ARCHAEOLOGICAL SITE TESTING AT LAKE CREEK (10IH2561/PY-1331) NEW MEADOWS RANGER DISTRICT, PAYETTE NATIONAL FOREST, IDAHO

by
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with Technical Assistance from
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Middle Columbia Basal Notched Arrowpoint

1,265 ± 100 Years Before Present

Heritage Program
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PREFACE

In early January of 1997, the Lake Creek drainage experienced a major flood event when heavy rains fell upon deep snow in the higher elevations. The flood event dramatically widened and downcut the Lake Creek stream channel. For locational reference, see Figures 1 and 2. The results of this flood caused erosion to at least nine roadbed locations and two wooden bridges were washed away and another was damaged. The damaged bridge in close proximity to the archaeological site structurally survived the flood. However, the creek deposited rocks, sand, and woody debris under the bridge, eventually damming the stream channel. The stream channel then migrated around the approach to the bridge and flowed down the roadbed for approximately 200 meters, eroding the road and downcutting through the ancient prehistoric archaeological site. The original roadbed did not harm the archaeological site located one meter below surface. However, the flooding waters removed a major portion of the cultural deposits, leaving the remaining archaeological site bisected and exposed.

In early April of 1997, the USDA Payette National Forest (PNF) was encouraged to make road repairs to the Federal right-of-way that trends over the privately owned property of Mr. David and Dr. Stacey Garry. The Garrys needed access to their property, and new building site. Since Federal money was being spent to rebuild the Federal road right-of-way (R-O-W), trending across privately owned land, the intent of the National Historic Preservation Act of 1966, as amended, in compliance with Section 106 had to be honored. The PNF Archaeologist, Lawrence A. Kingsbury, conducted an archaeological survey within the 30 foot road R-O-W and located the buried archaeological site on the private property. See Figure 2.

The archaeological site was downcut and bisected by the flowing stream of Lake Creek. The archaeological site remained in two parts with Lake Creek flowing through the middle of the site. See Figure 4. Creek erosion removed hundreds of metric tons of soil leaving a 12.50 meter distance between the two remaining portions of the archaeological site. The Forest Archaeologist observed cultural horizons within the black, well-developed, humic soil located at about 1.00 to 1.30 meters below the surface on the west elevation. On the east elevation, the cultural horizon was found at about 60 to 80 centimeters below surface. The west elevation of the archaeological site was stabilized from further stream erosion and road rebuilding impacts. However, the east elevation of the archaeological site would be impacted by further additional erosion and road reconstruction. The Forest Archaeologist made a decision to conduct immediate archaeological site testing. Archaeological site testing commenced on April 15, 1997. The following report describes the results of the archaeological data retrieval effort.

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The authors would like to express their gratitude to Mr. David and Dr. Stacey Garry of Riggins, Idaho, The Garrys are the owners of the property that the Federal right-of-way trends over, including the archaeological site located within the right-of-way. Mr. Garry installed the temporary foot bridge over the freshet of Lake Creek, providing access to the eastern portion of the archaeological site that needed investigation. The Garrys were interested in our work. David Garry is curator of mineralogy at the Utah State Museum of Natural History, and provided us with insights on mineral identification. He also helped us to excavate. The Garrys were cooperative and gracious. The collection of archaeological materials recovered and studied from their archaeological site will be permanently curated by the Garry family.

The Forest Archaeologist, Lawrence A. Kingsbury, is grateful to the following people who worked on this archaeological site, provided descriptive and quantitative analysis and helped in the production of this report. Steven E. Stoddard of McCall and Riggins, Idaho provided space at his Riggins residence for the water screening and sorting of the cultural material. Steven is a qualified and skilled field archaeologist capable of doing what is difficult. Jill A. Frye of New Meadows, Idaho worked with us at the archaeological site, kept field notes and artifact records in good order, illustrated all of the artifacts and prepared the figures in this report. Her detailed artistic skills in pen & ink illustrations make these descriptive archaeological reports interesting to review.

