point fragment.

The dark gray mottled clay loam contained fire-cracked rock, roots, and small gravel. The top of Level 1 was dry, with subangular blocky clods which were difficult to break up on the screen. The matrix had a somewhat greasy texture. The leaf mold layer was absent from this side of the site.

In Level 2 (10-20 cm), the soil continued to be a dark gray clay loam with fire-cracked rock, roots, and small gravel. More large rocks were seen in the fill. The soil screened fairly easily, but the texture stayed somewhat greasy. Fewer artifacts were found than in Level 1; nine tools and 422 pieces of debitage were present in the level collection. Heat alteration affected 63 of the flakes. Two scrapers, two utilized flakes, a possibly stemmed biface fragment, three biface fragments, and a biface blank were found. Three snail shells were also present.

Level 3 (20-30 cm) contained many roots in the fill and fewer rocks than in Levels 1 and 2. The soil was still a dark gray mottled clay loam with small gravel and fire-cracked rock. The debitage count was 567 flakes, and there were 14 tools collected. Twelve snail shells were present. The tools are three utilized flakes, one scraper, two retouched flakes, a projectile point preform, a Scallorn projectile point fragment, one biface blank fragment, a

biface preform fragment, and four biface fragments. Eighty-eight of the flakes are heat-altered.

In Level 4 (30-40 cm) of TU 9, the matrix was a dark gray mottled clay loam with many roots. Fire-cracked rock and small gravel were present, but although there were large fragments of heat-spalled rock, they were less numerous than in upper levels. Tree roots became increasingly common throughout the level. For the first time at 41BX845, a unit did not encounter bedrock at the end of Level 3, but matrix continued into the next level. TU 9, situated southernmost on the site, seemed to display a greater depth. Some broken bedrock slabs protruded from the west wall and SW corner of the pit in the level at 40 cm, and TU 10 was opened next to TU 9 along the south wall (Figure 5).

Five snail shells, two core fragments, two biface fragments, and 154 flakes were found in Level 4 of TU 9. Forty of the flakes are heat-altered. The number of tools and debitage is greatly reduced from the Level 3 collection.

Test Unit 10 (S112/E98) formed a 1x2-m unit with TU 9. More soil was present in the fill than in most of the other units. Large fragments of fire-cracked rock were observed in Level 1 (0-10 cm). The matrix was a dark gray mottled clay loam with roots and small gravel. The level yielded one snail shell, one core fragment, 21 tools, and 233 pieces of debitage (37 heat-altered). In addition, one flake looks heat-treated. The tools include two gravers, one notch, five biface fragments, one biface blank, 10 utilized flakes, and two projectile points. One point fragment is a small base resembling that of an Edwards point, while the other point has the appearance of a reworked Wells type.

The fill in Level 2 (10-20 cm) became somewhat greasy, but otherwise remained a dark gray mottled clay loam with fire-cracked rock, gravel, and tree roots. The fire-cracked rocks were fewer but in bigger fragments. Five snail shells, 12 tools, and 268 pieces of debitage were recovered from the level. Heat alteration affected 82 flakes. Two notches, four biface fragments, one scraper, three utilized flakes, one retouched flake, and one projectile point fragment were found. The point type is probably a Frio variant. Two of the biface fragments are extensively heat-altered.

The matrix remained unchanged in Level 3 (20-30 cm) of TU 10. The soil was still greasy, and the fire-cracked rock occurred as large pieces. Eight snail shells, nine tools, and 227 flakes (53 heat-altered) were collected. The tools are three biface fragments, three utilized flakes, one retouched flake, and two projectile points. One biface and two utilized flakes show heat alteration. The point fragments include one possible Figueroa base and a Nolan.

Level 4 (30-40 cm) fill differed from Level 3 only in that the fire-cracked rock size increased and the artifact count fell. Four snail shells, four tools, and 165 pieces of debitage (38 heat-altered) were collected from the greasy matrix. One utilized flake, one biface blank, and two biface fragments form the tool total, with one of the bifaces heat-altered. The matrix of the unit at 40 cm was uniform.

By Level 5 (40-50 cm) of TU 10, sparser evidence of cultural material was seen. Two utilized flakes were recovered, one of which is heat-altered. Debitage amounted to 83 flakes (28 heat-altered). The same dark gray mottled clay loam wag greasy and screened easily. Slabs of fire-cracked rock appeared to have been dumped in the fill in no discernible pattern; the fragments in no

way resembled a feature. No signs of bedrock were observed. Roots and small gravel were also present, as were four snail shells.

At 60 cm in Level 6, digging ceased upon reaching slabs of bedrock in the NW corner of the unit. Only **57** flakes, one utilized flake, and three snail shells were found in the level. Fifteen of the flakes are heat-altered. The greasy, dark gray mottled clay loam was consistent with the previous level.

Testing ceased at 41BX845 after TU 10 was profiled. Much of the site offered only shallow soil deposition above the bedrock; the exception was the western portion of the site where depth of deposits reached 60 cm above the fractured bedrock. But there are problems with the data found in TU 8, TU 9, and TU 10. For example, a chronology based on the provenience of diagnostic artifacts suggests extensive disturbance.

During testing, it was assumed that perhaps the western portion of the site was used prehistorically as a trash dump, but even then that did not seem a wholly satisfactory answer. Although Level 1 in the units was quite hard due to heavy equipment traffic, the lower levels were unusually unconsolidated in comparison to the rest of the site. The material was friable and easily shoveled. The amount of fire-cracked rock was less, and some of the rock seemed to be resting on end in the units. A plausible answer to these inconsistencies is that the relic hunters dug in this portion of the site. No pit walls were visible, but in uncontrolled digging, there would be no walls in place. The artifacts collected during testing may have been discarded by the collectors, just as we saw flakes piled up on boulders in surface collector piles. The blading disturbance was enough to obscure the ground surface and any previous digging which may have occurred at 41BX845.

A summation of the sites' potential is given in the Recommendations section, following analysis of the lithic materials collected at both sites.

LITHIC ANALYSIS

A total of 228 tools (Table 1) and 1026 pieces of debitage (Table 2) were collected from 41BX791. Similarly, 274 tools (Table 3) and 7801 pieces of debitage (Table 4) were found at 41BX845 during the course of the field investigation. The following chapter is designed to evaluate the lithic artifacts according to morphology and presumed function. The first section will address the types of flaking debris recovered from each site.

Debitage

By far the most numerous category of debitage at 41BX791 was that of tertiary flakes; of the 1026 unmodified flakes, tertiary flakes compose 39.1%, or 402 pieces. This is entirely consistent with the majority of debitage collections in that tertiary pieces are the largest in size and number. Part of this factor results from sampling: larger flakes are easier to see. However, it is likely that in the reduction process, sizeable tertiary flakes would be preferred as potential candidates for retouch. Next in percentages, chips account for 29.9% of the total. Chipping debris is also more common due to the further fracturing into smaller fragments from heat damage. Chips generally form the category with the most heat alteration.

Secondary flakes (12.5%) and tertiary microflakes (11.7%) are the only other categories which occur in more than minimal amounts. Chunks and shatter constitute 4.3% of the total. In contrast, bifacial thinning flakes make up just 1.2% of the total, and there are merely eight (0.7%) secondary microflakes. Only two primary flakes (0.2%) are in the collection. The paucity of primary and secondary flakes at 41BX791 may relate to the presence of a secondary lithic procurement area less than a kilometer to the north of the site. It is possible that the earliest stages of reduction took place at the secondary quarry rather than at the site; cortical reduction would offer convenience in carrying the material away from the procurement area. Such a procedure would decrease the volume of more corticated pieces on-site.

No single debitage concentration area was identifiable at 41BX791. The highest flake counts seemed to stem from test units along the periphery of the midden area. TU 2 and TU 3 on the northeast edge, TU 6 to the west, and TU 9 at the southwestern margin offered the highest debitage counts from the site. TU 3, on the terrace edge of the drainage, contained the most flakes of all the units.

The debitage collection at 41BX845 differed from that of 41BX791 in sheer numbers. A total of 7801 flakes were collected, compared to the much lower count at 41BX791. In this case, the most common debris type was the chip category, at a remarkable 40.5% of all the debitage. These chips are often heat-fractured. In descending order, the percentages of the other major categories are tertiary flakes (28.5%), secondary flakes (13.9%), and tertiary microflakes (11.9%). The percentages then drop to just 1.8% in the secondary microflakes, bifacial thinning flakes at 0.8%, and primary flakes at 0.1% of the total. Unlike 41BX791, 41BX845 had blades and microblades represented in the collection, but these categories appeared only in trace amounts.

Distribution of debitage throughout the test units centered in the deeper units, TU 8 and TU 9, located on the western edge of the site. Test Unit 8 had 25.6% of all debitage recovered, while TU 9 offered 24.6% of the total. The deepest of the units, TU 10, ranked third in the percentages at

TABLE 1. Site 41BX791 tool inventory.

Units	Proj Point	Biface	Biface Blank	Utilized Flake	Retouched Flake	Scraper	Chopper	Notch	Axe	Drill	TOTAL:
Surf SE Quad	-	4	8	4	-	4	-	-	-	-	20
Surf SW Quad	2	3	7	19	4	1	-	-	-	-	36
Surf NW Quad	4	6	11	10	2	6	1	-	-	-	40
Surf NE Quad	4	8	15	27	4	4	1	1	1	-	65
Surf NW Bkdt	-	2	1	3	-	-	-	-	-	-	6=167
S90/E100 TU1											
Level 1	-	-	-	-	-	-	-	-	-	-	-
Level 2	-	-	-	3	-	-	-	-	-	-	3 =3
S81/E94 TU2											
Level 1	-	1	-	4	-	1	-	-	-	-	6
Level 2	-	1	-	3	-	1	-	-	-	-	5
Level 3	-	-	-	-	-	-	-	-	-	1	1 =12
S82/E94 TU3											
Level 1	-	1	-	1	-	1	1	-	-	-	4
Level 2	-	-	2	-	-	-	-	-	-	-	2
Level 3	-	-	-	-	-	1	-	-	-	-	1 =7
S86/E94 TU4											
Level 1	-	-	-	-	-	-	-	-	-	-	-
Level 2	-	-	-	-	-	1	-	-	-	-	1
Level 3	1	1	-	-	-	-	-	-	-	-	2 =3
S90/E93 TU5											
Level 1	-	-	-	-	-	-	-	-	-	-	-
Level 2	-	-	-	-	-	1	-	-	-	-	1 =1
S91/E85 TU6											
Level 1	-	2	-	2	-	-	-	-	-	-	4
Level 2	1	-	-	-	1	-	-	-	-	-	2 =6
S100/E85 TU7											
Level 1	1	-	1	3	-	-	-	-	-	-	5 =5
S100/E78 TU8											
Level 1	-	1	-	4	-	-	-	-	-	-	5
Level 2	-	1	-	1	-	-	-	-	-	-	2 =7
S105/E78 TU9											
Level 1	-	-	-	10	-	-	-	-	-	-	10
Level 2	1	1	-	-	-	1	-	-	-	-	3 =13
S90/E106 T10											
Level 1	-	-	1	-	-	-	-	-	-	-	1 =1
S91/E92 T11											
Level 1	-	-	-	-	-	-	-	-	-	-	-
Level 2	-	-	-	1	-	2	-	-	-	-	3 =3
TOTAL:	14	32	46	95	11	24	3	1	1	1	=228

TABLE 2. Debitage collected at site 41BX791.

Units	Flakes								Microflakes				Chips	Bifacial Thin'g Fl	Chunks/ Shatter	TOTAL:
	Prim	Secondary			Tertiary				Second		Tertiary					
		Un	Fa	Fr	Un	Fa	Fr		Un	Fa	Un	Fa				
Surf[1] SE	-	1	-	2	4	4	2		-	-	-	-	-	-	1	14
Surf SW	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Surf NW	-	2	-	-	4	4	6		-	-	-	-	-	-	1	17
Surf NE	-	-	1	-	2	1	-		-	-	-	-	2	-	1	7
Bkdt NW	-	-	-	-	-	-	-		-	-	-	-	-	-	1	1 =39
S90/E100																
Level 1	-	2	1	-	1	2	11		-	-	3	-	27	3	1	51
Level 2	-	1	2	1	3	4	6		-	-	28	-	8	-	-	53 =104
S81/E94																
Level 1	-	1	-	5	7	5	17		1	-	9	2	19	1	2	69
Level 2	1	4	3	2	8	3	19		1	-	6	2	16	-	2	67
Level 3	-	1	-	3	6	4	7		-	-	3	2	14	-	-	40 =176
S82/E94																
Level 1	-	4	3	5	6	1	11		-	-	8	1	18	-	5	62
Level 2	-	2	1	2	6	7	6		-	-	4	2	7	1	2	40
Level 3	-	-	4	1	2	3	7		-	-	1	-	6	-	1	25 =127
S86/E94																
Level 1	-	1	-	1	2	1	6		-	-	2	-	3	-	-	16
Level 2	-	-	3	1	6	-	8		-	-	3	1	3	-	-	25
Level 3	-	-	-	-	4	2	2		-	-	-	-	2	1	1	12 =53
S90/E93																
Level 1	-	1	-	-	1	-	1		-	-	-	-	2	-	1	6
Level 2	-	-	-	-	3	1	6		-	-	-	-	1	1	1	13 =19
S91/E85																
Level 1	-	4	1	3	9	3	22		1	-	7	2	25	1	3	81
Level 2	-	-	2	3	6	2	2		-	1	4	1	16	-	-	37 =118
S100/E85																
Level 1	-	4	4	11	6	6	19		3	-	-	-	33	-	6	92 =92
S100/E78																
Level 1	-	2	2	2	5	3	8		-	1	2	3	31	1	2	62
Level 2	-	1	2	4	-	6	10		-	-	3	-	-	3	1	30 =92
S105/E78																
Level 1	1	6	5	4	17	4	22		-	-	9	4	57	-	11	140
Level 2	-	-	-	1	2	2	9		-	-	2	-	8	-	-	24 =164
S90/E106																
Level 1	-	2	-	1	3	-	2		-	-	1	-	-	-	-	9 =9
S91/E92																
Level 1	-	-	1	-	-	1	2		-	-	2	-	3	-	-	9
Level 2	-	-	1	1	-	2	1		-	-	3	-	7	1	2	18
Level 3	-	-	-	-	2	1	3		-	-	-	-	-	-	-	6 =33
TOTAL:	2	39	36	53	115	72	215		6	2	100	20	308	13	45	=1026

[1] Debitage inadvertently collected as tools

TABLE 3. Site 41BX845 tool inventory.

Units	Proj Point	Biface	Biface Blank	Utilized Flake	Retouched Flake	Scraper	Chopper	Drill	Graver	Gouge	Notch	TOTAL:
Surf SE Quad	1	4	8	4	-	1	-	-	1	-	-	19
Surf SW Quad	1	-	6	12	-	1	-	1	1	-	-	22
Surf NW Quad	-	3	5	5	-	1	3	-	-	1	-	18
Surf NE Quad	-	1	1	3	-	1	1	1	1	-	-	9 =68
S104/E108 T1												
Level 1	2	3	-	7	-	-	-	-	-	-	-	12
Level 2	-	-	2	2	-	-	-	-	-	-	-	4
Level 3	-	2	1	2	-	-	-	-	1	-	-	6 =22
S107/E101 T2												
Level 1	-	1	1	1	-	-	-	-	-	-	-	3
Level 2	-	-	-	-	-	-	-	-	-	-	-	-
Level 3	-	-	-	-	-	-	-	-	-	-	-	- =3
S100/E98 TU3												
Level 1	-	7	6	4	-	1	-	-	-	-	-	18
Level 2	-	2	2	-	1	-	-	-	-	-	-	5 =23
S93/E100 TU4												
Level 1	-	-	-	-	-	-	-	-	-	-	-	- =0
S96/E106 TU5												
Level 1	2	3	1	3	-	-	-	-	1	-	1	11
Level 2	-	-	-	-	-	-	-	-	-	-	-	- =11
S103/E108 T6												
Level 1	1	2	-	3	-	-	-	-	-	-	-	6
Level 2	-	-	-	4	4	-	-	-	-	-	-	8 =14
S105/E103 T7												
Level 1	-	4	2	5	-	-	-	-	-	-	-	11 =11
S105/E98 TU8												
Level 1	1	2	2	4	-	-	-	-	-	-	-	9
Level 2	1	5	1	7	-	1	-	-	-	-	-	15
Level 3	-	1	1	3	-	-	-	-	-	-	-	5 =29
S111/E98 TU9												
Level 1	2	5	3	7	1	1	-	-	-	-	-	19
Level 2	-	4	1	2	-	2	-	-	-	-	-	9
Level 3	2	4	2	3	2	1	-	-	-	-	-	14
Level 4	-	2	-	-	-	-	-	-	-	-	-	2 =44
S112/E98 T10												
Level 1	2	5	1	10	-	-	-	-	2	-	1	21
Level 2	1	4	-	3	1	1	-	-	-	-	2	12
Level 3	2	3	-	3	1	-	-	-	-	-	-	9
Level 4	-	2	1	1	-	-	-	-	-	-	-	4
Level 5	-	-	-	2	-	-	-	-	-	-	-	2
Level 6	-	-	-	1	-	-	-	-	-	-	-	1 =49
TOTAL:	18	69	47	101	10	11	4	2	7	1	4	=274

TABLE 4. Debitage collected at site 41BX845.

Units	Flakes								Microflakes				Chips	BTF	Chunk/ Shatter	Blades		Microblade		TOTAL:
	Prim	Secondary			Tertiary				Second		Tert					Sec	Tert	Sec	Tert	
		Un	Fa	Fr	Un	Fa	Fr		Un	Fa	Un	Fa								
Surf[1] SE	-	2	2	1	3	5	1		1	-	-	-	-	-	-	-	-	-	-	15
Surf SW	-	1	-	-	-	-	1		-	-	-	-	-	-	-	-	-	-	-	2
Surf NW	-	1	1	-	-	3	1		-	-	-	-	-	-	-	-	-	-	-	6
Surf NE	-	-	3	1	-	1	-		-	-	-	-	-	-	-	-	-	-	-	5=28
S104/E108																				
Level 1	-	6	6	3	9	5	26		4	-	2	-	18	1	5	-	-	-	-	85
Level 2	-	14	7	17	13	5	45		1	1	23	10	80	4	15	-	-	-	-	235
Level 3	-	7	5	3	14	7	28		3	1	23	8	97	1	3	-	-	-	1	201=521
S107/E101																				
Level 1	-	2	6	4	5	8	62		3	-	10	9	49	2	5	-	1	1	-	167
Level 2	-	1	-	-	4	6	3		-	-	3	4	26	1	-	-	-	-	-	48
Level 3	1	2	2	-	3	5	10		-	-	5	1	10	2	3	-	-	-	-	44=259
S100/E98																				
Level 1	2	29	18	55	44	19	134		5	-	49	8	307	9	16	1	-	1	-	697
Level 2	1	14	10	23	35	18	61		8	2	43	16	206	6	14	-	-	-	1	458=1155
S93/S100																				
Level 1	-	-	-	2	3	-	1		-	-	2	-	4	-	-	-	-	-	-	12=12
S96/E106																				
Level 1	-	2	2	2	2	3	14		1	1	4	-	8	1	3	-	-	-	-	43
Level 2	-	-	-	1	1	-	1		-	-	-	-	1	1	1	-	-	-	-	6=49
S103/E108																				
Level 1	1	9	1	9	5	5	15		-	-	5	-	20	1	3	-	-	-	-	74
Level 2	-	3	2	2	4	2	6		-	-	3	-	7	-	1	-	-	-	-	30=104
S105/E103																				
Level 1	-	37	18	38	46	6	94		7	4	51	8	212	1	14	-	-	-	-	536=536
S105/E98																				
Level 1	-	47	25	94	66	19	158		11	5	97	15	408	5	13	-	-	-	-	963
Level 2	-	35	17	42	35	24	96		21	9	89	22	321	-	9	-	-	-	-	720
Level 3	1	18	5	24	29	10	52		5	1	37	7	118	1	8	-	-	-	1	317=2000
S111/E98																				
Level 1	-	35	14	55	65	15	125		11	1	70	11	363	2	16	-	-	-	-	783
Level 2	-	10	10	24	36	14	61		11	4	59	12	176	2	3	-	-	-	-	422
Level 3	1	34	22	56	50	18	96		4	3	57	10	209	5	2	-	-	-	-	567
Level 4	-	8	3	11	11	8	41		2	-	19	-	51	-	-	-	-	-	-	154=1926
S112/E98																				
Level 1	-	16	9	25	32	19	90		4	5	34	10	142	5	17	-	1	-	-	409
Level 2	2	9	9	17	21	17	40		-	-	23	12	113	1	4	-	1	1		270
Level 3	-	5	2	6	27	8	43		3	-	22	1	103	4	3	-	-	-	-	227
Level 4	-	6	3	6	20	11	37		4	-	15	1	55	5	2	-	-	-	-	165
Level 5	1	2	4	2	2	5	14		-	-	9	2	37	2	3	-	-	-	-	83
Level 6	-	3	1	1	6	1	8		-	-	7	3	23	3	1	-	-	-	-	57=1211
TOTAL:	10	358	207	524	591	267	1364		109	37	761	170	3164	65	164	1	3	3	3	=7801

[1] Debitage was inadvertently collected as tools

15.5%; the other units showed a dramatic decrease in flake counts in comparison, with 14.8% in TU 3, falling to only 6.8% in TU 7. Given the shallow deposition in much of the site, these figures are not unexpected.

Chipped Stone Tools

Utilized Flakes (all tools shown to scale)

At both sites, utilized flakes dominated the tool assemblage. A total of 101 (36.8%) utilized flakes were collected from 41BX845, while 98 utilized flakes were found at 41BX791, amounting to 41.2% of the tools. A majority of the utilized flakes (67.0%) were recovered from the surface at 41BX791, prompting suspicion that, despite all attempts to eliminate the flakes not culturally modified, the category might include some flakes without true use-wear. To control this problem, perhaps more traces of deliberate modification were sought from the artifacts than is usually required in analysis. Consequently, many of the utilized flakes illustrated may actually look retouched (Figures 6-8). The utilized flakes from 41BX845 did not reflect this trend: Only 23.7% of the flakes were located on the surface of the site.

As shown in the drawings (Figures 6-10), the utilized flakes come in a wide size range of secondary and tertiary flakes. Utilized flakes from the surface tend to be large, but larger flakes also appeared in test units (for example, Fig. 8c or Fig. 10e). Although the utilized flakes are generally not heat-altered, more modified flakes from 41BX845 show damage from heat than at 41BX791. These are very low percentages, of course, only 11 flakes at 41BX845 versus four flakes at 41BX791, but at 41BX845, all but two of the flakes came from the level bags of Test Units 6 through 10.

Utilization scarring on flakes from 41BX791 (Table 5) and 41BX845 (Table 6) appears on a variety of decortication material, including core fragments as well as flakes and blades. Differences in the utilized flake collections from the two sites are distinctive in terms of flake selection for expedient tool use. The utilized flakes from 41BX845 all occur as flakes rather than on blades or core fragments, lacking even the minimal representation of blades or debris as seen at 41BX791.

Site 41BX791 possessed a more generalized distribution of flake types with utilization scars than did 41BX845. At 41BX845, the preferred form for utilization was clearly the tertiary flake fragment, at 33.6% of the total, while at 41BX791, both secondary and tertiary flakes were modified fairly equally. One common trend is that, whatever the level of decortification, the pieces tend to be large in size. The exceptionally smaller utilized flakes shown in Figures 9e and 10b are broken medially, and working edges suggest that each was originally a larger tool.

No pattern of utilization scarring was discernible. Working edges occurred on all edges, both dorsally and ventrally. A few pieces were even flaked alternatively on both faces. In general, all examples of modification by use-wear are present: distal working edge, one lateral edge used, both lateral edges scarred, even the proximal end sometimes displays wear not associated with platform preparation.

Retouched Flakes (all tools shown to scale)

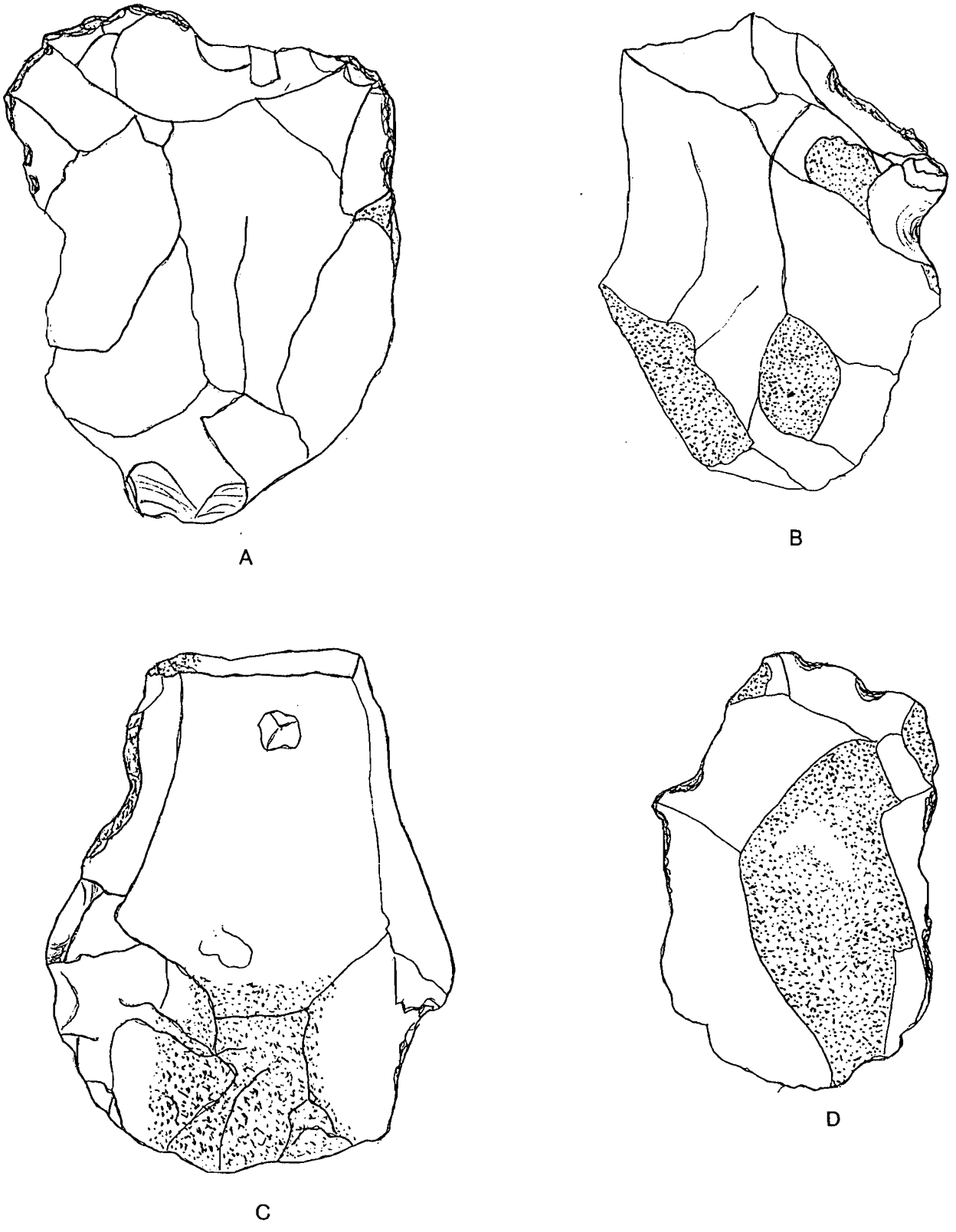
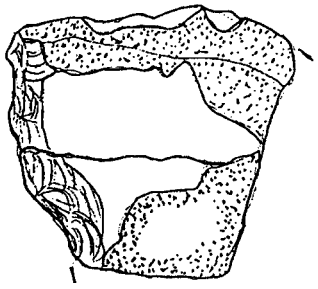
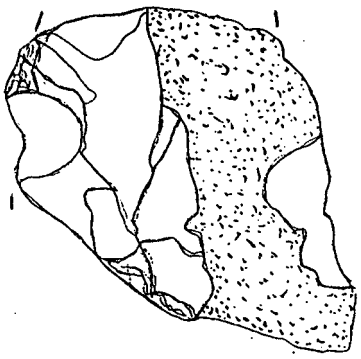


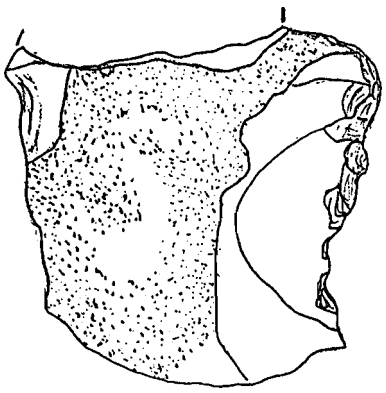
FIGURE 6. Utilized flakes from 41BX791.



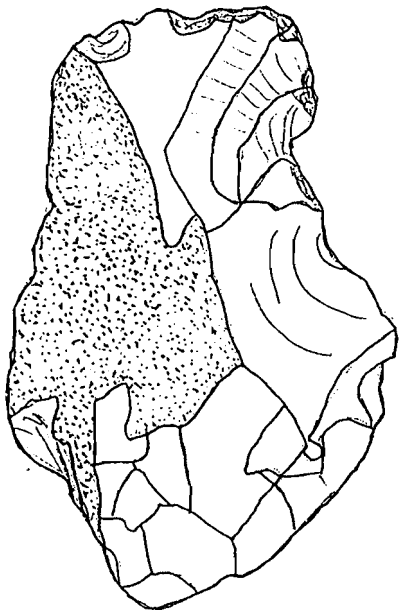
A



B



C



D

FIGURE 7. Utilized flakes from 41BX791.

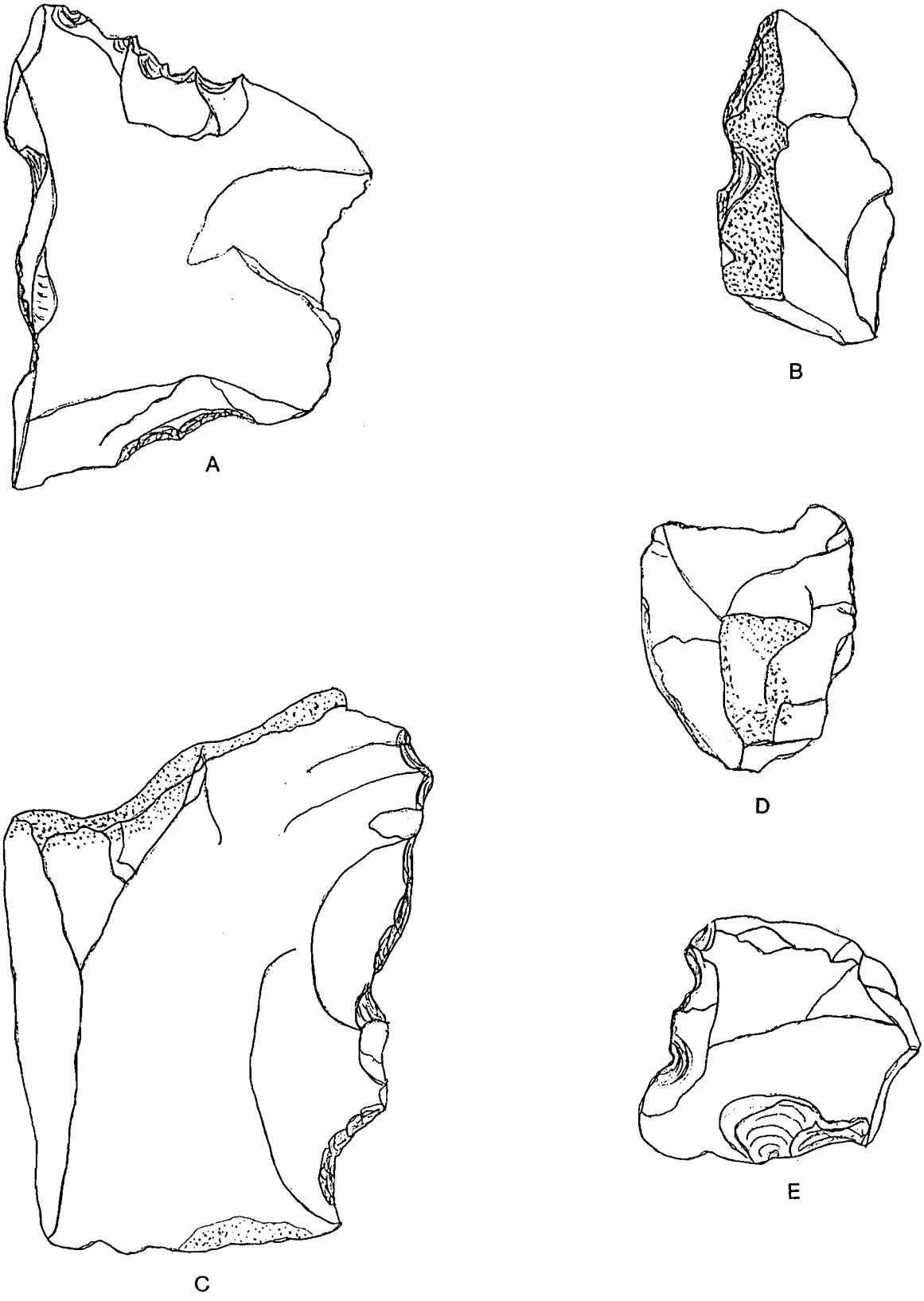


FIGURE 8. Utilized flakes from 41BX791.

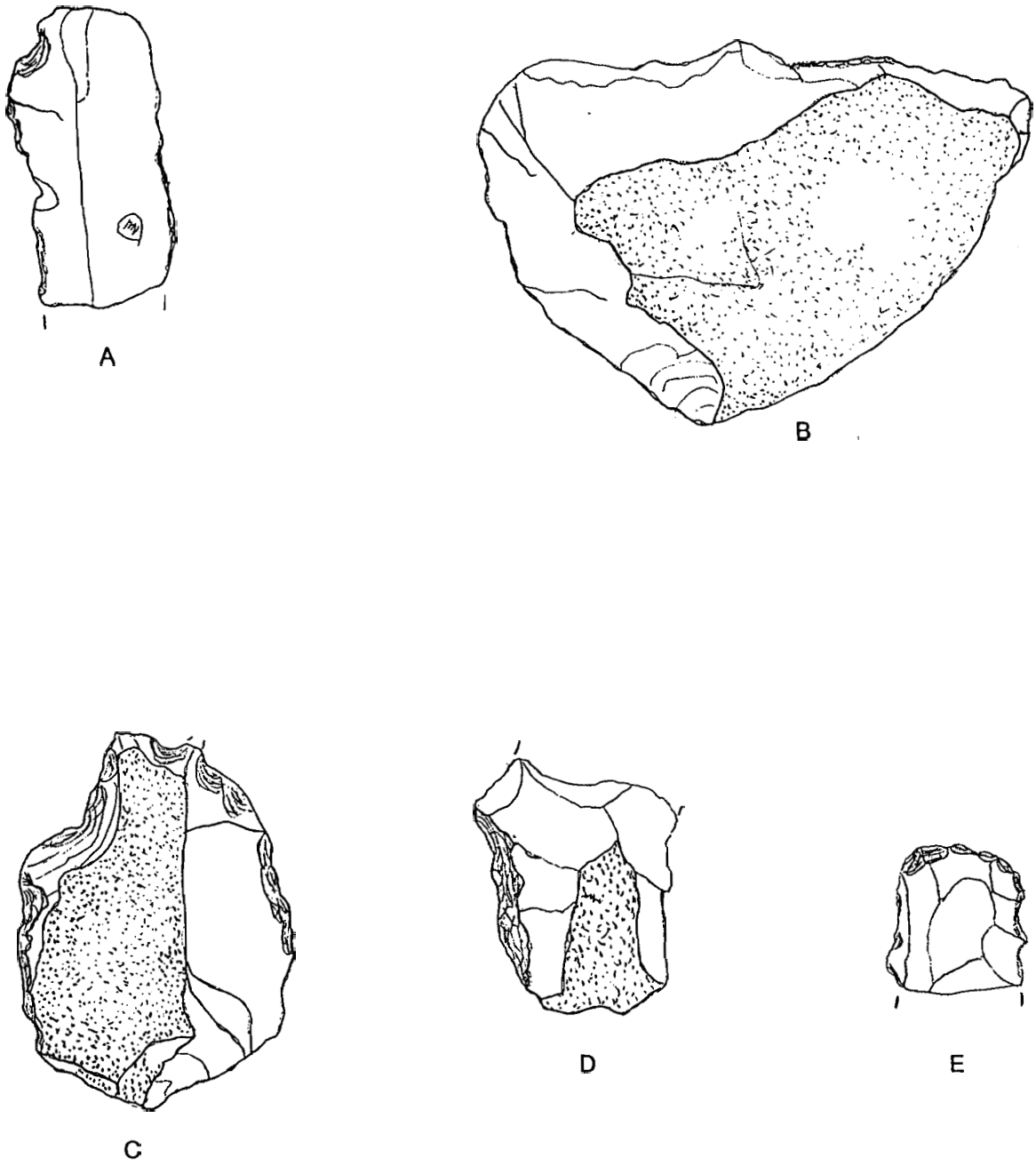


FIGURE 9. Utilized flakes from 41BX845.

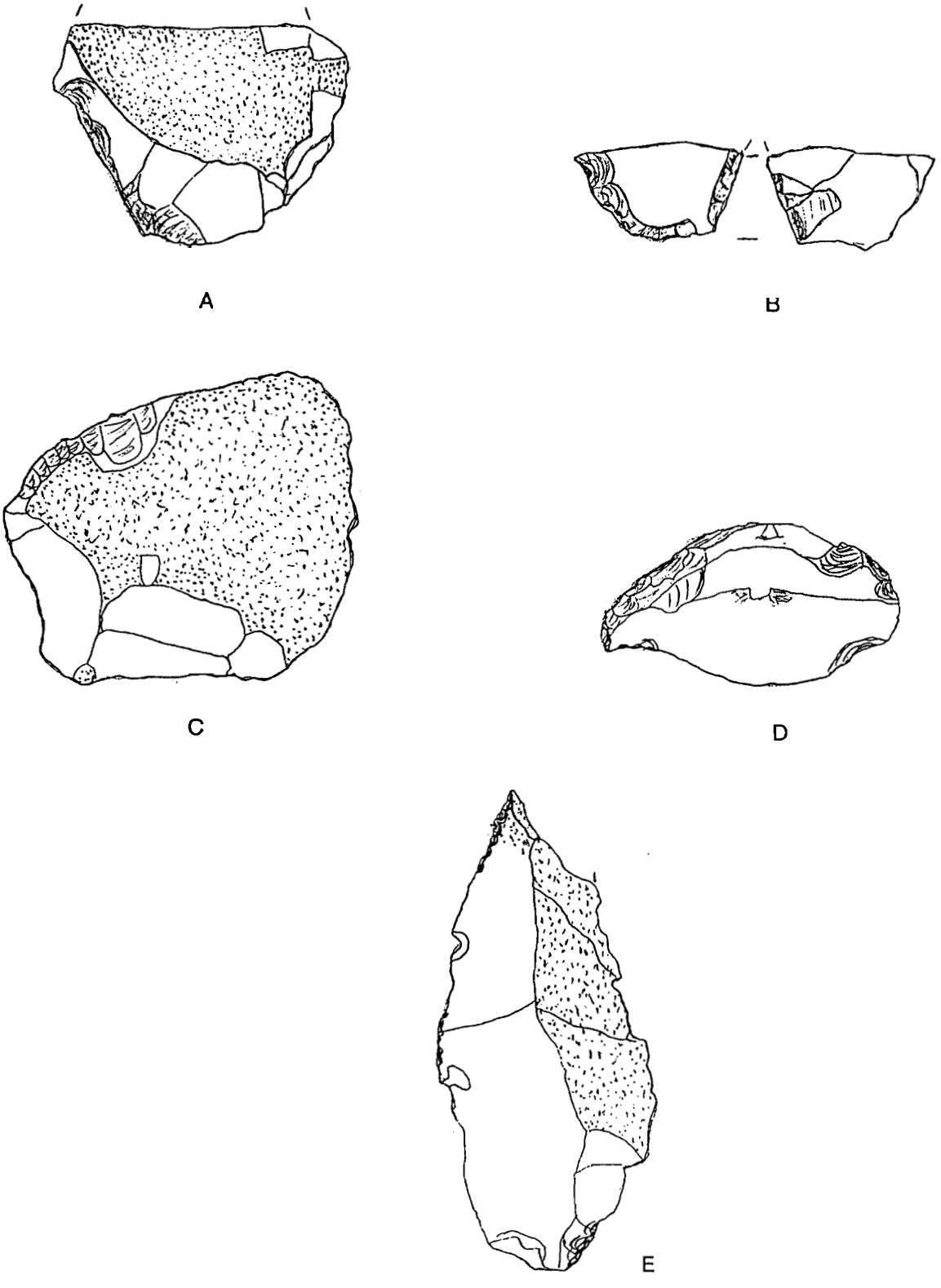


FIGURE 10. Utilized flakes from 41BX845.

TABLE 5. Utilization of flakes, 41BX791.

Units	Secondary Flake				Tertiary Flake				Tert Blade		Core Frag		TOTAL
	Un	Fa	Frag	Unpr	Un	Fa	Frag	Unpr	Unf	Fac	Sec	Tert	
Surf SE Quad	-	-	2	-	-	-	2	-	-	-	-	-	4
Surf SW Quad	3	2	6	1	2	3	-	-	1	-	-	-	18
Surf NW Quad	1	3	2	-	1	2	1	-	-	-	-	-	10
Surf NE Quad	3	5	2	1	8	2	6	1	-	-	-	-	28
Surf NW Bkdt	-	1	-	-	-	-	1	-	-	-	-	1	3
S90/E100 TU1													
Level 1	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 2	-	-	-	-	1	-	1	-	-	-	1	-	3
S81/E94 TU2													
Level 1	2	-	1	-	-	1	-	-	-	-	-	-	4
Level 2	1	1	-	-	-	-	-	-	-	-	-	1	3
Level 3	-	-	-	-	-	-	-	-	-	-	-	-	0
S82/E94 TU3													
Level 1	-	-	-	-	1	-	-	-	-	-	-	-	1
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 3	-	-	-	-	-	-	-	-	-	-	-	-	0
S86/E94 TU4													
Level 1	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 3	-	-	-	-	-	-	-	-	-	-	-	-	0
S90/E93 TU5													
Level 1	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
S91/E85 TU6													
Level 1	-	-	-	-	1	1	-	-	-	-	-	-	2
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
S100/E85 TU7													
Level 1	1	1	-	-	-	1	-	-	-	-	-	-	3
S100/E78 TU8													
Level 1	-	-	-	-	-	1	2	-	-	-	-	1	4
Level 2	-	-	-	-	-	-	1	-	-	-	-	-	1
S105/E78 TU9													
Level 1	-	1	4	-	4	-	1	-	-	-	-	-	10
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
S90/E106 TU10													
Level 1	-	-	-	-	-	-	-	-	-	-	-	-	0
S91/E92 TU11													
Level 1	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 2	-	-	-	-	-	-	4	-	-	-	-	-	4
TOTAL	11	14	17	2	18	11	19	1	1	0	1	3	= 98

TABLE 6. Utilization of flakes, 41BX845.