Several other people provided assistance. Jeff Kahler, Forest Civil Engineer, prepared the topographic map of the site. Charlie Showers, Assistant Forest Engineer, authorized the undertaking through cooperation with the Emergency Relief for Federally Owned Roads program. Other specialists who provided their expertise include Dr. Richard E. Hughes who did the obsidian sourcing; Jenny Waters on faunal identification; Dean Martens for his soil scientist insights; and Yvonne Welter for processing the radiometric determinations. It takes a team of people to provide the holistic approach in doing the Binfordian method of archaeology. We all worked as a team from the beginning to the end. I wish a special thanks to you all.

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I. TOPOGRAPHICAL SETTING OF THE LAKE CREEK ARCHAEOLOGICAL SITE

Lake Creek is a meandering tributary that flows north into the Salmon River. The distance from the confluence of the two streams to the archaeological site is approximately 1100 feet.

The landform that the archaeological site is situated upon is considered a "slope debris fan." Over thousands of years, the larger rock fall eroding from the higher elevations of the Salmon River Mountains was reduced into smaller and smaller particles by mechanical and chemical weathering. This debris moved downslope by creeping, creating the slope debris fan. At the terminus of the slope debris fan is Lake Creek with a mature riparian zone consisting of an overstory of alder trees. Within this riparian zone, the soils were well developed and consisted of a meter of black humic soil.

Through time, Lake Creek developed a series of meandering bends and point bars revealing a pattern of stream flow. The stratified multicomponent archaeological site within the slope debris fan suggests that the Lake Creek flow had been consistent and had not changed at this locality for perhaps thousands of years.

With the advent of road and bridge construction paralleling Lake Creek and the flooding events of 1964, 1974, and 1997, the course of Lake Creek changed. Point bars developed in Lake Creek creating the meandering pattern through the floodplain. The 1997 flood event added new bends and irregularities in the creek channel when log jams, and piles of boulders deflected the flow of the creek toward the opposite bank where the force of the current caused undercutting through the slope debris fan. When the debris fan was bisected, erosion exposed the archaeological site leaving a portion of the slope debris flow in the floodplain. Two areas of the archaeological site were exposed by erosion, and are here identified as the west bank and the terminus of the slope debris fan.

Within the west bank, there was a meter of alluvial/colluvial sediments overlying about a meter of black, well developed humic soil. The archaeological material was observed within the upper 20 to 30 centimeters of the black soil horizon, at about 1.00 to 1.30 meters below surface. The terminus of the slope debris fan now in the floodplain and surrounded by the braided flow of Lake Creek had less overburden of about .60 to .80 centimeters overlying the black soil horizon containing archaeological materials.

II. ARCHAEOLOGICAL EXCAVATION METHODS AND OBSERVATIONS

Based upon the perceived earth moving impacts, a datum point was established on the slope above the site in a location not likely to be disturbed by earth moving activities. Methodology used to examine the site included standard archaeological techniques. The site consisted of two parts, the west side which was not likely to be affected by road reconstruction, and the east side which was likely to be destroyed during road reconstruction.

USDA Forest Service engineers mapped the site area and produced an AUTOCAD quality topographical map that was used by the archaeologists in plotting the archaeological deposits. See Figure 3. A series of grids were produced using two datums, one for each extant section of the site, which was divided by the flow of Lake Creek. All measurements used by the archaeologists were made metrically. Datums were placed in relation to permanent reference points along the right-of-way (R-O-W). Datum A was located on the west side at the southern end of the cultural deposits.

No archaeological testing took place on the west side of the site area. However, Dean Martens, a soil scientist with the USDA Payette National Forest, did do analysis and description on a soil column, on the west side, where deeply exposed stratified archaeological deposits were clearly discernable. It was determined that the west side of the site should not be impacted by road reconstruction. Geotechnical material was placed over the exposed stratified soils, and this was covered by additional soil and stream gravels and armored with large rocks, thus protecting this portion of what remained of the buried archaeological deposits.