Units	Secondary Flake				Tertiary Flake				Tert Blade		Core Frag		TOTAL
	Un	Fa	Frag	Unpr	Un	Fa	Frag	Unpr	Unf	Fac	Sec	Tert	
Surf SE Quad	2	2	4	-	-	2	2	-	-	-	-	-	12
Surf SW Quad	-	-	2	-	-	-	3	-	-	-	-	-	5
Surf NW Quad	1	1	-	-	-	1	-	-	-	-		-	3
Surf NE Quad	-	1	1	-	-	-	2	-	-	-	-	-	4
S101/E108 TU1													
Level 1	2	-	-	-	-	1	4	-	-	-	-	-	7
Level 2	-	-	-	-	-	-	2	-	-	-	-	-	2
Level 3	1	-	-	-	-	1	-	-	-	-	-	-	2
S100/E101 TU2													
Level 1	1	-	-	-	-	-	-	-	-	-	-	-	1
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
Level 3	-	-	-	-	-	-	-	-	-	-	-	-	0
S100/E98 TU3													
Level 1	-	1	-	-	-	2	1	-	-	-	-	-	4
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
S93/E100 TU4													
Level 1	-	-	-	-	-	-	-	-	-	-	-		0
S96/E106 TU5													
Level 1	2	-	-	-	1	-	-	-		-	-	-	3
Level 2	-	-	-	-	-	-	-	-	-	-	-	-	0
S103/E108 TU6													
Level 1	-	-	-	-	-	2	1	-	-	-	-	-	3
Level 2	-	1		1	1	-	1	-	-	-	-	-	4
S105/E103 TU7													
Level 1	1	-	-	-	1	-	3	-	-	-	-	-	5
S105/E98 TU8													
Level 1	1	-	2	-	-	-	1	-	-	-	-		4
Level 2	-	-	1	-	1	2	3	-	-	-	-	-	7
Level 3	-	-	2	-	-	-	1	-	-	-	-	-	3
S111/E98 TU9													
Level 1	-	-	1	1	1	1	3	-	-	-	-		7
Level 2	1	-	-	-	-	-	1	-	-	-	-	-	2
Level 3	1	-	-	-	2	-	-	-		-	-	-	3
Level 4	-	-	-	-	-	-	-		-		-	-	0
S112/E98 TU10													
Level 1	1	-	2	1	1	1	4	-	-	-	-	-	10
Level 2	1	-	1	-	1	-	-	-	-		-		3
Level 3	1	-	-	1	1	-	-	-	-	-	-	-	3
Level 4	-	-	-	-	-	-	1	-		-	-		1
Level 5	-	-	-	-	1	-	1	-		-	-	-	2
Level 6	-	-	-	-	-	1	-	-	-	-	-	-	1
TOTAL	16	6	16	4	11	14	34	0	0	0	0	0	= 101

Eleven retouched flakes were recovered from 41BX791 and 10 at 41BX845. No retouched flakes were collected on the surface at 41BX845, although 90.9% of the retouched flakes at 41BX791 are surface finds. The retouched flake category is rather transitional between utilization and scraping tools, in that more deliberate flaking is done to produce a working edge but not enough to produce scalar patterned retouch.

Most of the retouch is seen either as a line of continuous flaking scar removals present only on a lateral edge, or as two working edges, generally a lateral margin and a distal end (Figures 11 and 12). Sometimes the retouch continues from a lateral across to an end (Figure 12a,b), but more often there is a gap of unretouched edge separating the lateral and end modifications (Figure 11f).

Use-wear is noticeable but not extensive. Many of the flakes are snap or hinge-fractured, breaking at the working edge (Figure llb-e; Figure 12b,c). No attempt was made to rework the retouched flakes following fracture damage. While the retouched flakes show more investment in manufacturing than the utilized flakes, there is no apparent need to maintain that expenditure in the tools by rejuvenation after breakage.

Notches (all tools shown to scale)

Five notches were recovered from the two sites, one notch at 41BX791 and four at 41BX845. The single notched tool from 41BX791(Figure 13a) was collected on the surface in the NE quadrant. It is a secondary unfaceted flake with scalar retouch in a concavity formed on the ventral right lateral edge. Two squared-off projections flank each side of the notch. Slight use-wear is seen on the working edge with faint edge-rounding of the projections.

At 41BX845, all four notches appeared in two test unit collections and not on the site surface, although the pieces were found in the upper levels of the tests. A tertiary flake fragment was found in TU 5, Level 1; it has a retouched notch on the dorsal left lateral. Another notch occurs on a multi-purpose tool found in the same level, but this tool was included in a different category. The heat-altered biface fragment has much finer flaking on one face than on the other; the surface with the more detailed flaking pattern has moderately steep edge retouch resembling a scraping edge. The opposite face has little edge modification of that sort but does show a retouched notch along one lateral edge.

The other three notches were retrieved from TU 10 at 41BX845. One notch in the Level 1 collection is placed on the left ventral lateral edge of a tertiary flake fragment (Figure 13b); although retouched, the notch is small. In Level 2, two blades show similar notches with slight traces of use-wear. The larger of the two blades, a tertiary fragment, (Figure 13c) has two notches on the dorsal surface, one on each lateral edge. The smaller secondary faceted blade has a notch formed on the left ventral lateral edge.

Notches are a very minor tool type in the assemblages at both sites, constituting no more than 1.4% of the total at either site. The manufacturing techniques for notching indicate little investment in a temporary use tool. When notches are found on composite or multipurpose tools, there may be better workmanship and maintenance of the tool displayed. Generally, however, these multipurpose tools are assigned to other tool categories.

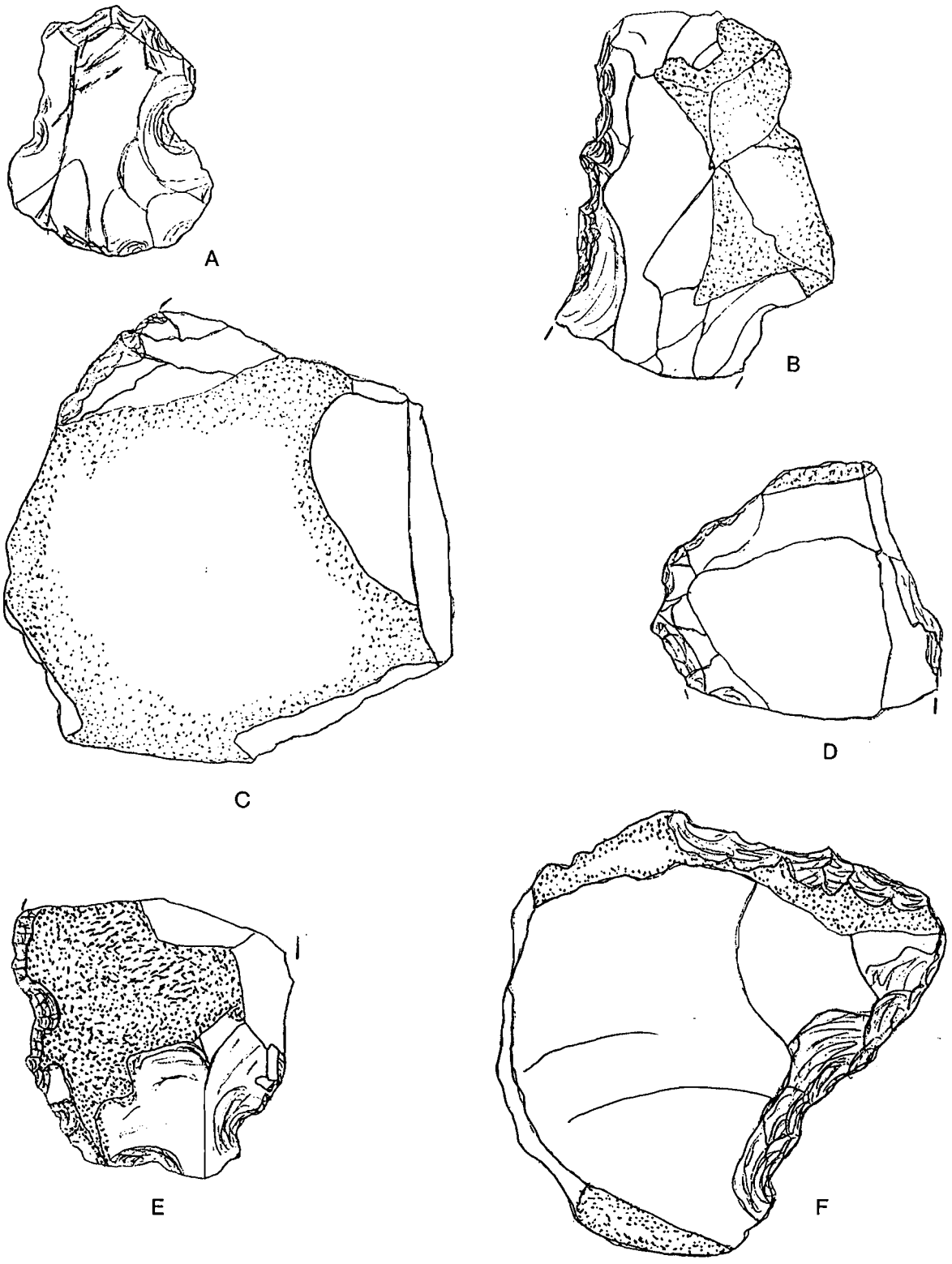


FIGURE 11. Retouched flakes from 41BX791.

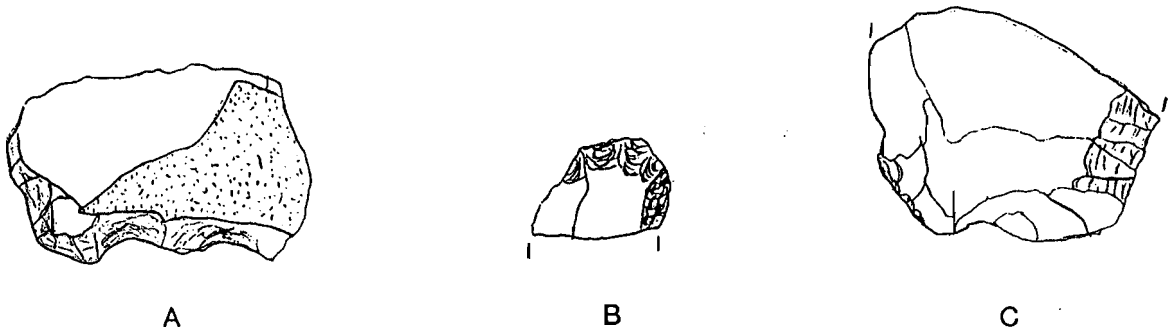


FIGURE 12. Retouched flakes from 41BX845.

Drills (all tools shown to scale)

The presence of drills is quite limited at 41BX791 and 41BX845, amounting to less than 0.7% of the tool total at each site. One tiny fragment of a drill bit was collected at 41BX791 in Level 3 of TU 2. Lenticular in transverse cross section, the fragment has irregular proximal and distal heat fractures which removed the tip and base. Bifacial flaking on the fragment is fine parallel collateral. The lateral edges are parallel, with step-fracturing and evidence of heavy wear in the form of edge-rounding.

Both of the drill base fragments from 41BX845 are surface collections from the SW and NE quadrants, respectively. The NE quadrant contained a secondary flake fragment with a snap-fracture on its distal end, removing a projection (Figure 13d). The distal break is surrounded by dorsal retouch that is very worn, with step-fracturing. The other drill fragment (Figure 13e), from the SW quadrant, is also a secondary flake fragment with a distal projection broken by a snap-fracture. The projection is formed by the intersection of two notches, and the right dorsal distal notch is worn by step-fracturing.

Gravers (all tools shown to scale)

No engraving tools were found at 41BX791, but seven gravers were collected at 41BX845. Three were present in the surface collections of the SE, SW, and NE quadrants. From the SW collection, the graver is a tertiary flake fragment modified by alternating retouch dorsally and ventrally (Figure 14a). The retouch is not steep enough to identify as bevelling, however. The distal end is transversely concave, and the pattern of retouch takes advantage of the shape to form a wide working edge projecting toward a blunt tip. Little use-wear scarring is observable on the working edges, and the tip is edge-rounded.

The graver found on the surface in the SE quadrant is present on the distal end of a secondary flake with an unprepared platform. A sharp tip is formed by the intersection of two arcs of steep dorsal retouch (Figure 14b). Some step-fracturing is visible, and use-wear is seen on the ventral face of the projection. The third graver was found during the surface inspection of the NE quadrant at 41BX845. Retouch is apparent on both the dorsal and ventral surfaces of the tertiary unfaceted flake (Figure 15c). A tip is formed by the intersection of two notches on the dorsal distal end, and the working edge is scarred by heavy wear and step-fracturing;

The other four gravers were recovered from test units at 41BX845. In Level 3 of TU 1, the working edge occurs on the right dorsal lateral of a tertiary faceted flake. Intersecting dorsal notches converge in a small, sharp beak. The graver found in TU 5, Level 1 is a tertiary flake fragment retouched on the ventral surface to form a sharp tip on the distal end (Figure 15d).

Some edge wear is noticeable on the projection. No edge modification is evident on the dorsal face along the distal end. In this example, the projection is not a product of intersecting notches unlike many of the other gravers in the collection.

Two gravers were collected from Level 1 of TU 10. One is a tertiary unfaceted flake with edge retouch on the ventral face along the right lateral (Figure 14e). Two notches intersect to form a rather curved and blunt tip; step-fracturing and use-wear are present on the working edge.

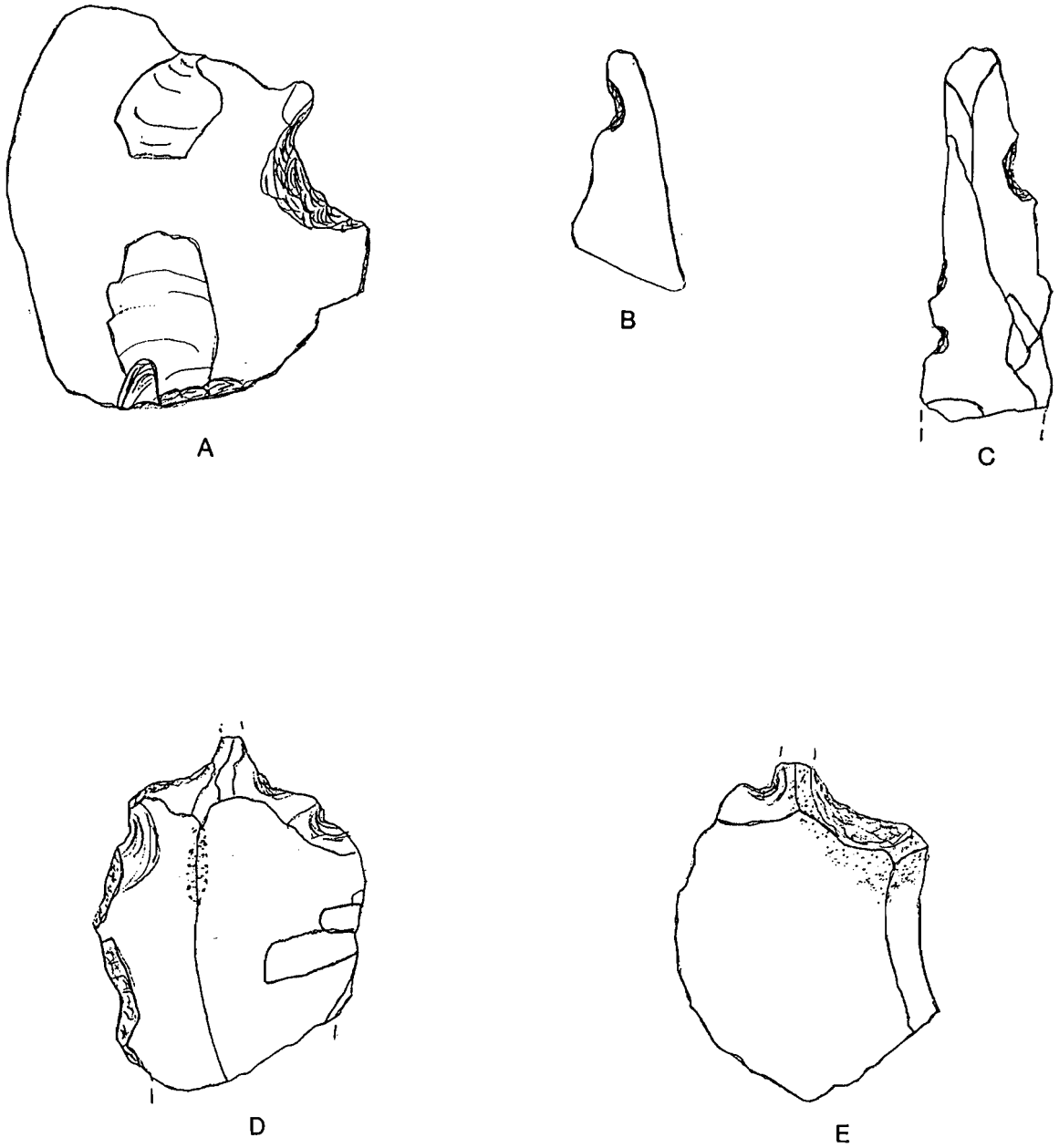


FIGURE 13. Notches and drills.

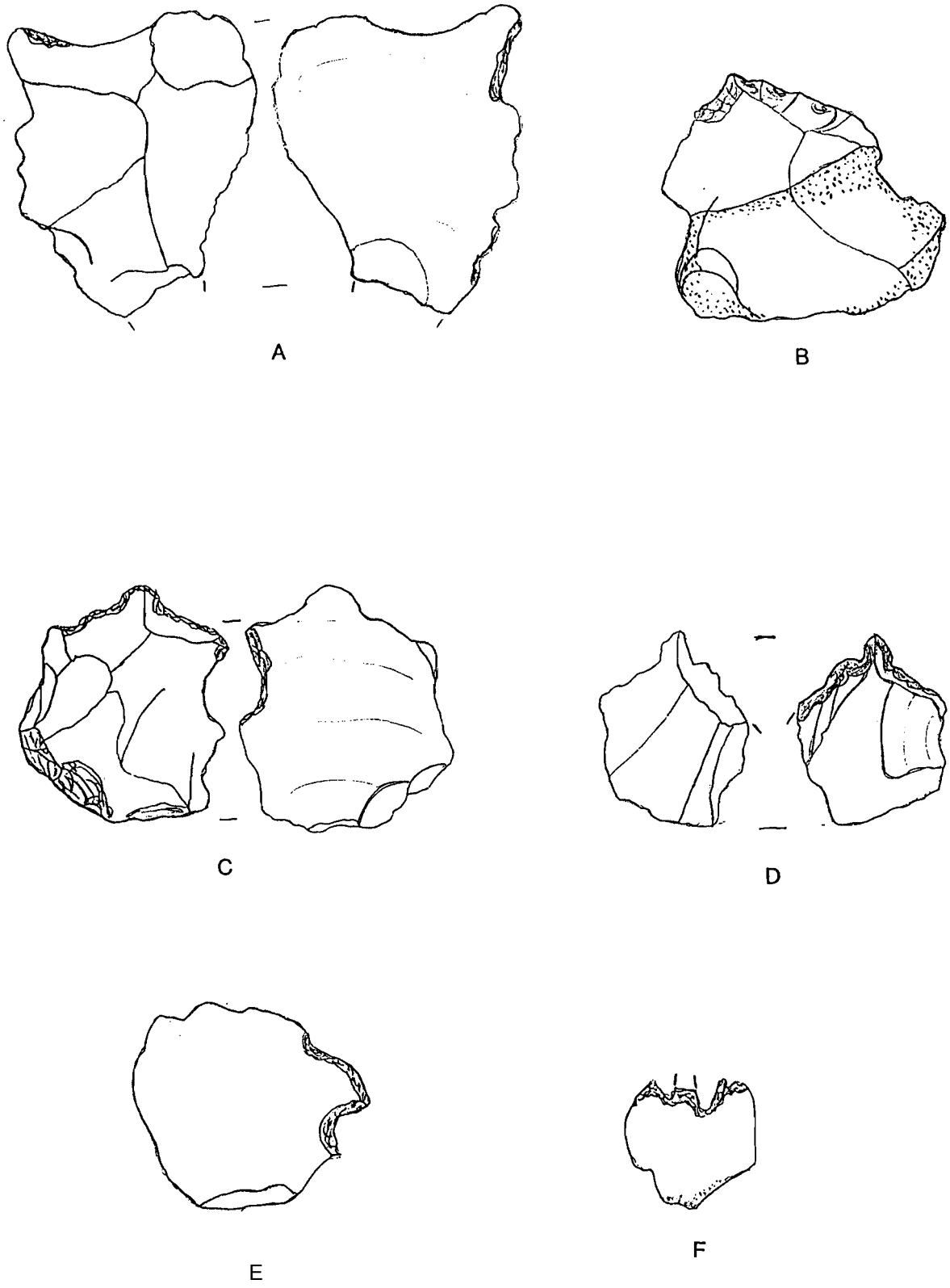


FIGURE 14. Gravers from 41BX845.

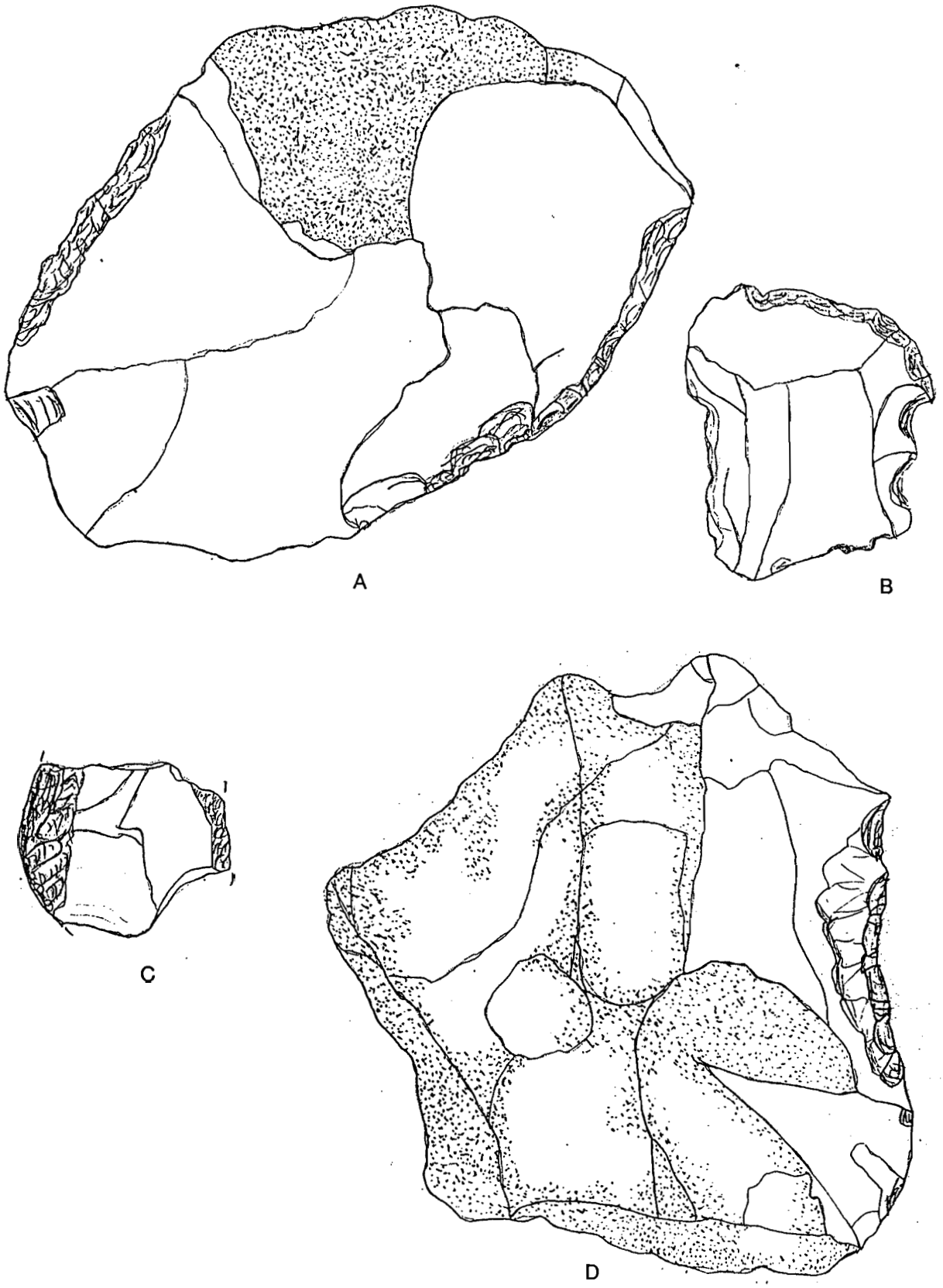


FIGURE 15. Scrapers from 41BX791.

The second tool in the level is quite different and may have served as a perforator, although damage to the projecting tip makes further identification difficult. The tool is present on the distal end of a secondary unfaceted flake (Figure 14f), and intersecting notches were flaked on the ventral face narrowly and deeply. It appears that the tip may have had parallel lateral edges. Bifacial retouch marks one of the notches, extending up one edge of the hinge-fractured projection. The piece is thin and delicate, with careful workmanship. There was, however, no attempt to modify the rest of the flake; all of the effort was directed to the working edge.

The seven gravers at 41BX845 share certain characteristics. Five of the tools have a distal working edge; only two use a lateral edge. The tools generally appear worn by use, with edge-rounding and step-fracturing noted. The gravers are flake tools with a minimum of investment in a working edge; while the edges display evidence of continued use, resharpening was not attempted.

Scrapers (all tools shown to scale)

Thirty-five scraping tools were found at the two sites during testing: Eleven scrapers were collected at 41BX845, and 24 scrapers came from 41BX791. In contrast to the other categories of flake tools, most of the scrapers are manufactured from very large cobble reduction flakes. The size difference is distinctive in comparison to the more diverse expedient tool types, which include a range of smaller dimensions as well as large cobble flakes.

At 41BX791, 15 scrapers (62.5%) were found on the surface in all four quadrants. The SW quadrant yielded one scraper; the piece is a secondary unfaceted flake with retouch on both of the dorsal lateral edges (Figure 15a). Use-wear and step-fractures are noticeable on the working edge. No flaking is seen on the distal end, which remains covered by cortex.

Four scrapers were collected from the SE quadrant. A tertiary faceted flake (Figure 15b) exhibits dorsal retouch on both the distal end and the right lateral edges. The retouch is steep and worn with step-fracturing. Notching is present on the right lateral, with flake removals shaping a concave, irregular edge. A convex working edge is formed distally with nonconverging retouch.

Another scraper (Figure 15c) from the SE quadrant has steep scalar retouch on both dorsal laterals of a tertiary flake fragment. It has irregular proximal and distal fractures caused by heat damage, which has obscured the overall shape of the flake. The working edge on the left dorsal lateral is convex.

A large secondary unfaceted flake in the SE quadrant retains much of the cobble cortex across its surface (Figure 15d). Moderately steep retouch on the dorsal right lateral is worn and step-fractured. The working edge is somewhat concave. Cortex left on the proximal end and dorsal left lateral provides a blunted edge to hold against the palm of the hand.

The fourth scraper from the SE (Figure 16a) is on a tertiary core fragment with moderately steep, scalar retouch along the dorsal left lateral. Use has left the edge angle of the retouch quite worn and step-fractured; the nonconverging retouch is continuous across a very convex lateral edge.

In the NE quadrant, four scrapers were identified. One is a secondary faceted flake with moderately steep edge angle retouch on the dorsal surface (Figure 16b). The working edge is flaked from the right lateral to the distal

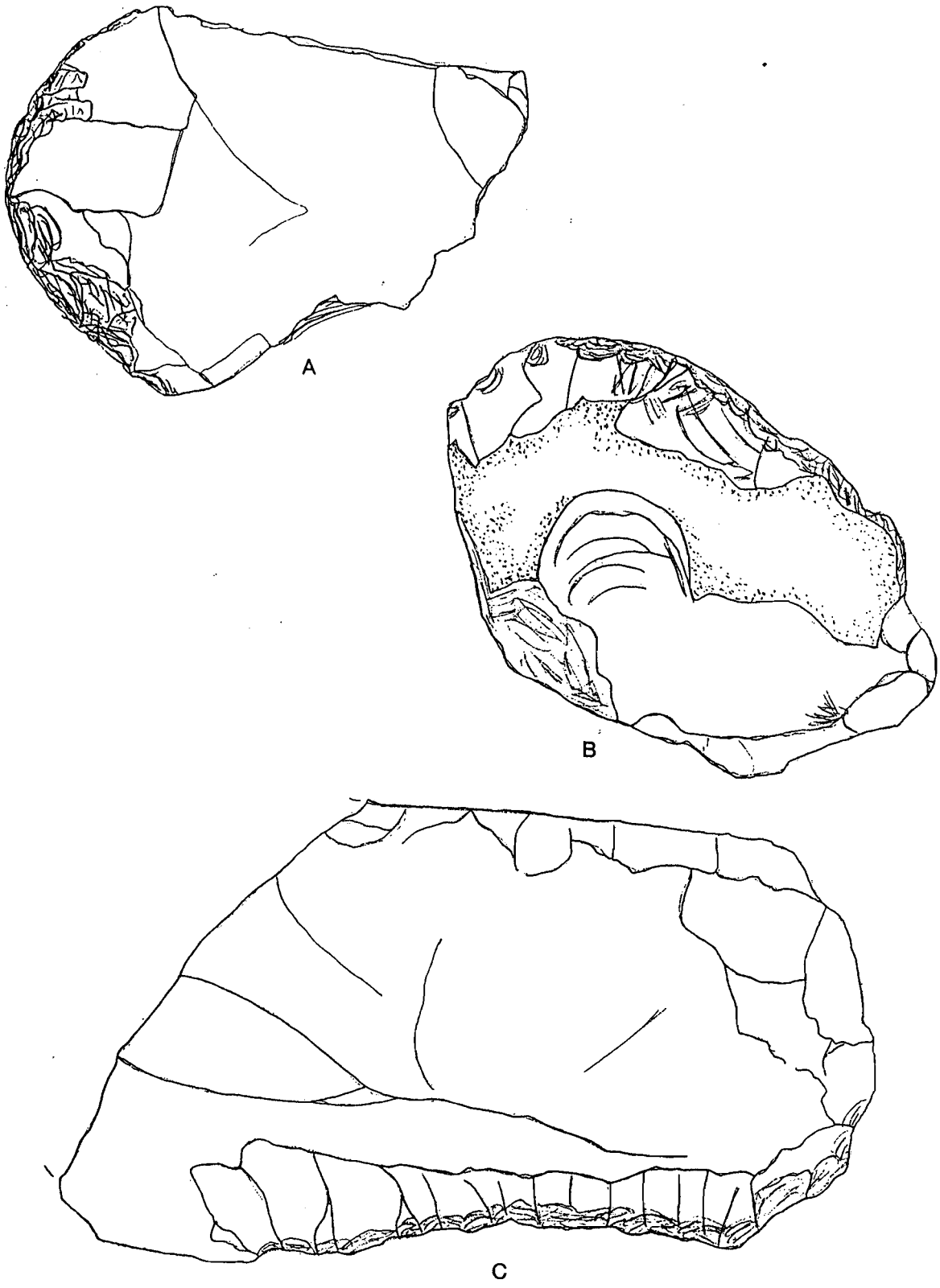


FIGURE 16. Scrapers from **41BX791.**

end transversely, using the greater width of the flake over length. The retouch is worn from use and also shows use-wear modification on the ventral surface as well as the prepared dorsal face.

The second scraper from the NE quadrant somewhat resembles a scraper in the SE collection (Figure 15c) in that both lateral edges are retouched dorsally (Figure 17a). The tertiary unfaceted flake has steep to moderate retouch, primarily on the right lateral edge with a little preparation of the left lateral edge. The right lateral edge is slightly convex. The base is concave to straight, and the tool is broken at midsection by an irregular transverse fracture. As with the scraper from the SE quadrant, this scraping tool is basally thinned.

Another scraper found on the NE portion of the 41BX791 site surface is also retouched on both dorsal lateral edges. The distal end is blunt and unmodified, while the proximal end is concave. Retouch on the lateral edges is moderately steep and worn by use; the lateral edges are irregular but convex. The working edge on the left lateral is marked by deep, parallel flake scars ending almost at the dorsal ridgeline.

The fourth scraper in the SE quadrant is a tertiary flake fragment with retouch on the dorsal distal end. Use-wear and step-fracturing are apparent on the working edge. The edge angle is fairly steep.

Six scrapers were found on the surface in the NW quadrant. Two are discoidally shaped tertiary fragments, with steeply angled working edges that are worn and step-fractured by use; one has continuous retouch on the dorsal left lateral, while the other is modified on the dorsal right lateral edge. The remainder include one tertiary and three secondary flakes. One secondary faceted flake has a continuous line of dorsal retouch on all edges but the proximal end; another secondary faceted flake is modified from the dorsal midsection of the left lateral across the distal end. Both tools show moderately steep cutting edges and worn, step-fractured surfaces. The secondary unfaceted flake has steep, scalar retouch all along the dorsal right lateral edge and also is worn by use. The tertiary unfaceted flake is similarly retouched on the dorsal right lateral and includes evidence of use-wear.

Eight scrapers were recovered from subsurface testing at 41BX791. A large scraper from TU 2, Level 1 has steep retouch on the dorsal lateral edge of a core fragment, extending from the lateral across the narrow end (Figure 16c). The opposite end is broken by an irregular fracture. The working edge shows use-wear along very step-fractured retouch, and evidence of resharpening is present.

In Level 2, a small, heat-altered scraping edge fragment was found. Cortex covers all the dorsal surface of this secondary flake fragment except for a line of steep retouch. Resharpening scars accompany step-fracturing and use-wear. Irregular heat fractures have extensively damaged the fragment, leaving little indication of its former shape.

Two scrapers came from TU 3 at 41BX791. In Level 1, a secondary faceted flake has moderately steep retouch on the dorsal left lateral edge (Figure 17c). Step-fracturing shows wear on the cutting edge. Level 3 contained another secondary faceted flake with somewhat steep edge retouch on the dorsal left lateral, also with step-fracturing along the edge. Much of the dorsal surface is cortical, with little effort made to reduce the flake.

The scraper in Level 2 of TU 4 is a tertiary flake fragment with step-fractured, worn dorsal distal and right lateral edges. The working edge is steeply angled. The flake is broken by an irregular medial fracture. Shifting

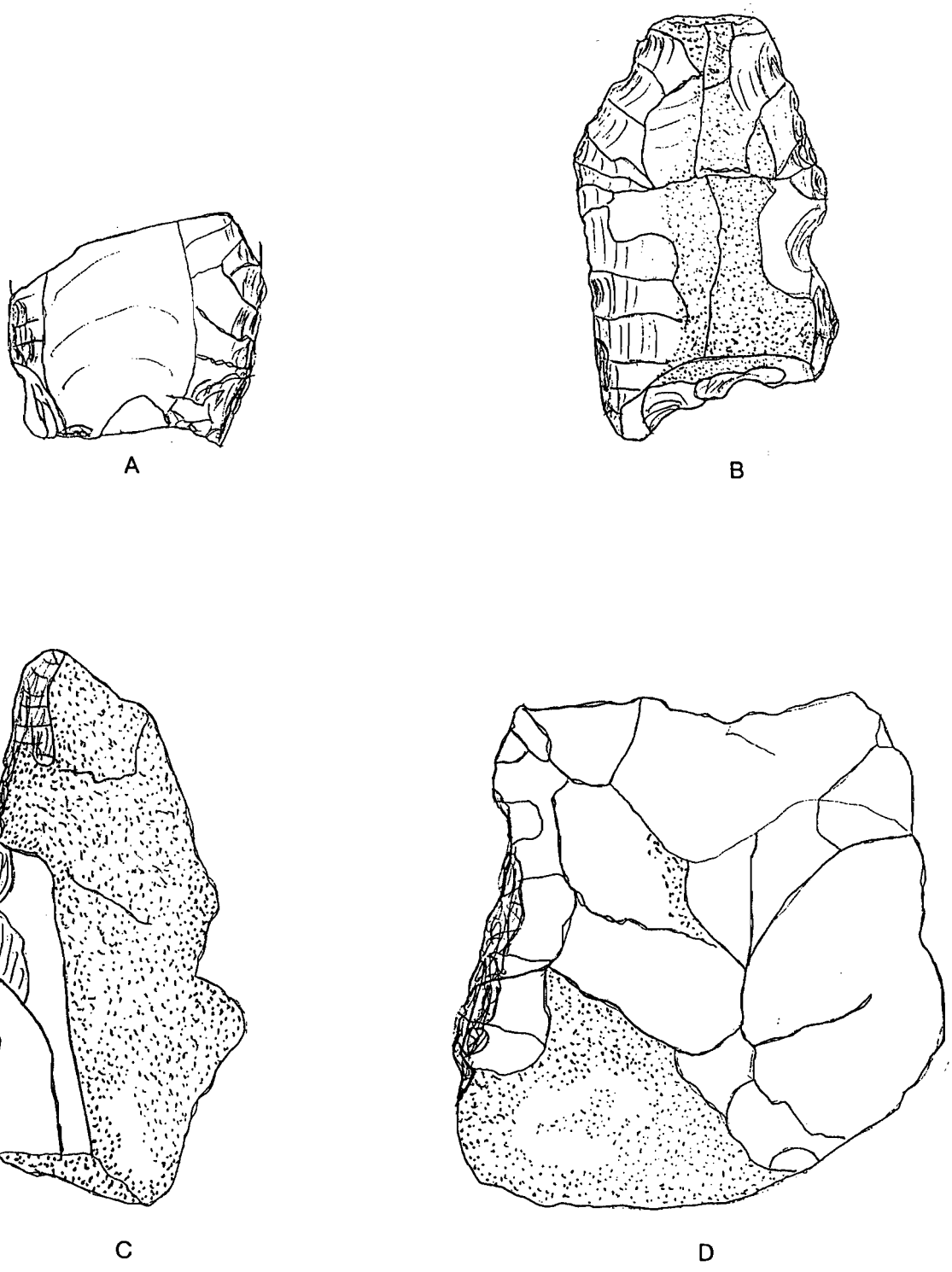


FIGURE 17. Scrapers from 41BX791.

to TU 5, Level 2, a core fragment was found with steep, unifacial retouch on all edges. The piece, roughly oval in shape, has a convex end and fairly parallel laterals. Use-wear and step-fracturing are present.

The scraping tool in TU 9, Level 2 is a discoidally shaped tertiary fragment with steep dorsal edge retouch on the distal end and right lateral. Some flakes were removed ventrally to enhance the working edge angle. Step-fracturing has worn the edge.

Level 2 of TU 11 at 41BX791 contained two scrapers. A tertiary core fragment had retouch on an unidentifiable end; the steep cutting edge showed step-fracturing. The working edge is flaked without convergence. In the same level was a secondary unfaceted flake with moderately steep retouch on the dorsal left lateral edge (Figure 17d). The edge is heavily step-fractured.

At 41BX845, 11 scrapers were found. There is one scraping tool in each of the surface quadrant collections, amounting to 36.4% of all scrapers at the site. In terms of the overall site tool collection, however, only 1.4% of all tools are scrapers.

A scraper in the SW quadrant is manufactured on a secondary unfaceted flake; the keeled scraper has medium angle edge modification with heavy step-fracturing on the right lateral dorsal surface. The projection on the left lateral has little retouch. In the SE quadrant, the dorsal left lateral and distal end of a secondary flake fragment show steep retouch transversely (Figure 18a). Use-wear is present. The scalar edge retouch is uniform but nonconverging.

A large, thick cobble fragment found in the NW quadrant is heavily step-fractured by wear on its working edge (Figure 18b). The left lateral and distal end of the dorsal surface have steep edge retouch. The cobble has been thinned on the ventral surface as well. Much of the dorsal surface, though, retains its cortex except along the reduced edges.

A tertiary flake fragment was collected from the NE quadrant. The dorsal distal end and left lateral are worn on the steeply retouched working edges and show step-fracturing. The piece is a small remnant of a larger tool, and is broken medially and longitudinally by snap-fractures.

In the test units, an additional seven scrapers were found, particularly concentrated in TU 9. Test Units 3, 8, and 10 also supplied scraping tools. The scraper in TU 3, Level 1 is a small fragment of an unidentifiable working edge. The tertiary flake fragment has deep flake removals on the remaining edge and is quite worn with step-fracturing. The steep retouch appeared to have been renewed to resharpen the edge. The convex edge is broken medially by a hinge fracture. The scraper in Leve! 2 of TU 8 is a tertiary unfaceted flake with steep, continuous retouch along the right dorsal lateral edge.

Four scrapers were recovered from Levels 1 through 3 of TU 9. In Level 1, a secondary flake fragment has steep retouch on the dorsal right lateral edge; some chattering can be seen on the dorsal distal end, as well (Figure 18c). The worn, step-fractured working edge is broken proximally by an irregular medial fracture which removed the flaking platform. The thick piece is patinated, and cortex was not removed from the blunt left lateral.

There are two scrapers from Level 2 of TU 9, and both tools are manufactured on secondary flakes. A secondary flake fragment has a line of steep edge retouch along the left lateral and distal end on the ventral surface. Step-fracturing and use-wear are present. The secondary faceted flake (Figure 18d) has moderately steep flake removals along the dorsal left lateral. The

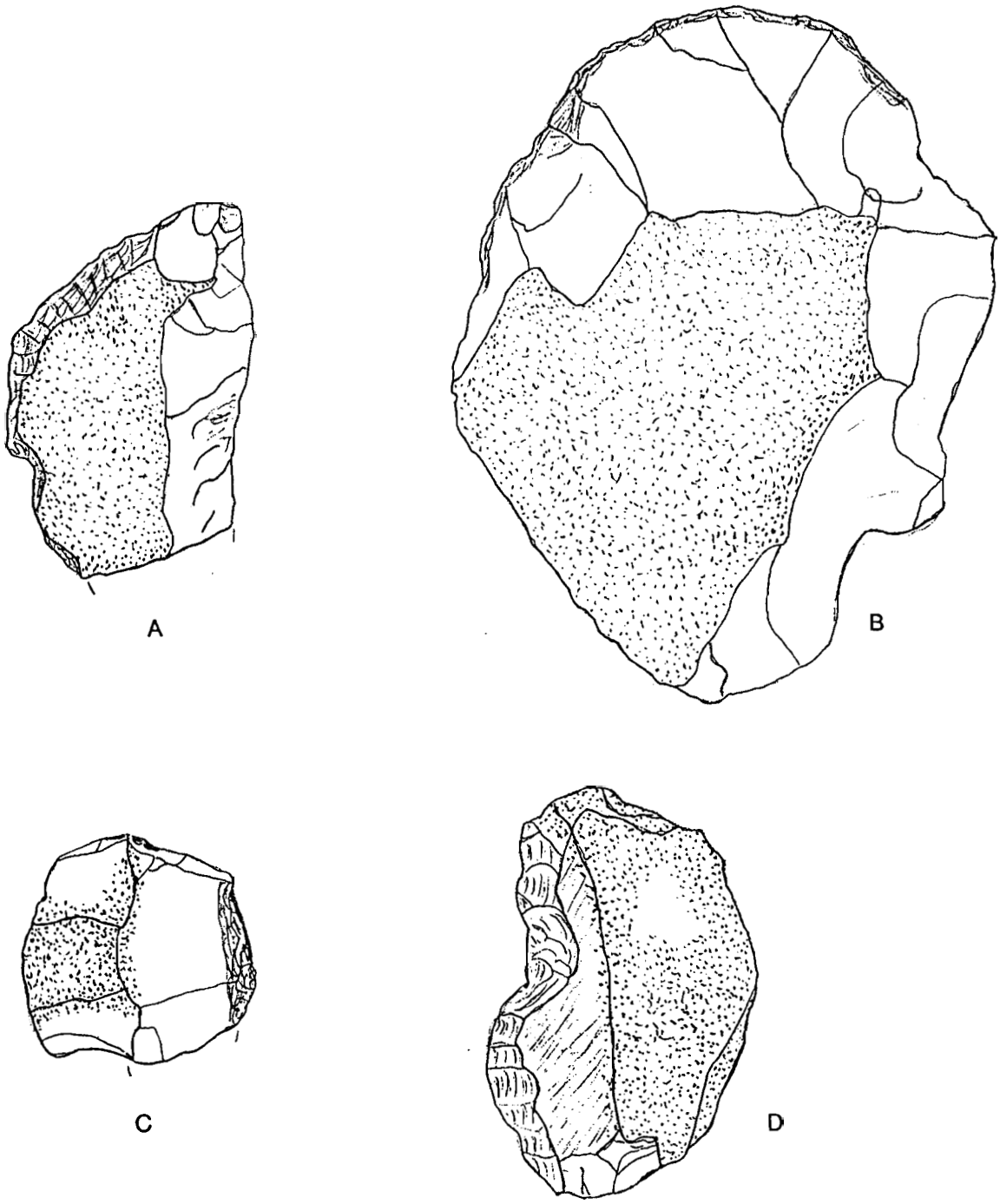


FIGURE 18. Scrapers from 41BX845.

dorsal surface of the flake is patinated left of the dorsal ridge, and the scraping edge is flaked into the patination. Some use-wear is seen on the working edge.