The east side of the site area was represented by an elongated island of black soil overlayed by about one meter maximum depth of alluvial light brown colored sediments. Mixed with the sediments were large and small isolated water worn rocks. Datum B was located one meter north of the southern extremity of the extant soil, and a one meter square grid was referenced to that datum. See Figure 3. The area of soil which remained on the east side measured 16 meters in length by a maximum of 2 meters wide, tapering to less than 20 centimeters wide at the north end. Since this area was within the R-O-W, and adjacent to Lake Creek, it was almost certain to be completely destroyed during road reconstruction. Given this parameter, it was decided that the subsurface archaeological investigation should focus on the excavation of a substantial portion of the remaining site on the east bank of the creek. A stratified random sample of six, one-meter wide units were excavated. It is estimated that approximately 25% of the eastern site area was sampled through archaeological excavation.

TEST EXCAVATION UNITS

UNIT B5

Subsurface investigation was begun by establishing Unit B5 (5 meters northeast of Datum B) as a control. Since this unit was the first foray into the site, it was excavated in 10 centimeter levels. All measurements within the unit were taken in relation to the northwest corner of the unit. The slope of the surface soil was more than 18 degrees west to east, so the initial level did not cover the entire one meter square. The unit was completely excavated to a depth of 80 centimeters, and the southwest corner was excavated to a depth of 1.10 meters. See Figure 5.

Soil was removed using spades and trowels. Stone tools, large bone fragments and a representative sample of the thousands of wasteflakes encountered during excavation were plotted on the level record forms. All soil matrix was processed through a 1/8" (3 mm) wire mesh dry screen, and perused intensively by the archaeologists. All identifiable cultural material was separated, bagged and retained for further examination and review.

Another screening technique that was found to be more effective than dry screening was wet screening of the soil matrix. Because the soil matrix was moist and greasy, not all of the soil would pass through the dry screen. At this point, the material that remained within the dry screen was placed into five gallon buckets and taken to the Stoddard residence in Riggins, Idaho for wet screening. Wet screening is a simple process where pressurized water is sprayed onto the soil matrix containing micro-artifacts. The water washed the black greasy soil away making it possible to see the micro-pieces of bone and tertiary wasteflakes.

As test unit B5 was excavated, it became obvious that the removal of an additional 30 centimeters on the west and 60 centimeters on the east of the unit would result in a complete "slice" or cross section of the site, So units B5/1W and B5/1E were plotted and excavated using the same methods as were used to excavate, screen, map, and retrieve all cultural material from Unit B5. As available time for sampling this site was running out, the non-cultural sediments within the overburden in adjacent excavation units was removed using shovels so as to access the cultural deposits in an expedient manner. Upon reaching the cultural deposit, we returned to using hand trowels in excavating.

ADDITIONAL TEST UNITS

Subsequent to the excavation of Unit B5, five additional 1 X 1 meter test units were excavated. These were numbered by location of their northern perimeter in relation to Datum B; hence the designations B0, B2/3, B4, and B7. These units were excavated stratigraphically, based on the soil profile of unit B5 and the evidence of the exposed sides of the site area. The top 40 cm of culturally sterile soil was removed, and the remainder was carefully excavated and screened through 1/8 inch (3 mm) dry shaker screen.

CULTURAL MIDDEN CONTENT

From the perspective of the archaeologists while using a hand trowel in excavating the 40 centimeters of cultural deposition, the following was observed. The cultural deposition is referred to here as the midden. The black midden soil was greasy to the touch. The soil was so greasy that cleaning one's hands required scrubbing. Mixed within this black greasy soil was a variety of fragmented faunal remains, fire fragmented rocks mixed with chipped stone wasteflakes, and other artifacts. Figures 7 through 24 illustrate the diagnostic artifacts recovered from the excavation.

With the exception of disarticulated teeth elements, and one nearly complete ungulate vertebra (Figures 22 -24), all of the other faunal remains were fragmented. Fragmentation was originally done more than 2,000 years ago by the prehistoric inhabitants processing bones for the extraction of bone marrow to be used as a food resource. The passing centuries caused the bone fragments to further decompose. The only recovered bone elements that could be used for identification to genus and species consisted of whole teeth elements. The remainder of the bone fragments were too small for identification to element, genus and species. As the trowel was scraped through the black soil, bone and mussel shell pieces were uncovered. If these pieces were moist when they came into contact with the steel edge of the trowel, they further decomposed, broke down and crumbled beyond recognition. During excavation, pieces of long bone were uncovered, and when exposed to the air they dried out and fragmented into lengthwise pieces. However, if the bone fragments had been previously burnt, they were hardened. Burnt bone fragments varied in color from polished black to greyish-blue. Burnt bone was easily recognized.