A small scraper was found in TU 9, Level 3; it is a secondary flake fragment with steep edge retouch on the dorsal distal end. The scraper is worn with step-fracturing along the working edge. Retouch is only present on a portion of the distal end in a pattern of nonconvergence.

One last scraper came from Level 2 of TU 10. A tertiary unfaceted flake is retouched dorsally on the distal end and continuing on to the right lateral edge. The cutting angle is medium, and the piece shows no use-wear.

The scrapers in general tend to have edge angles of less than 85 with no examples of perpendicular or overhanging edges. While most of the scrapers show evidence of use-wear modifications along the working edge, none of the tools appear to have been reworked. The lack of reworked scrapers in the assemblage tends to explain the absence of stepped edges beyond a steep angle.

There are both differences and similarities in the placement of scraping edges on tools from the sites. At 41BX791 and 41BX845, one important form of scraper has working edges that include both the distal end and a lateral; six scrapers (25.0%) at 41BX791 and five scrapers (45.4%) at 41BX845 show this morphology. While 41BX791 has four scrapers (16.6%) with retouch on both lateral edges, there are none at 41BX845. The predominant scraper type at 41BX791 is the sidescraper at 39.1% of all scraping tools, and only one endscrapers is present in the collection from that site. Percentages of sidescrapers at 41BX845 are similar with four (36.3%) identified. There is also a single endscraper at 41BX845.

Choppers (all tools shown to scale)

Seven choppers were found during the testing: three at 41BX791 and four at 41BX845. All of the choppers at 41BX845 came from the surface collection, while 73.2% of the tools were located on the surface at 41BX791. One piece from the NE quadrant of 41BX791 (Figure 19b) is a bifacially reduced cobble with a triangular working edge battered on the distal tip. The proximal end takes advantage of the cortical surface to form a butt. The chopper is thick proximally, but thins toward the distal end. The working edge is step-fractured with wear and shows traces of edge renewal flaking.

Another chopping tool was collected from the surface in the NW quadrant. The cobble tool is fairly flat in transverse cross section and is covered by cortex except for one bifacially flaked end. The working edge is worn by step-fracturing.

The only chopper recovered from a test unit at the site was found in Level 1 of TU 3. A thick, fist-sized cobble has one prepared edge of bifacial flake removals; the working edge is slightly worn by use-wear. The opposite lateral edge retains a rounded cobble surface.

All of the chopping tools from 41BX845 came from surface collections in the NE and NW quadrants. Three choppers were identified in the NW sector. The three choppers each have less than 50% cortical surface, and one is a core fragment and not a cobble. The core fragment, unlike the cobbles, is thinner in transverse cross section. The two remaining choppers, while quite reduced bifacially, are still thick. The sole chopper found in the NE portion of the site is a very large (24.9 cm in length) cobble with flake removals over

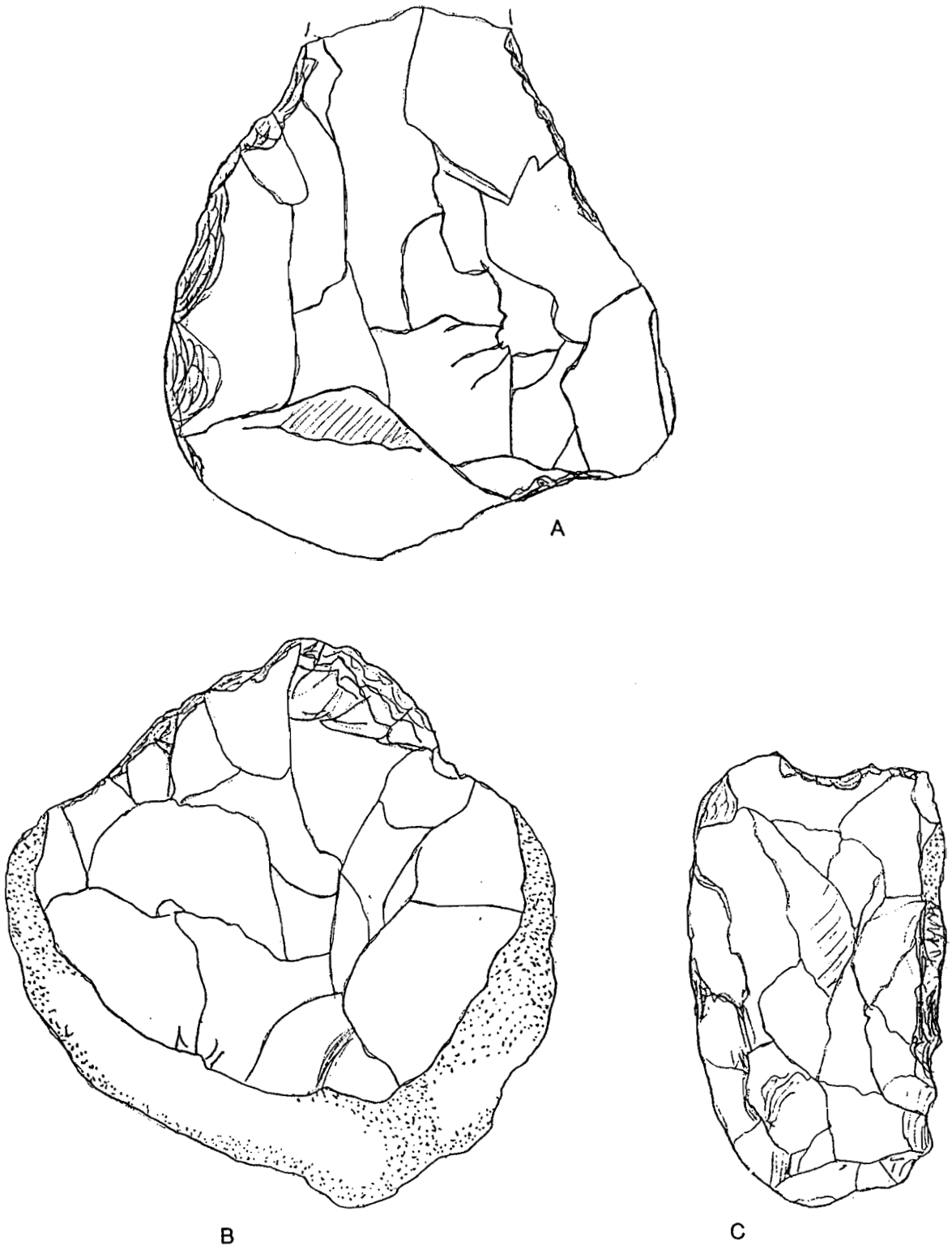


FIGURE 19. Miscellaneous tools from 41BX791 and 41BX845.

approximately 50% of the body to bifacially reduce the thickness; the flaked end has bifacial edge retouch.

In some cases, the choppers resemble cores. Indeed, choppers have sometimes been referred to as core tools in the literature, and at least one of the choppers from 41BX845 is on a core fragment. The distinction here is a bifacial working edge as compared to a platform.

Handaxe (tool shown to scale)

The tool identified as a handaxe came from surface collection in the 41BX791, NE quadrant (Figure 19a). A cobble was bifacially reduced, leaving cortex present on one face. The overall shape of the piece is acuminate or teardrop-shaped. A hinge-fracture removed the distal tip. The proximal end is flat and broad in transverse cross section, but reduction narrowed the cobble longitudinally to a thin distal end. The lateral edges are blunted with flaking and edge-rounding. Presumably the distal working edge was broken after the manufacturing stage.

The tool is not considered chronologically diagnostic.

Gouge (tool shown to scale)

The possible gouge was located on the surface of 41BX845 within the NW quadrant. The tool, ovate in shape, measures approximately 7 cm in length and 4 cm i nwidth. It is bifacially retouched over the surfaces, and both of the ends are concave (Figure 19c). The lateral edges are straight to somewhat convex. The larger of the two concavities on the distal end is steeply bifacially thinned. The working edges are step-fractured. The piece is fairly thin but irregular in transverse cross section.

The bifacial tool does not resemble the Guadalupe gouges and only bears a vague similarity to the range of Clear Fork tools. Thus, the specimen cannot be attributed to a certain chronology with any confidence.

Bifaces (all tools shown to scale)

Blanks. Forty-seven biface blanks were found at 41BX845, while at 41BX791, 46 blanks were collected. These figures represent 11.1% and 20.1% of each tool collection, respectively, making biface blanks the second most common tool type at 41BX791 and third at 41BX845. Only 42.5% of the blanks were recovered from the surface collection at 41BX845, but 91.3% of the blanks came from the surface at 41BX791.

The biface blanks from both sites share a limited range of morphological characteristics. The unfinished tools are roughly shaped into acuminate, triangular, ovate, or rectangular forms reduced from cobbles. The majority of blanks at both sites are oval-shaped. The other shapes occur at both sites in approximately the same proportions, except that the rank of triangular versus acuminate reverses (Table 7). Surprisingly, the majority of blanks at the two sites do not have cortex on either face; blanks with cortex present on both surfaces account for only a small portion of the sample. It appears that the biface blanks were substantially reduced at the secondary procurement area before reaching the sites. This notion is supported by the paucity of primary flakes at the sites. Examples of these later-stage blanks from the surface of 41BX791 are illustrated in Figures 20a-c and 21a,b.

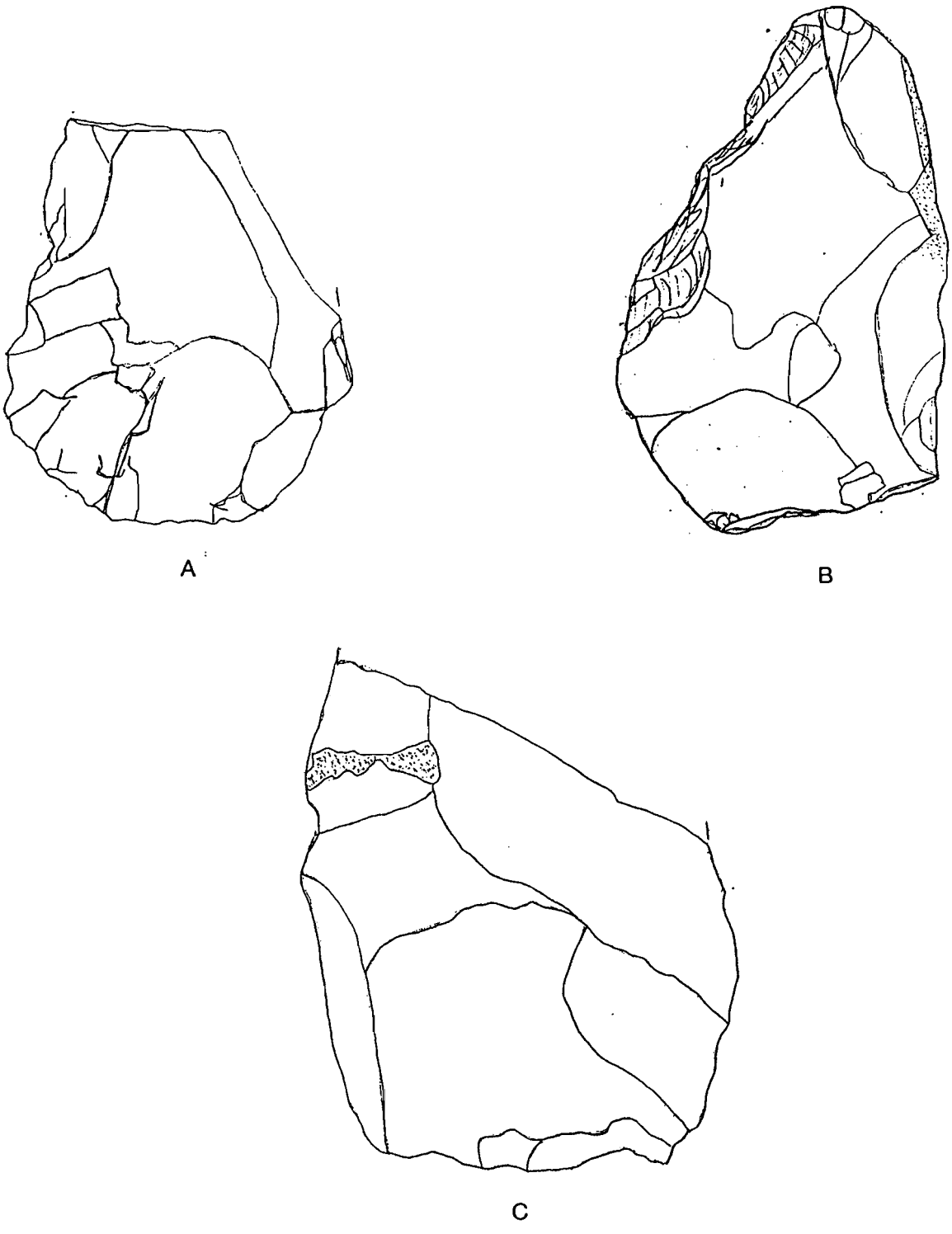


FIGURE 20. Biface blanks from 41BX791.

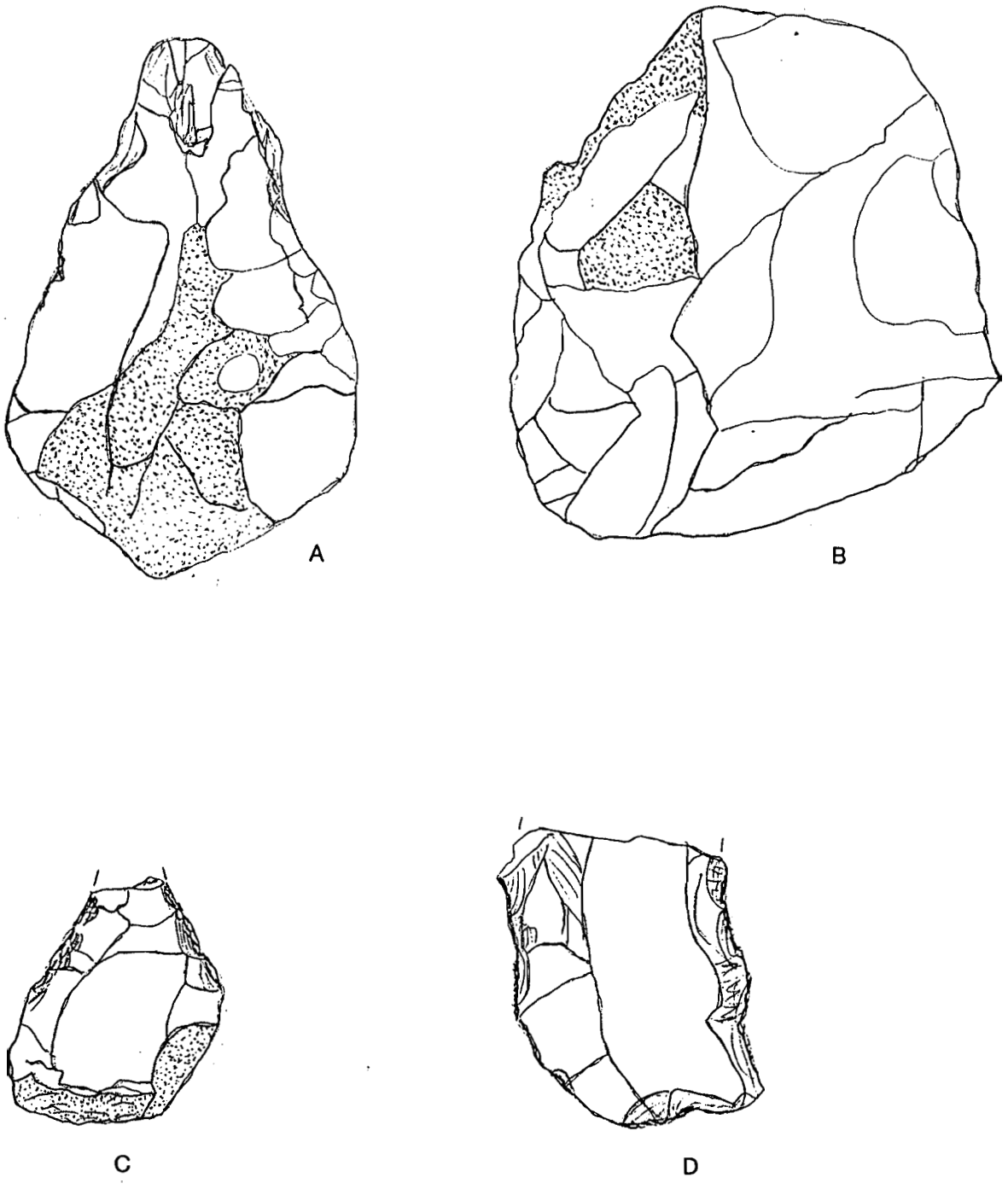


FIGURE 22. Biface blanks and bifacial edge-trimming fragments from 41BX791.

TABLE 7. Biface blanks.

	Observed Cortex			Overall Shape					
	Unifac	Bif	None	Ovate	Tri	Acum	Rect	Amorph	Total
41BX791	14	9	23	19	9	5	10	3	=46
41BX845	15	7	25	27	3	7	7	3	=47

Completed Bifaces. Thirty-two finished bifaces were found at 41BX791, and 69 bifaces were recovered at 41BX845. At 41BX845, finished bifaces are the second most common tool type after utilized flakes. Unlike 41BX791, where 71.8% of the bifaces were collected on the surface, only 11.6% of the bifaces at 41BX845 were surface finds.

Bifacial tools differ from blanks in that the finished tools are much thinner in transverse cross section, and the tool edges show retouch and use. In comparison, the lateral edges of blanks reveal platform preparation for thinning the cobble, characterized by rough edge-rounding and abrasion. Although most of the bifaces show only moderate use-wear, a few tools have been reworked for edge renewal. The fragmentary nature of the majority of the pieces makes identification difficult, but generalized shapes are recognizable. At 41BX791, 11 bifaces are rectangular, 10 are triangular, seven are ovate, two are amorphous fragments, and one each are lanceolate and acuminate. Some of the tools classified as bifaces suggest more specialized use, such as the one illustrated in Figure 21c, which resembles a perforator base. The piece, however, is too fragmentary to identify further.

Similarly, there are 21 triangular bifaces at 41BX845, 19 amorphously shaped bifaces, 16 oval-shaped, 10 rectangular, two stemmed, and one acuminate biface. Many of the bifaces are fragmentary, as at 41BX791. In addition, the problem of heat damage to the tools has obscured tool shapes. Heat alteration in some cases has left biface fragments which are fingernail sized, with potlid fractured faces.

The large number of bifaces present at the two sites suggests that considerable effort was put into the production of bifacial tool forms from local materials available nearby. The collections contain all stages of biface reduction; the unfinished blanks are easier to transport to other locations than rough cobbles and may be worked into finished tools later. The utility of generalized tool forms is versatile, however, and the tools may have been completed with only minimal retouch.

Projectile Points (all tools shown to scale)

At both sites, projectile points constituted approximately 6% of the total tool collection found during the testing. The collection at 41BX791 includes 14 specimens, and another 18 projectile points came from 41BX845. These points and fragments, whenever possible, are assigned to recognized diagnostic types. Several specimens, however, are too fragmentary for identification with any confidence; others appear to be point preforms.

It is possible to characterize the projectile points by criteria such as size and morphology into such categories as "large basally notched" forms. This method allows separation of almost all of the specimens, including the fragments, into generalized categories for comparison. The more complete points are then analyzed for typological attribution.

41BX791

Large Side-Notched Points

Nolan (one specimen)

Chronological Affiliation: Early Archaic, circa 4000-2500 B.C. (Turner and Hester 1985:132); Early Middle Archaic, Central Texas Clear Fork Phase, Local Period 6, 3000-2000 B.C. (Black and McGraw 1985:117).
Provenience: Test Unit 4 (S86/E94) Level 3, 20-30 cm
Dimensions: Length: 43 mm (broken); Width: 20 mm; Neck Width: 16 mm; Thickness: 8 mm

The dart point (Figure 22a) has an irregular fracture which left the distal tip blunt and broken. The haft element is as wide as the blade, and there are shallow notches on alternately beveled lateral edges at the haft element. The base is somewhat convex and shows some edge-grinding. No grinding is visible on the somewhat convex lateral edges of the blade.

One surface of the piece has a steep arris, with a transverse cross section that is plano-convex. The point is thickest in cross section at the distal end. The flaking pattern on the blade is nonpatterned; the steep flake removals and step-fractured lateral edges on the blade suggest an attempt to rework this thick piece of rather chalky chert.

Large Stemmed Points

Langtry Variant (one specimen)

Chronological Affiliation: Middle Middle Archaic, Central Texas Round Rock Phase, 1500-600 B.C. (Katz 1987:114); Local Period 7, 2000-650 B.C. (Black and McGraw 1985:115).
Provenience: Test Unit 6 (S91/E85), Level 2, 10-20 cm
Dimensions: L: 28 mm (br); W: 24.5 mm; NW: 14 mm; Th: 4.5 mm

A medial hinge fracture removed the distal tip of the blade, and one lateral edge also shows irregular modification on both faces (Figure 22b). The hinge fracture may have happened as a result of the lateral damage. The piece is quite thin and plano-convex in transverse section, with long, almost parallel flake removals from the lateral edge to the midline. The retouched lateral edges have gently rounded shoulders without barbs, which contract shallowly to a lengthy stem.