Mussel shell pieces were also observed and widely scattered throughout the cultural midden. Mussel shell pieces were white against the black soil matrix and easily seen. All of the observed shell fragments were small. No complete shell halves were recovered within the excavation. The hinge on the shell half was needed for identification to species,and was not found, not even during wet screening activities. It appears the mussel shells were all nearly decomposed. Radiometric dates from the cultural deposits containing mussel shell ranged from 1,265 +- 100 to 2,925 +- 100 years before present.

The archaeologists assume that these fresh water mussels were part of the prehistoric diet. Also, it is assumed that the shell halves were probably used as expedient tools in that mussel shells have sharp edges that can be used for cutting and scraping activities.

This midden also contained an adundance of carbonaceous soil mixed with scattered fire cracked and broken rocks. Prehistoric Indians used rocks in the process of cooking. When rocks are heated and cooled they fracture. The black organically rich soil was black in color to begin with. Upon being occupied by prehistoric inhabitants who were building fires, butchering and cooking meat, the soil became blacker with the addition of carbon from the wood during fires. The soil probably became greasy from the processing of meat and bone marrow extraction. However, this assumption can be demonstrated through a chemical test called immunological analysis which was not undertaken.

Hearth features were not clearly defined within the excavation area. As previously mentioned, the fire cracked and broken rock were widely scattered. This suggests that hearth features were not well defined when they were being used by the prehistoric people, or that the hearth features were kicked about during the occupation. A portion of a hearth feature was uncovered and it was recognized by a higher frequency of larger fire cracked and broken rocks surrounding a nearly complete vertebra of an ungulate. See Figure 24.

Besides burnt rocks, there were burnt stone tools. Four of the five Elko Corner Notched dartpoints revealed potlidding and fracturing from being burnt in fire. With three of the five typeable Elko Corner Notched dartpoints, the archaeologists extracted three radiocarbon samples for radiometric dating. These results are explained in section IX., Archaeological Interpretation. Besides burnt Elko Corner Notched projectile points, there were pieces of chert that had been heat treated as revealed by the waxy texture and luster of the chert.

Other stone artifacts found within the cultural midden consisted of dart and arrowpoints; projectile point tips; one steepend scraper, several utilized flake tools, and biface fragments; cobble tools and cores of basalt, and thousands of wasteflakes of various stone materials. Table 2, on page 24, provides descriptions for how the authors define the above tool types. To say the least, this was an interesting cultural midden for an archaeologist to excavate. Such archaeological sites are not common in the area of the Payette National Forest, and will likely only to be found associated with riverine environments.

III. SOIL SCIENTIST REPORT

The services of a soil scientist were requested by the Forest Archaeologist. On April 19, 1997, Dean Martens, Soil Scientist, Payette National Forest, visited the Lake Creek archaeological site and produced the following report.

During late December 1996, and early January 1997, above average temperatures in conjunction with heavy rain-on-snow precipitation occurred throughout the central Idaho mountains, triggering numerous landslide and flood events. The Lake Creek drainage, an area with very steep slopes and high gradient streams,experienced small landslide events as well as stream flows that were sufficient enough to wash out several sections of a road that parallels the stream from its mouth to the Payette National Forest boundary. The washout of the lowest section of the Lake Creek Road exposed an archaeological site approximately 1/4 mile above the confluence of Lake Creek and the Salmon River.

The archaeological site, which occurs on a very small alluvial bench at approximately 1900 feet elevation, was exposed during the January 1997 flood event that created a new channel for Lake Creek. No soil or landtype information exists for this area since the site is approximately two miles below and north of the Payette National Forest boundary. The bench itself would best fit landtype 101, alluvial land, while the steep slopes on both sides of the site should best fit the 120c-13 landtype, strongly dissected mountain slope land. Geologic maps of the area classify the geology as gneiss and schist. Similar types of flood events have occurred in the Lake Creek drainage in June of 1964, when a small dam washed out and in January of 1974 when another warm temperature rain-on-snow event occurred.