The stem has parallel to tapering laterals, with beveling present on one face. Edge-grinding and rounding are seen on the lateral edges of the stem.

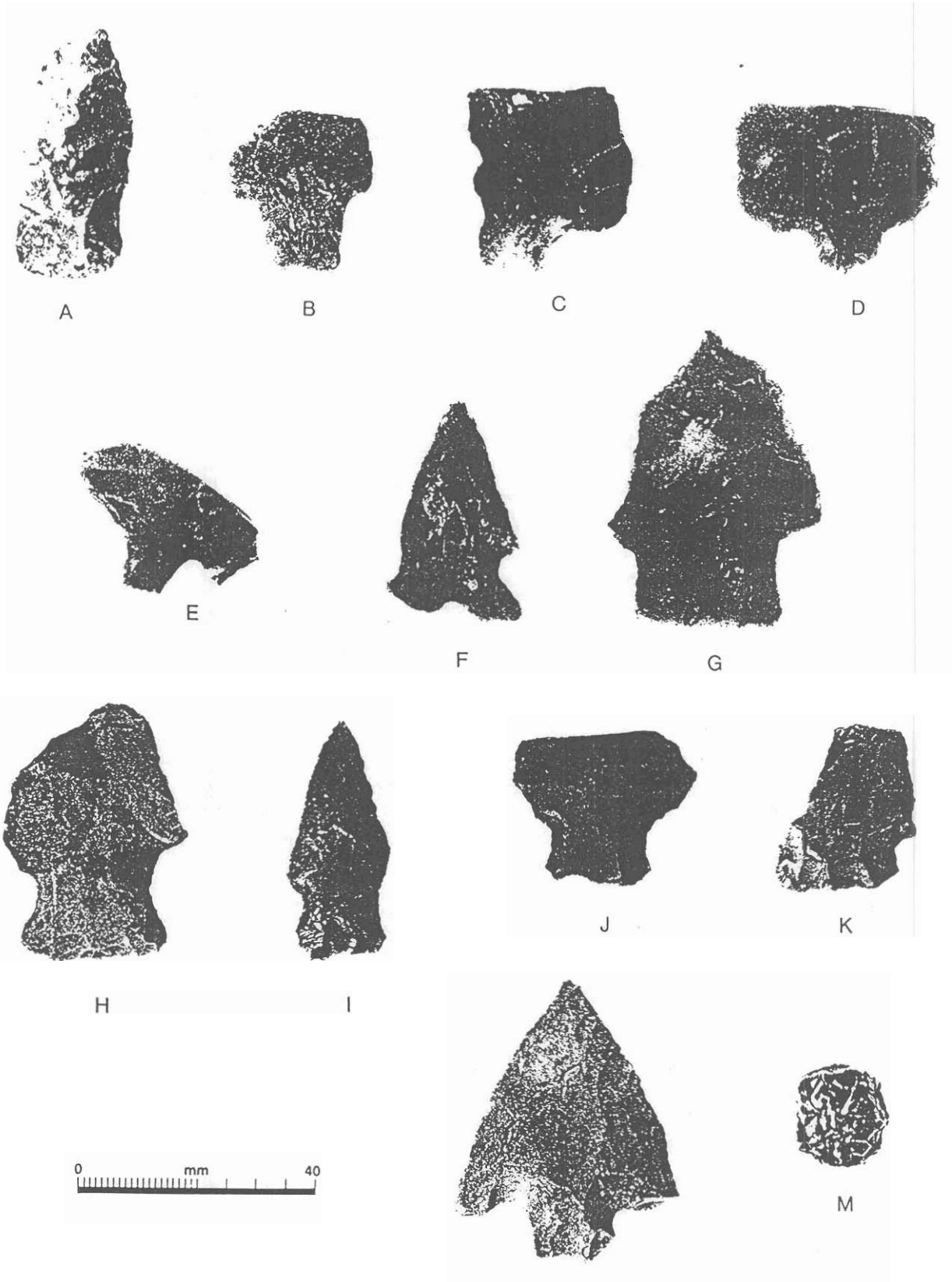


FIGURE 22. Projectile points from 41BX791

The base is somewhat concave and thinned; slight polish is visible on the basal projections formed by the concavity.

Langtry points, while allowing for a range of variation within the type, share many of these characteristics with the point fragment, but the idealized type specimen has more pronounced shoulder development. These differences are balanced by the paucity of similar point types in the region. The closest resemblance to Langtry points is Gary, an East Texas form not seen in Bexar County sites.

Large Tri-Notched Points

Montell (three specimens)

Chronological Affiliation: Early Late Archaic, Central Texas Uvalde Phase, 250 B.C. to A.D. 200 (Katz 1987:116); Late to Transitional Archaic, circa 1000 B.C. to A.D. 200 (Turner and Hester 1985:126); Late Archaic, Local Period 8, 650 B.C. to A.D. 250 (Black and McGraw 1985:109).

Provenience: Surface collection, NE quadrant (Figure 22c and d) and SW quadrant (Figure 23e)

Dimensions: 22c.. L: 31 mm (br); W: 26 mm; NW: 24 mm (br); Th: 6 mm
22d. L: 31 mm (br); W: 36.5 mm; NW: 28 mm; Th: 5.5 mm
22e. L: 28 mm (br); W: 30.5 mm (br); NW: 22 mm; Th: 5 mm

All three points are quite fragmentary, and one (Figure 22c) is extensively heat-fractured. The point fragments are basal remnants which appear to have deep basal indentations. Despite the heat damage, one square projection on the haft remains, with parallel lateral edges and a straight base (Figure 22c). The rest of the haft element was removed by a snap-fracture. The blade laterals are similarly obscured by irregular and hinge-fractures. A medial hinge-fracture removed the distal end of the blade. The piece is thin in transverse cross section. Flaking on the blade is nonpatterned.

The second point base fragment from the NE quadrant (Figure 22d) has a deep but narrow V-shaped notch indenting the base. One squared projection is clearly visible on the base. The thin piece is broken by an irregular medial fracture. Both lateral edges are convex. The fragment may have been reworked.

The third point in this grouping (Figure 22e) was found on the surface of the SW quad. Again, the basal projection is squared, and a narrow notch indents the base. The remaining barb is broken off above the haft element with a hinging fracture, while the other barb was removed in the medial transverse snap-fracture. The thin fragment has fine, nonpatterned flaking on both surfaces.

These three specimens are admittedly fragmentary, but the basal treatment of an indented stem is typical of Montell.

Frio (one specimen)

Chronological Affiliation: Middle Late Archaic, Central Texas Twin Sisters Phase, A.D. 200 to 600 (Katz 1987:112); Local Period 9 at 41BX228, A.D. 250-950 (Black and McGraw 1985:105).

Provenience: Surface collection, NW quadrant
Dimensions: L: 37 mm (br); W: 24 mm; NW: 16.5 mm; Th: 6 mm

The triangular blade element (Figure 22f) is marked by asymmetrical side-notching: One notch is deep, while the other is shallow. The base is indented with a wide-open notch, and the haft element expands into squared off ears, one of which is broken by an irregular fracture. The distal tip was also damaged by an irregular fracture. Retouch on the lateral edges is worn and step-fractured. Biconvex in transverse cross section, the blade element is fairly thin, but basal thinning flake removals terminated in step-fractures on both faces, failing to thin the piece further.

Frio projectile points typically show a triangular blade element and an indented base. The wide range of basal notching in Frio specimens may grade into Ensor. This specimen, while the side-notches lack consistency, fits easily into the Frio definition.

Large Corner-Notched Points

Castroville (one specimen)

Chronological Affiliation: Early Late Archaic, Central Texas Uvalde Phase, 250 B.C. to A.D. 200 (Katz 1987:111); Late Archaic, San Marcos Phase, Local Period 8 at 41BX228, 650 B.C. to A.D. 250 (Black and McGraw 1985:109).
Provenience: Surface collection, NW quadrant
Dimensions: L: 50 mm (reworked); W: 35 mm (reworked); NW: 24 mm; Th: 7 mm

An attempt to reshape this specimen has extensively altered the blade, but the basal element remains distinctive (Figure 22g). The stem is wide, with parallel laterals and a straight base. Basal thinning flake removal marks one face. The base and lateral edges of the haft element are not ground; edge-rounding is restricted to the highest point on the stem at maximum neck width. The retouch is fine and nonpatterned.

The broad, thin stem contrasts strongly with the irregularly shaped blade. Reduction of the laterals through deep bifacial flake removals was started before the tool was discarded, perhaps after a medial fracture. Both of the barbs are snap-fractured. The distal tip is thick and blunted. If the reworking of the point were completed, it is likely that a much smaller overall size would have been necessary.

Judging from the stem treatment, this specimen is typical of the Late Archaic. Point types of the time period, including Marcos, Marshall, Lange, and Castroville, display many similar traits in manufacture. Without the characteristic extended barbs on the blade, identification is unclear, but the fine workmanship on the stem is suggestive of Castroville.

Large Point Fragments

Unidentifiable (five specimens)

Chronological Affiliation: Archaic Period

Provenience: Surface collection, NW quadrant (Figure 22h and i) and SW quadrant (Figure 231); Test Unit 7 (S100/E85) Level 1, 0-10 cm (Figure 22k); Test Unit 9 (S105/E78) Level 2, 10-20 cm (Figure 22j)

Dimensions:
22h. L: 42 mm (br); W: 29 mm (br); NW: 19 mm; Th: 8 mm
22i. L: 40 mm; W: 17.5 mm; NW: 13 mm; Th: 5 mm
22j. L: 26 mm (br); W: 31 mm (br); NW: 16 mm; Th: 6 mm
22k. L: 28 mm (br); W: 25 mm (br); NW: 19 mm (br); Th: 5 mm
221. L: 48 mm (br); W: 37 mm (br); NW: 15 mm; Th: 7 mm

Two point fragments (Figure 22h and 221) have a marked correspondence to the Late Archaic point types already discussed. The specimen in Figure 22h is broken medially by an irregular fracture; evidence of rework distally is visible. The blade lateral edges are battered, and the shoulders are too fractured to recognize whether barbs were prepared.

Wide, shallow side-notches form a broad and expanding haft element with a straight base. The notches are particularly battered with edge-crushing and step-fracturing, but the base also displays edge-rounding. The piece is thickest in transverse cross section at the haft element.

The inferior quality of the chert and poor manufacturing technique obscure classification. There is some likeness to Marcos or Marshall projectile points, but the piece is too damaged for certainty.

The second point (Figure 221) has a hinge-fractured haft element which makes a positive attribution difficult. The triangular blade element is wide with deep, V-shped corner-notches; it has a sharp distal tip. The resharpened lateral edges show alternate beveling with thinning flake removal. One of the blade barbs was broken off by a hinge-fracture. The neck width is narrow, albeit damaged by the hinge-fractures which broke the expanding stem. The basal remnant appears concave and rounded.

The third point has a triangular blade and a haft element of approximately the same width, separated by large, shallow side-notches (Figure 22i). The stem is slightly expanding, with squared ears and a straight, thinned base. One of the short barbs on the blade is broken by a hinge-fracture. The long blade is slightly twisting, accentuated by alternate beveling along the lateral edges. Edge-rounding is apparent on the laterals, with step-fractured wear present. The distal tip is sharp. Maximum thickness of the piece is at the wide haft.

The specimen fits into the Late Archaic size range (Figure 23i). There are vague suggestions of Darl point technique in the use of beveling on the blade edges, but the beveling might indicate rework after damage.

The fourth point fragment may have been unfinished before it was hinge-fractured medially (Figure 22j). The shoulders are merely roughed out and asymmetrical. The haft element has an irregular base with only one ear-shaped before the piece was discarded.

The last large unidentifiable point fragment (Figure 22k) is heat-damaged with potlid fractures. It has only one lateral edge intact but resembles a corner-notched point with an expanding, eared stem and concave base. The stem is short in comparison to the length of the blade, and it appears to have been approximately the same width.

Small Point Fragments

Unidentifiable (two specimens)

Chronological Affiliation: Prehistoric
Provenience: Surface collection, NE quadrant
Dimensions: Too fragmentary for measurement

One of the point fragments is a blade element (Figure 22m), and the other is a barb fragment. Both are too fractured for further identification. Measurements were not attempted due to the fragmentation of the specimens.

The small blade is quite patinated from exposure. It has a medial snap-fracture, and an irregularly fractured base. The specimen may be an arrowpoint. The barb was removed from a thin blade by fractures at right angles. The barb does not fit any of the points in the collection; it may be from a dart point.

41BX845

Large Stemmed Points

Nolan (one specimen)

Chronological Affiliation: Early Archaic, circa 4000 B.C. to 2500 B.C. (Turner and Hester 1985:132); Early Middle Archaic, Clear Fork Phase, Local Period 6, 3000-2000 B.C. (Black and McGraw 1985:117)
Provenience: Test Unit 10 (S112/E98) Level 3, 20-30 cm
Dimensions: L: 46 mm (br); W: 29 mm; NW: 19 mm; Th: 7 mm

The specimen (Figure 23a) has a large, triangular blade with a distal hinge-fracture. Step-fracturing from thinning flake removal is present bifacially on the blade. The stem is formed by alternate beveling high on the laterals, and the blade shoulders curve shallowly into the stem. Use-wear and edge-crushing are visible on the stem lateral edges. The laterals on the stem are not symmetrical, as one edge is straight while the other is concave. On the concave lateral, the stem expands slightly. The base is somewhat concave.

Overall workmanship of this piece seems rough and slapdash. There is no fine retouch to finish thinning and sharpening the point. Although the lateral edges on the blade are fairly straight rather than convex, the use of beveling certainly suggests the Nolan type. Nolan points display traits in common with other point types from the Early Archaic, such as La Jita, but the stems on type specimens of the other forms are as wide as the blade (Turner and Hester 1985:112; Black and McGraw 1985:118). The fragment differs from Travis in the placement of the beveling, which occurs in Travis points on the blade.

Wells (one specimen)

Chronological Affiliation: Early Archaic, 3500-2000 B.C. (Gerstle et al. 1978:65); Early Archaic, San Geronimo Phase, 5050-4050 B.C. (Prewitt 1981:78).
Provenience: Test Unit 10 (S112/E98) Level 1, 0-10 cm
Dimensions: L: 60 mm (br); W: 21 mm; NW: 15 mm; Th: 8 mm

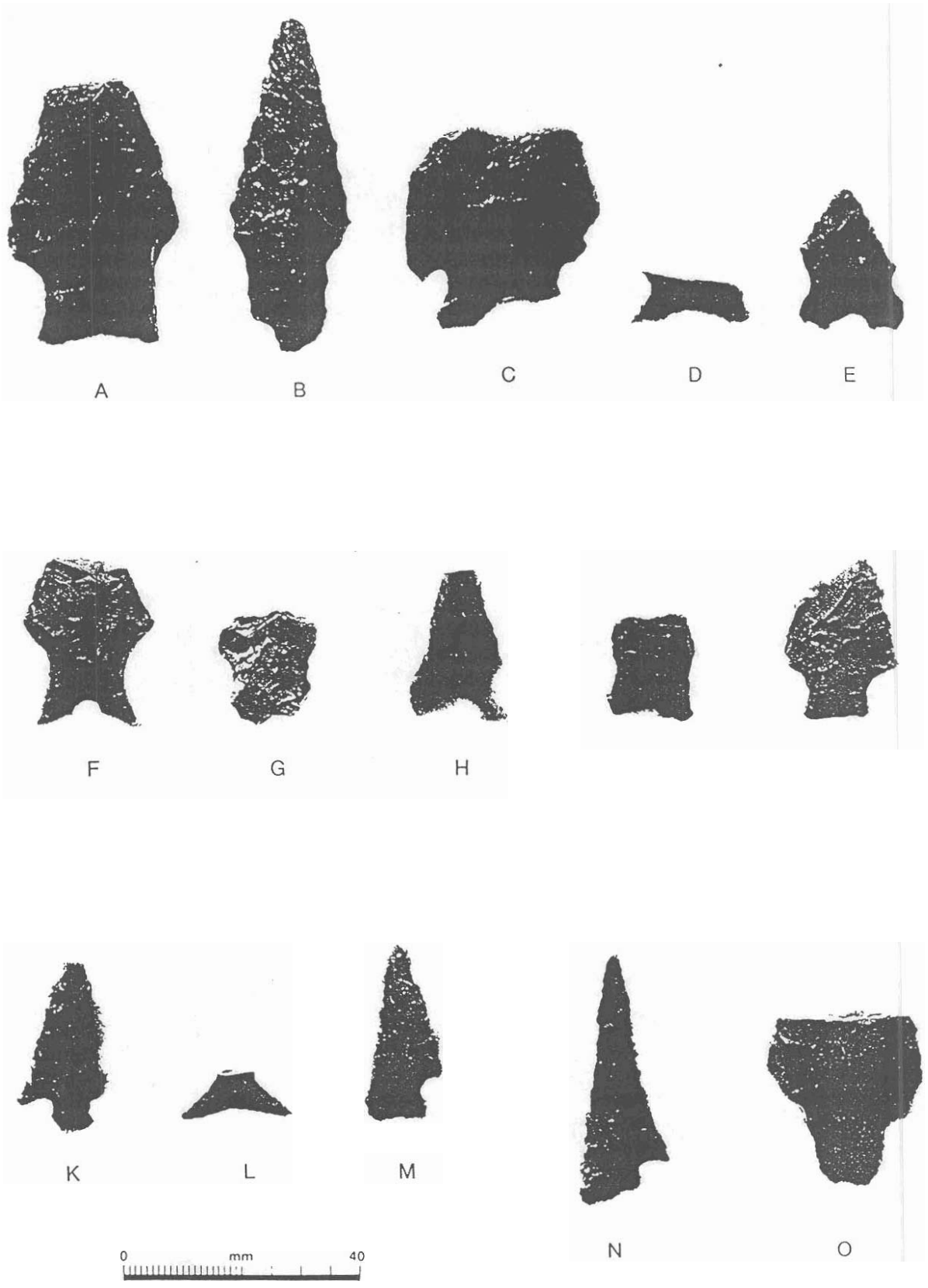


FIGURE 23. Projectile points from 41BX845

A long, narrow blade terminates in a blunt distal tip on the point (Figure 23b). The blade lateral edges are straight with alternate beveling present; the lateral edges of the blade are step-fractured and show edge-rounding. Overall, the piece is roughly made and lacks a finish of fine patterned flaking. The point is thickly lenticular in transverse cross section at the distal end, mainly due to the beveling, but thins to a biconvex profile toward the proximal end. The rounded shoulders curve slightly in toward the long, straight stem, producing a narrower haft element. Although the stem is damaged by a hinge-fracture, the base is clearly convex. Edge-crushing marks the neck width, with some apparent grinding lower on the stem laterals. Wells is an unusual point type in the region, but examples are reported in northern Bexar County (Gerstle et al. 1978:70). There are also some similarities to the range of Travis points, but the edge-grinding on the haft element and the elongated stem seem to characterize the Wells type.

Large Corner-Notched Points

Marcos (one specimen)

Chronological Affiliation: Early Late Archaic, Central Texas Uvalde Phase, 250 B.C. to A.D. 200 (Katz 1987:115); San Marcos Phase, Local Period 8, 650 B.C. to A.D. 200 (Black and McGraw 1985:112).
Provenience: Test Unit 1 (S104/E108) Level 1, 0-10 cm
Dimensions: L: 35 mm (br); W: 34 mm (br); **NW:** 19 mm; Th: 7 mm

The distal end of the point (Figure 23c) was removed by an irregular medial fracture, after which an attempt to rework the fragment into another tool was made. One lateral edge is missing due to a burin-like spall driven from the medial break; this spall also damaged the barb at its terminus. The blade is heavily step-fractured on both faces from the thinning flake removal that occurred following the fracture. The wide blade probably was triangular before the modification.

The corner-notching is deep and narrow, although both barbs are too damaged to determine the original shape. One barb was removed by an irregular fracture, and the remaining barb is shortened by the spall. The notches are constricted by an expanding, eared stem which is deeply concave at the base. The stem is low on the fragment and not as wide as the blade. No grinding is present. The basal indentation may be overly emphasized by the hinge-fracture which broke one of the ears on the haft element; the basal treatment may not be intentional.

In the Late Archaic, large triangular points are common. Both Marcos and Marshall points have somewhat similar corner-notched design. As damaged as this fragment is, it seems more closely to resemble the Marcos style of notching, with a large, single-blow notch retouched at the neck.

Frio (five specimens)

Chronological Affiliation: Middle Late Archaic, Central Texas Twin Sisters Phase, A.D. 200 to 600 (Katz 1987:112); Local Period 9 at 41BX228, A.D. 250-950 (Black and McGraw 1985:105).

Provenience: Test Unit 5 (S96/E106) Level 1, 0-10 cm (Figure 23d); Test Unit 1 (S96/E108) Level 1, 0-10 cm (Figure 23e); Test Unit 10 (S112/E98)Level 2, 10-20 cm (Figure 23f); Test Unit 9 (S111/E98) Level 1, 0-10 cm (Figure 23g); surface collection, SE quadrant (Figure 23h).

Dimensions:
23d. L: 10 mm (br); W: 23 mm (br); NW: 16 mm; Th: 4 mm
23e. L: 24 mm; W: 19 mm; NW: 14.5 mm; Th: 5 mm
23f. L: 30 mm (br); W: 22 mm; NW: 13 mm; Th: 7 mm
23g. L: 20 mm (br); W: 18 mm (br); NW: 13 mm; Th: 6 mm
23h. L: 27.5 mm (br); W: 27 mm; NW: --; Th: 5 mm

The haft element is all that remains of a point from TU 5 (Figure 23d). Hinge-fractured at the haft neck, the side-notching expands into a squared, eared stem with a concave base. The basal notch is wide and shallow. One of the ears is broken by a hinge-fracture. Some edge- grinding is present on the base and side-notches. The thin fragment has fine, nonpatterned retouch bifacially, and the chert may be heat-treated, given its waxy luster.