The soil profile description was taken just upstream from the lowest road blowout on the south side (west elevation) of the stream. The soils occur on gentle slopes (5 to 10%), are quite productive, and support a grass/brushwood vegetation that provides greater than 90% ground cover. Remnant domestic onion plants continue to grow on the bench, an indication of the past garden - possibly for the dwelling at the mouth of Lake Creek. Soils on the bench are deep (greater than 40 inches in depth), coarse textured, have a thin organic surface, a thin dark colored horizon below the organic layer, and a very thick dark colored horizon beginning at approximately 35 inches below the surface. Rock fragment content is low throughout the soil profile with the exception of the C1 horizon at the 10 to 25 inch depth and the Cb horizon at depths of greater than 70 inches. All horizons had pH levels between 6.3 and 6.9 and none of the horizons effervesced when tested with hydrochloric acid.

Table 1 provides further soil descriptive information pertaining to soil depths, soil color. texture, consistency, stone/rock percentage, and the pH reaction.

The very dark colored and thick horizon beginning at a depth of 35 inches is a buried horizon that marks what was once the surface of the soil. The 35 inches of material that overlies this horizon is a result of the alluvial deposits from past flood events and surface soil development since that time. The likely scenario with flood events in this steep gradient stream is that large volumes of water with high velocities downcut and moved soil, rock, and organic materials downstream. Where benches occur, the floodwaters were able to broaden their path, reduce their velocity, and deposit some of the materials they were carrying.

The size of the materials that were deposited on the bench in any one event depends on the velocity of the stream after the water reached the bench and spread out. The thickness and color of the dark buried horizon indicated a long period of soil buildup and development (thickness) that may have been influenced by carbon inputs (very dark color). This horizon has a sandy loam texture and very small mica flakes are evident throughout. The existence of this horizon correlates extremely well to the bench as the newly exposed stream bank is followed upstream.

IV. PROJECTILE POINTS AS TEMPORAL MARKERS

Thirteen typeable projectile points were recovered during the archaeological investigation of the Lake Creek site. All of these artifacts were measured, weighed, catalogued, and illustrated. All pen & ink artifacts illustrated within this report are done to scale unless noted adjacent to the illustration.

In 1970, Leonhardy and Rice proposed a cultural typology for the Lower Snake River region in southeastern Washington. The radiometric dates and associated diagnostic artifacts recovered from the Lake Creek site support this sequence as applied to west-central Idaho in the following ways:

Based upon projectile point typological similarities reported for previously described archaeological assemblages (Leonhardy & Rice 1970, Stoddard 1996), it was determined that all 13 projectile points were representative of Plateau material cultural. All of the projectile point neck widths were measured following the procedures outlined by Corliss (1972: 14-21). When compared to Corliss' Table I and V, these means fall within the acceptable parameters for Sahaptin (Plateau) groups.

Eight of the projectile points had a neck width means of .81 cm and are determined to be dartpoints. One dartpoint is a Tucannon type, one is a Northern Side Notched type, one dartpoint is a Harder type, and five are Elko Corner Notched (ECN) types. See Figures 7 & 8. Dartpoints are attached to dart foreshafts and are propelled by the atlatl. Five of the projectile points had a neck width mean of .57 cm and are determined to be arrowpoints. Four are identified as Middle Columbia Basal Notched (MCBN) arrowpoints, and one small fragment is a late period side notched arrowpoint. See Figure 9. Arrowpoints are propelled with the use of the bow. Dartpoints have been found to be much heavier than arrowpoints, which observation was born out by the weights of the recovered projectile points. The dartpoints ranged in weight from 1.10-2.14 grams with an average weight of 1.6 grams, while the arrowpoint weights ranged from 0.49-0.77 grams, with an average weight of 0.60 grams. These ranges show a clear dichotomy between the two categories of points, as the heaviest arrowpoint would need a 50% increase to approach the weight of the lightest dart point.