The second point (Figure 23e) shows poorer workmanship, but it is patterned in the same style. A short triangular blade has wide but shallow side-notches and an expanding, eared stem; the ears are also squared by a basal indentation. In this case, the notch is deep and U-shaped. Edge-crushing is visible on the notches. The asymmetrical blade amounts to approximately half of the point's total length. Maximum width of the point is in the haft element. Resharpening on one lateral edge has given the piece a lopsided appearance and left deep step-fractures on one face.

A third point fragment (Figure 23f) is heat-altered and irregularly fractured at the midsection and on the shoulders. Wide but deep side-notches constrict the stem at the neck; the stem expands into attenuated, flared ears squared by a narrow, deep notch on the base. Unlike the previous specimen, this point is thickest through the blade rather than at the haft element. The thick point exhibits fine workmanship despite the heat damage to the blade.

The fragment from TU 9 (Figure 23g) is quite damaged by heat alteration, with spalling and potlid fractures visible. The side-notches formed an expanding stem that had a thinned, concave'base. Due to the fracturing, little else remains identifiable on the fragment, but the thickness and neck width fall within the parameters of Frio dimensions.

One of the specimens included in this grouping is a preform (Figure 23h). It is shaped along one lateral edge only. Apparently the piece was broken by a hinge-fracture of the distal tip and never finished. There is a wide, V-shaped side-notch which expands into a squared-off ear on the stem. The base is thinned for notching as well. Although the blade is not completely thinned, the flaking is finely done notwithstanding the step-fracturing.

These points share the characteristic basal notching of Frio points. The heat-altered specimen (Figure 23f) is most likely a variant form of the Frio stylistic range, with the same diagnostic markers of the type, but taken to an extreme.

Large Side-Notched Points

Figueroa/Zavala (two specimens)

Chronological Affiliation: Late Late Archaic or Late Prehistoric Periods, Central Texas Driftwood, Austin, or Toyah Phases, A.D. 600-1800 (Katz 1987:121); Transitional Archaic, circa 200 B.C. to A.D. 600 (Turner and Hester 1985:97).

Provenience: Test Unit 5 (S96/E106) Level 1, 0-10 cm (Figure 23i); Test Unit 10 (S112/E98) Level 3, 20-30 cm (Figure 23j).

Dimensions: 23i. L: 20 mm (br); W: 15 mm (br); NW: 13 mm; Th: 4 mm
23j. L: 28 mm (br); W: 20 mm; NW: 10mm; Th: 5 mm

The two specimens are both basal fragments. Side-notches form expanding stems with straight bases. Both are broken at the midsection of the blade; one (Figure 23j) is damaged by a deep hinge-fracture down one face from the medial break, while the other (Figure 23i) has irregular medial fractures which also removed both lateral edges. The hinge-fractured blade element (Figure 23f) looks as if thinning flake removal is incomplete. It may have one shoulder. which is too pronounced for the typology, but the lateral edge is thickest at the unthinned shoulder. The haft elements on both fragments show edge-wear in the form of crushing and rounding.

Classification of these specimens is tentative at best, and both points may have been broken during manufacture. The dimensions of the two pieces suggest a size range which lies between arrow and dart points. The point types of Figueroa and Zavala are not clearly delineated in the literature (Katz 1987:121), and such types are unusual at sites in the area.

Small Corner-Notched Points

Scallorn (one specimen)

Chronological Affiliation: Early Late Prehistoric, Central Texas Austin Phase, A.D. 750-1350 (Katz 1987:120); Local Period 10, A.D. 900-1300 (Black and McGraw 1985:102).
Provenience: Test Unit 9 (S111/E98) Level 3, 20-30 cm
Dimensions: L: 30 mm (br); W: 17 mm (br); NW: 6 mm; Th: 3 mm

The point fragment is broken at the distal end by a snap-fracture and at the proximal end by irregular fractures (Figure 23k). A possible burin blow was made at the distal break down one lateral edge. The thin, triangular, serrated blade is resharpened along the lateral edges, leaving step-fractured flake removals on one face. The resharpening ends just short of the thicker, fractured distal end. One shoulder is modified by the retouch, so that the laterals do not match. The remaining barb is long and slightly expanding at the tip. A narrow haft element is formed by single-blow corner-notches which are deep and retouched. The expanding stem is unidentifiable due to fracturing below the neck.

The example conforms to many of the traits which typify Scallorn, particularly the edge serration and the elongated barbs on the blade laterals. The absence of the base hinders more conclusive identification, however.

Edwards (one specimen)

Chronological Affiliation: Late Prehistoric, circa A.D. 960-1040 (Turner and Hester 1985:173); Early Late Prehistoric Period, Central Texas Austin Phase, late Local Period 10, A.D. 750-1350 (Katz 1987:110).
Provenience: Test Unit 10 (S112/E98) Level 1, 0-10 cm
Dimensions: L: 16 mm (br); W: 13 mm (br); NW: 4 mm (br); Th: 3 mm (br)

Only the stem of this projectile point remains. The narrow neck of the haft element expands widely into pointed projections which curve outward (Figure 231). The base has a shallow, wide-open V-shaped concavity. The thin fragment is finely flaked, with retouched edges. The basal treatment is strongly reminiscent of Edwards, given the exaggeration of the stem ears.

Point Preforms

Unidentifiable (three specimens)

Chronological Affiliation: Late Prehistoric
Provenience: Test Unit 8 (S105/E98) Level 2, 10-20 cm (Figure 23m); Test Unit 9 (S111/E98) Level 3, 20-30 cm (Figure 23n); Test Unit 9 (S111/E98) Level 1, 0-10 cm.
Dimensions: 23m. L: 32 mm; W: 18 mm; **NW**: --; Th: 5 mm
23n. L: 44 mm; W: 17 mm; NW: --; Th: 3 mm
. L: 31 mm; W: 17 mm; NW: --; Th: 5 mm

All three of the points have an unfinished appearance; two'are 'notched only on one lateral edge, while the third is not notched at all. One specimen (Figure 23m) has a single side-notch on a long, narrow blade. The opposite lateral edge is straight, giving the blade an asymmetrical look. Forming the notch apparently caused damage to the blade shoulder, removing the barb.

The expanding stem also has a hinge-fracture which broke off the projecting ear. A somewhat concave base is partially shaped. The blade bears thinning flake scars on one face, and the lateral edges are not retouched. In longitudinal cross section, the point is concavo-convex, resembling a flake.

The second example also has one notch (Figure 23n). In this case, the point is corner-notched on one lateral edge above a hinge-fractured base. No modification of the notch was performed after the initial blows; perhaps the stem was broken during preparation of the notch. The very thin blade is quite long and narrow, with slightly concave lateral edges. It has a sharp distal tip but the lateral edges are unretouched.

The third point is a triangular blade which contracts slightly about two-thirds of the way down the lateral edges. Both the lateralsand the proximal end are irregularly concave. Basal thinning was begun, but the lateral edges and the base remain unfinished.

These blades appearto be preforms for arrowpoints which were discarded before completion.

Point Fragments

Unidentifiable (two specimens)

Chronological Affiliation: Unknown
Provenience: Surface Collection, SW quadrant (Figure 23o); Test Unit 8 (S105/E98) Level 1, 0-10 cm
Dimensions: 23o. L: 30 mm (br); W: 27 mm (br); 'NW: 15 mm; Th: 6 mm
L: 16 mm (br); W: 13 mm (br); NW: 4 mm (br); Th: 3 mm (br)

A large, heat-altered basal fragment from the surface collection has irregular heat fractures which broke the blade at the midsection and damaged both shoulders (Figure 23o). The stem tapers to a straight base. It may be a stemmed biface rather than a projectile point, but the piece is thin and finely flaked. No identification is possible given the intense fracturing, but the size suggests an Archaic date.

Another heat-a1tered fragment is much smaller, but potlid fractures have destroyed most of its surface. The basal fragment is of a small arrowpoint with a very narrow haft element. The blade is irregularly fractured at the midsection and on the shoulders, so that the style of notching is uniden-tifiable. The haft element is broken below the neck of the stem, removing the base. There is not enough left of the fragment to classify.

CONCLUSIONS

Subsurface testing was performed at 41BX791 and 41BX845 in the spring of 1990 by members of the SDHPT archaeological staff. Cultural materials were uncovered in shallow deposits above the bedrock at 41BX791 to a maximum depth of 30 cm below present ground surface. When testing began, the site surface was quite disturbed from construction clearing and grubbing. This surface disturbance was reflected in the stratigraphy of the 11 test units excavated at the site. While tools and debitage were recovered from the units, little of the burned-rock feature remained distinctive. Burned rocks were present as a scatter without clear delineation. The absence of charcoal or faunal samples for chronological and environmental interpretation hampered research efforts.

Diagnostic artifacts collected at 41BX791 include projectile points in the style of Nolan, Langtry, Montell, Castroville, and Frio. The artifactual evidence indicates that the site was used from the Early Archaic well into the Middle Late Archaic, with the most intense occupation during the Late Archaic Period. Analysis of the lithic assemblage collected from the site suggests that reduction of locally available lithic material, from nodules to the biface blank stage was an important activity.

Testing at site 41BX845 was also done in an area already modified by surface clearing. The site was not recorded until after construction of S.H. 211 had begun. Collected piles of artifacts dotted the site surface when the archaeologists arrived, pointing to disturbance by pothunting as well as construction. Although preliminary subsurface testing at 41BX845 showed shallow soil deposition of less than 30 cm above the bedrock, the final two test units on the western edge of the site reached depths of 60 cm before bedrock was uncovered. Unfortunately, the levels in these units appear to have been disturbed; there are problems in the stratigraphic sequence of the artifacts.

Projectile points collected at 41BX845 represent an occupation sometime in the Late Early Archaic with a hiatus until the Early Late Archaic, continuing into the Early Late Prehistoric Period. The points collected are similar to Nolan, Wells, Marcos, Frio, Figueroa, Scallorn, and Edwards typology. As an indication of the problems of subsurface integrity at the site, the Wells and Edwards point specimens were found together in Level 1 of Test Unit 10.

RECOMMENDATIONS

An assessment of the testing program at both 41BX791 and 41BX845 indicates that an extensive excavation phase is not justified, and no further work is recommended for 41BX791 or 41BX845. Given the shallow cultural deposition throughout the location of 41BX791 and much of the site area at 41BX845, neither site has enough potentially undisturbed site area remaining to warrant intensive data recovery investigations. The portion of 41BX845 with deeper subsurface cultural deposits appears to have suffered extensive damage from uncontrolled relic hunting, ruling out the potential for significant information. Without subsurface integrity, further testing would amount to little more than a hunt for artifacts. Those portions of sites 41BX791 and 41BX845 within the right-of-way of S. H. 211 do not warrant designation as State Archaeological Landmarks. In the case of 41BX845, the site location apparently continues outside of the project boundaries beyond the scope of this project, and could be investigated at another time by an entity other, than TxDOT.

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APPENDIX

In the spring of 1991, the SDHPT Environmental Section received copies of artifact drawings from an amateur excavation of 41BX845. These illustrations are included in the report as an addendum; given the lack of stratigraphic information, no attempt was made to integrate the tools into the analysis. The diversity of tool types shown in the collection offers some insight into the site's research potential before disturbance.

Inventory of Lithics

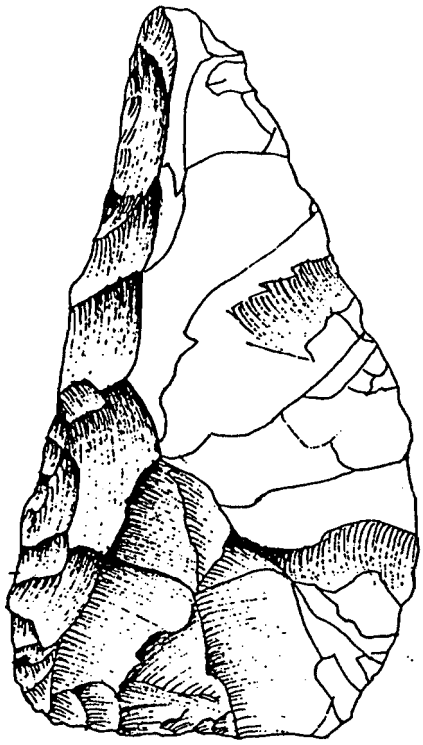
22 identifiable dart points

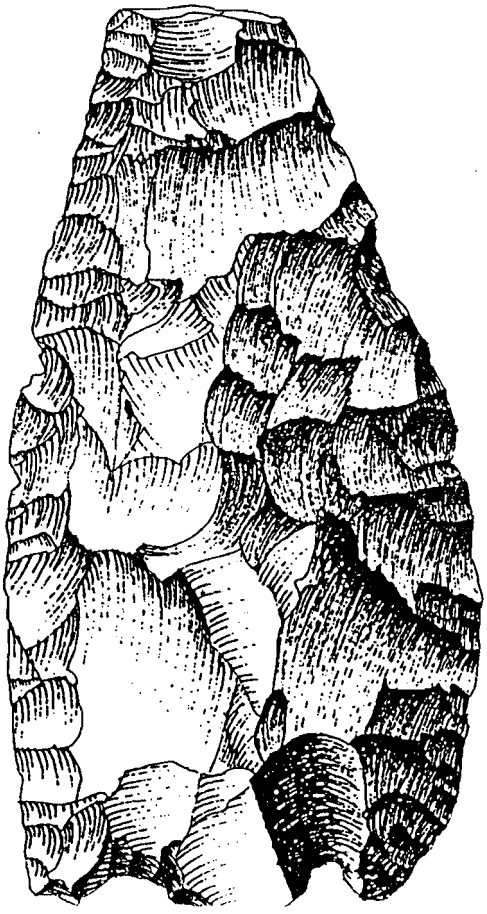
4 Marshall, 2 Pedernales, 2 Ensor, 1 Montell, 2 Matamoros, 2 Marcos, 1 Early Triangular, 1 Nolan, 1 Bulverde, 1 Tortugas, 1 Uvalde, 1 Travis, 1 Pandora, 2 UID, 1 possible Frio, 1 possible Marshall, 1 possible Montell, 1 possible Marcos

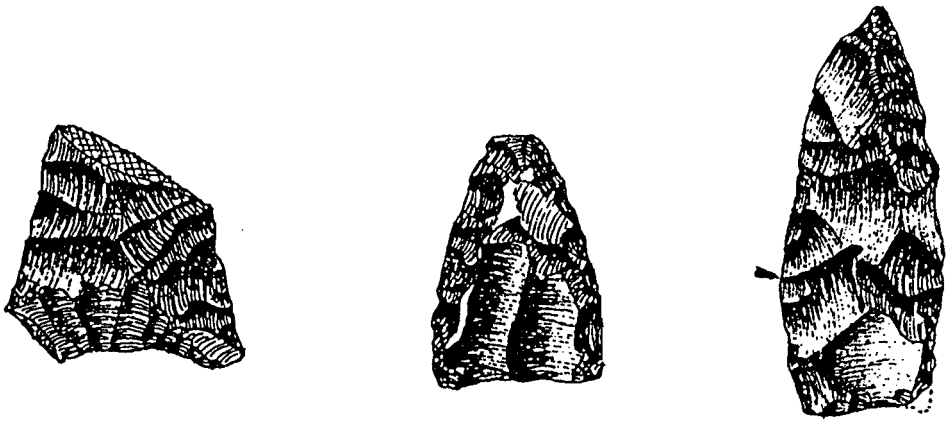
Other Lithics

1 Archaic drill, 4 Clear Fork gouges, 2 flake edge-scrapers, 1 butted biface, 20 biface preforms, 4 thin small bifaces, 17 proximal fragments of stemmed bifaces, 15 biface distal fragments, 3 unmodified flakes, 1 thick bifacially worked piece of no definite form, 1 mid-blade fragment with oblique parallel flaking (possible Paleo), 23 UID biface fragments

41 BX 845







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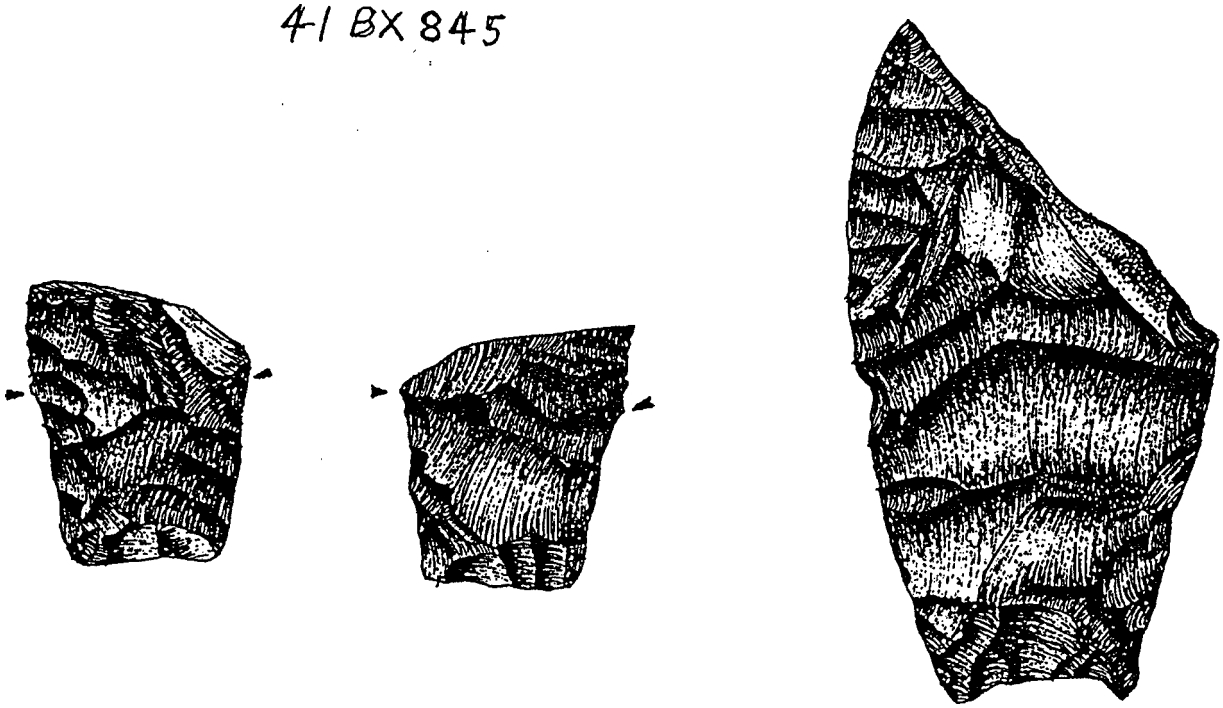

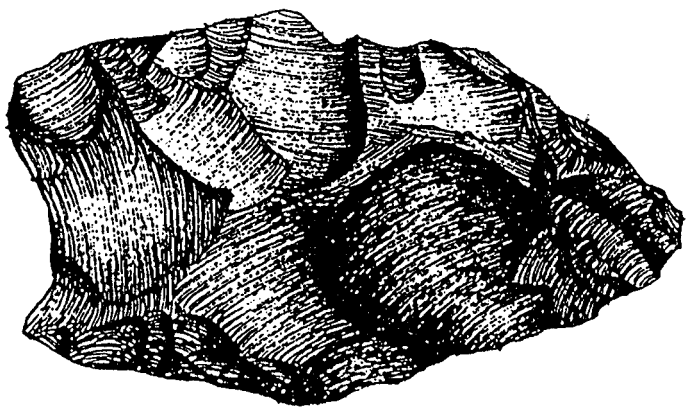

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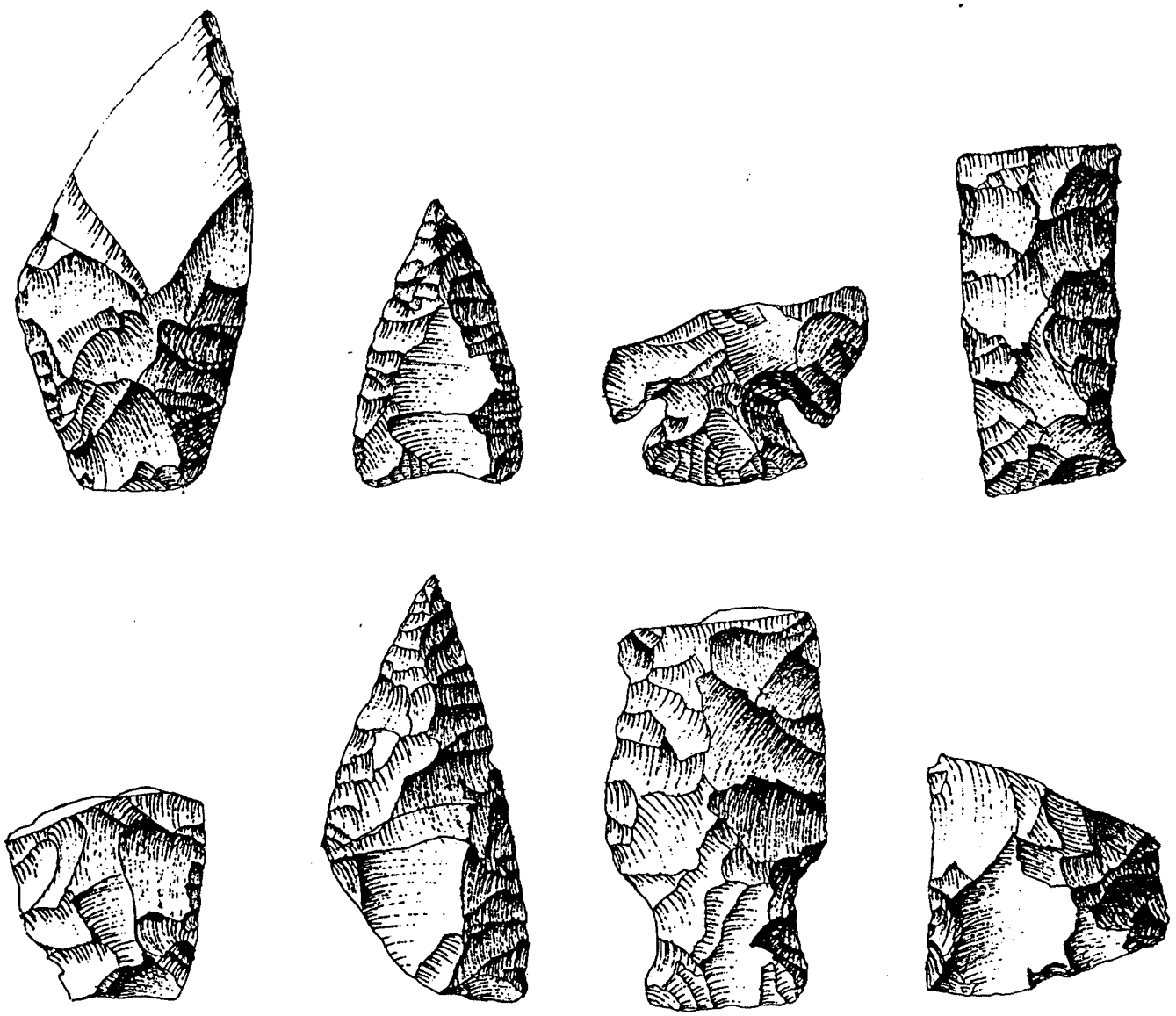

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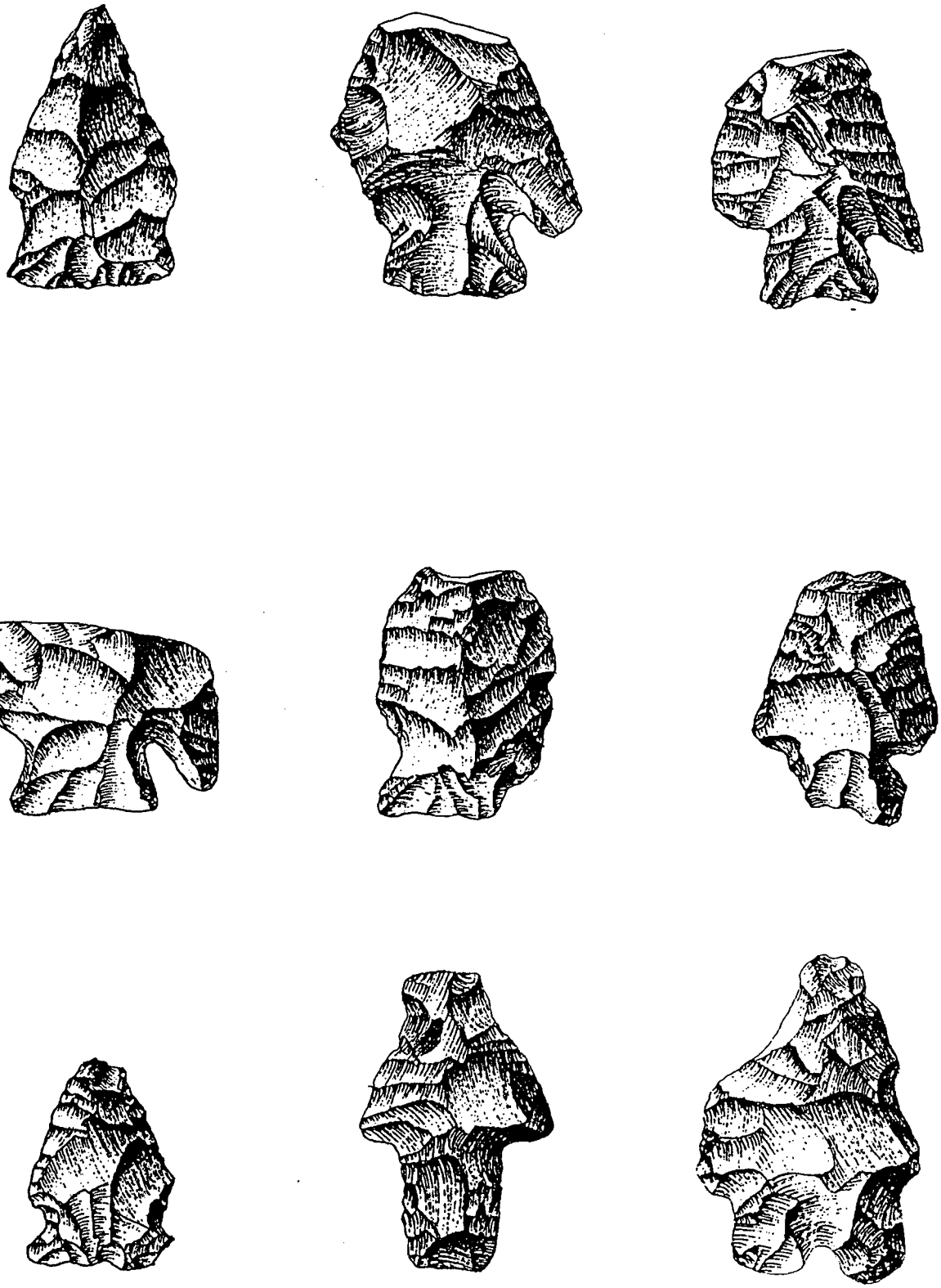

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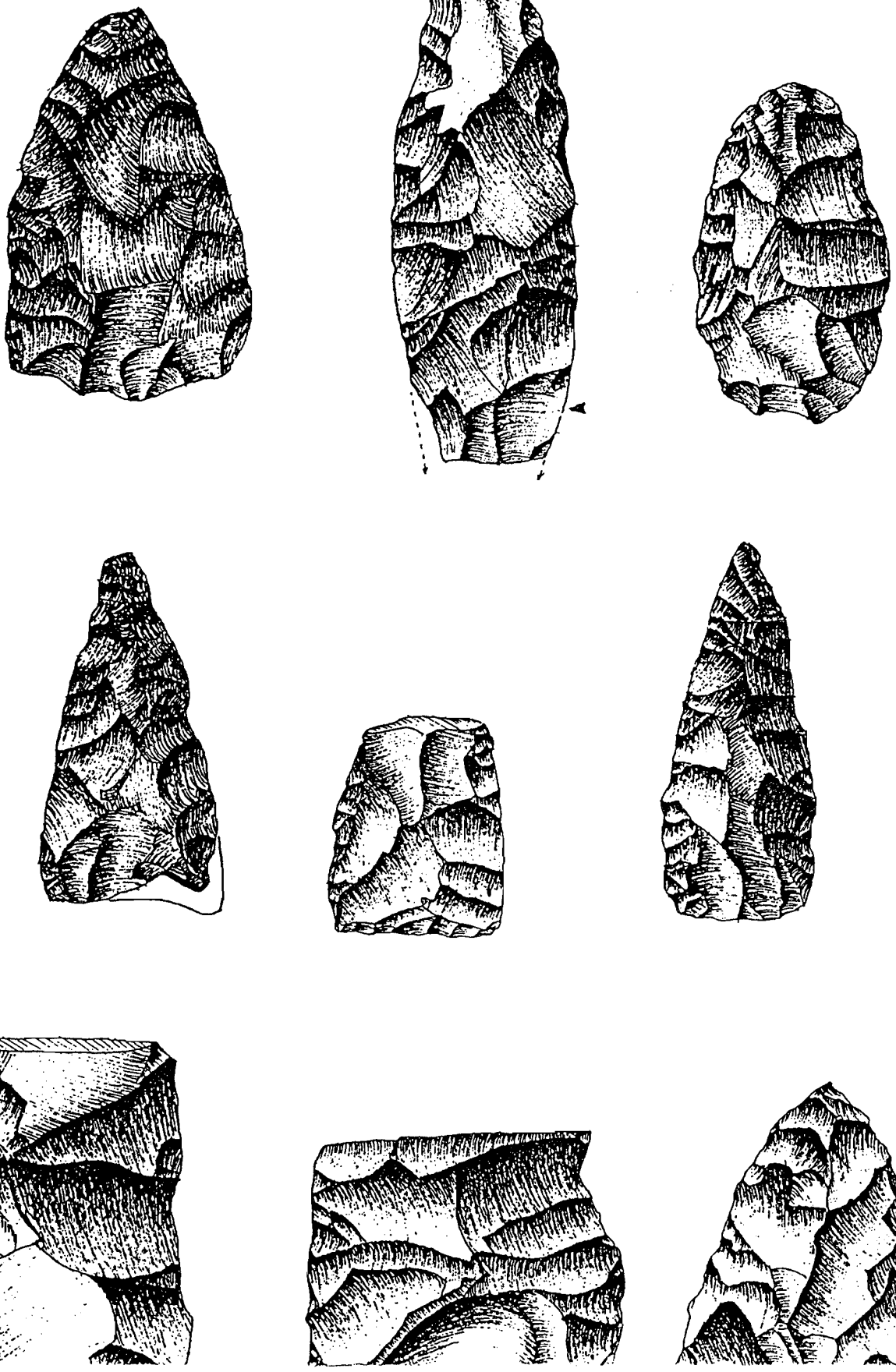

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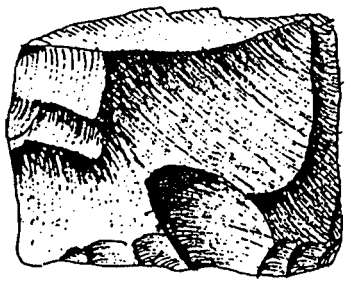

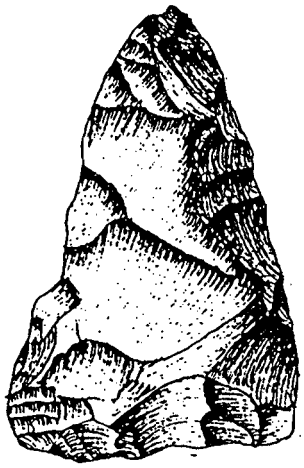

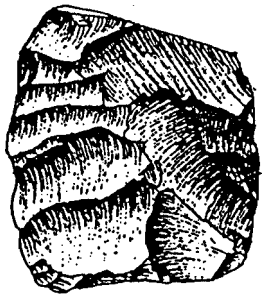

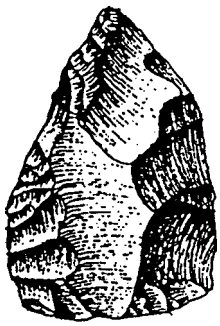

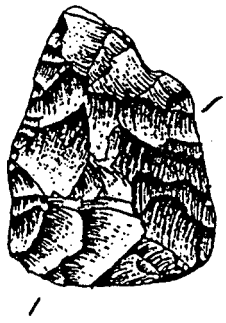

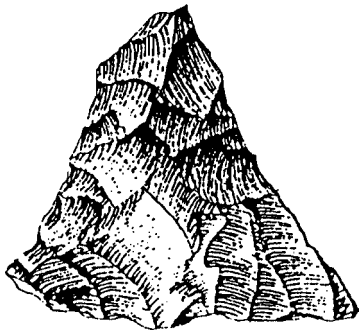

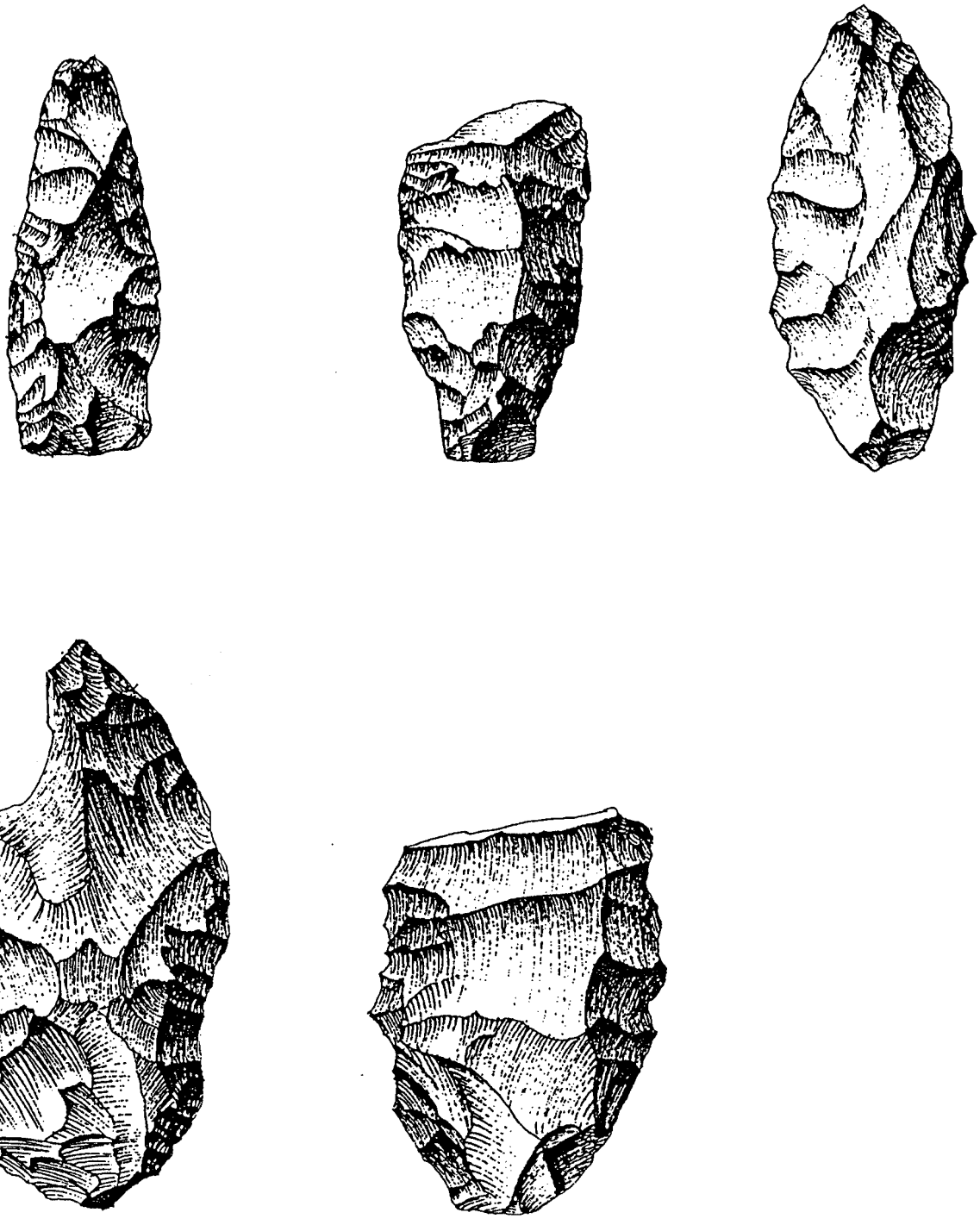

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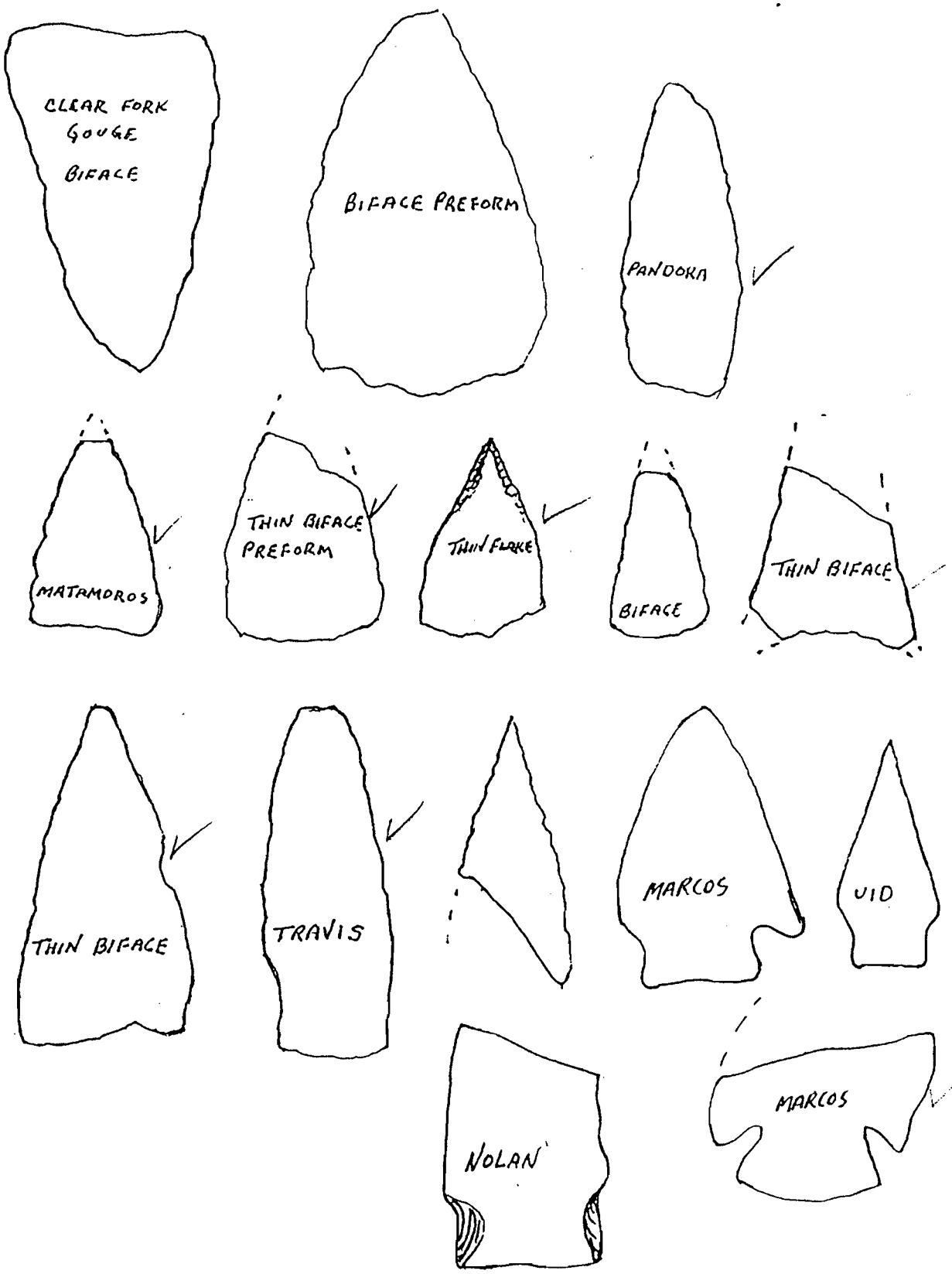

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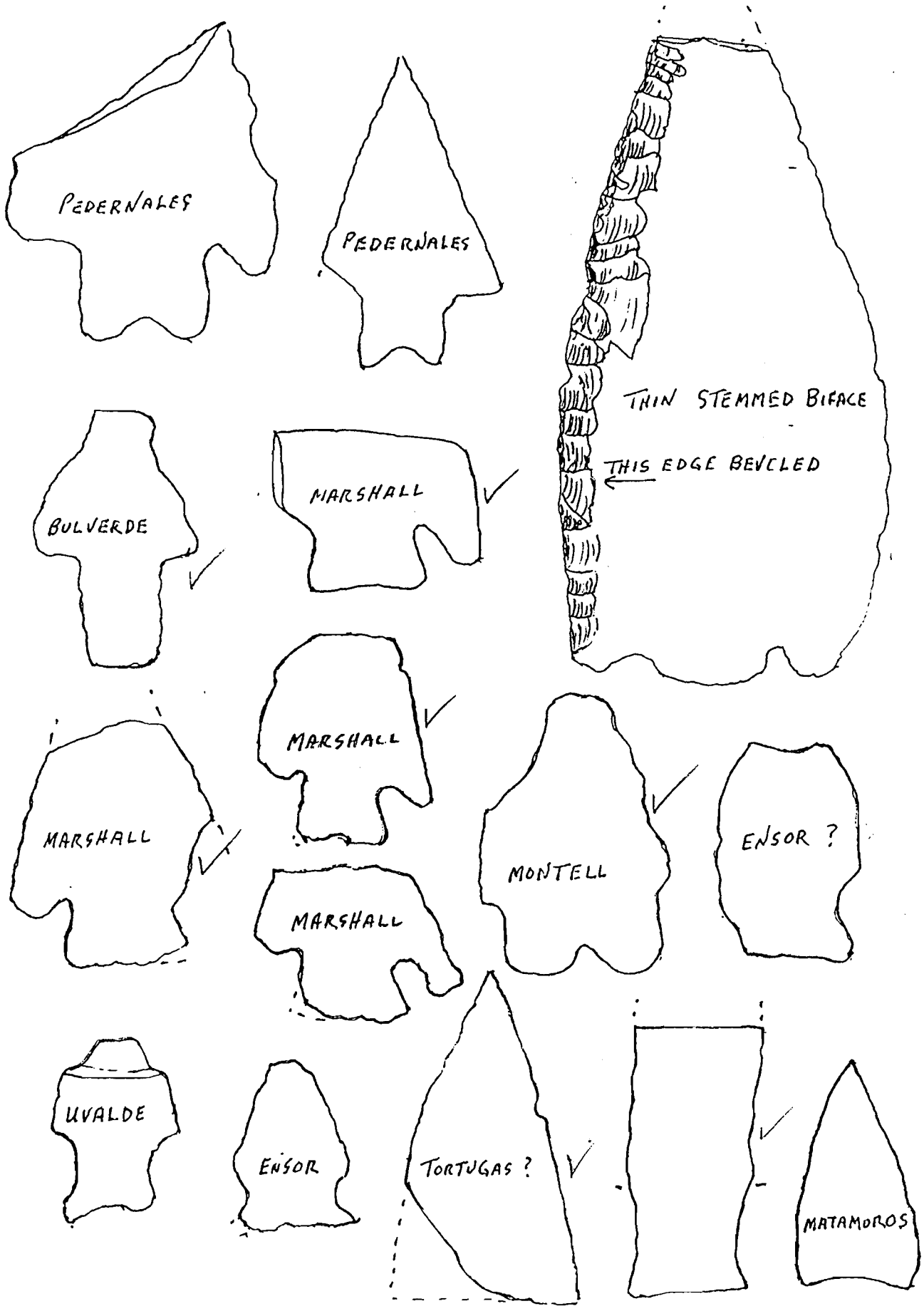

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