Of the five ECN dartpoints found in association with three radiocarbon samples, four dartpoints revealed evidence of having been burnt. Also, found in association with the above was one complete black obsidian Middle Columbia Basal Notched (MCBN), arrowpoint. This was the only complete projectile point and the only one made from obsidian recovered from the excavation.

The ECN dartpoint found in association with radiocarbon sample #1 dates to 2,090 +- 70 years before present (BP), which places it in the Harder Phase (2,500 - 700 years BP). The ECN dartpoint found with radiocarbon sample #2 dates to 2,540 +- 100 years BP, which places it at the interface with the Tucannon Phase (4,500 - 2,500 years BP) and the Harder Phase. A third ECN dartpoint associated with radiocarbon sample #3 dates to 2,925 +- 100 years BP, placing this projectile point well within the Tucannon Phase. ECN dartpoints date from 8,400 - 650 years BP (Stoddard 1996: 7-8). Figure 6, illustrates the stratigraphic placement of the ECN dartpoints in relationship to the above mentioned radiocarbon dates.

The MCBN obsidian arrowpoint that is illustrated upon the cover of this report, as well as being illustrated in Figure 9 b, is of special significance. This MCBN obsidian arrowpoint was recovered with radiocarbon sample #4, dates to 1,265 +- 100 years BP. In the process of measuring radiometric dates, the baseline date, also called "Zero Age" is 1950 AD. When subtracting 1,265 with a +- factor of 100 years from 1950 AD it equates and dates to 585 AD to 785 AD. This artifact can be placed within the Harder Phase. Also, this radiometric determination now provides the earliest date for the appearance of the use of the bow & arrow in the area of the Payette National Forest. The fact that this arrowpoint was also the heaviest weight as measured in grams, also supports the theory that this emerging technology was refined through time and that later arrowpoints become lighter in weight and smaller in size.

Table 9, on page 31, illustrates a prehistoric time line. This time line, also called a chronology, is developed to organize the archaeological traditions and phases as associated with projectile point morphological change through time. The relative ages as illustrated on the left column are derived from radiometric dates associated with certain diagnostic projectile points. This chronology is referenced from the available archaeological literature for the region of the Northern Great Basin and Columbia Plateau. This chronology has changed, and will continue to change as archaeologists gather more radiometric dates and stylized projectile points. As more data accumulates, archaeologists will have a better understanding of the prehistoric archaeology within the region. At this time, this chronology best fits how archaeologists understand the prehistoric archaeology for the area of the Payette National Forest.

V. TOOLS: LITHIC AND BONE

LITHIC TOOLS

Projectile Points

A total of thirteen typeable projectile points and five point fragments were recovered during the investigation of the Lake Creek site. The fragments are not attributable as to type because the distinctive basal portion of the tools are missing. Of the typeable projectile points, eight are considered to be dartpoints representative of four separate types, and the remaining five are classified as arrowpoints of two different types. The identification and description of each style and type and the attribution to phase or cultural group is derived from the available existing archaeological literature. Three of the dartpoints and one of the arrowpoints were found in direct association with dateable carbon deposits, providing reliable relative dates based on radiometric analysis (see Table 8). The following descriptions will ascribe the projectile points found at the Lake Creek site to the idealized point types in the literature for the region. Although range of length and width are given for each type of point, average neck width is the most meaningful measurement because only one point retained the complete original length and width, and also because it provides a reliable indication of the identity of the cultural group responsible for its manufacture (Corliss: 1972). The points will be described in the order of their appearance from the Late Archaic Period (Tucannon Phase) into the Post Archaic Period (Harder Phase), which includes the transition from reliance on the dart and atlatl to the introduction of the bow and arrow. * = incomplete dimension.

Elko Corner Notched (Figure 7)
Number of specimens: 5
Description: These are medium sized dartpoints. Although all five have broken tips and/or barbs, enough features remain to identify them as Elko Corner Notched points. Four of the five exibited evidence of potlidding and fracturing due to heat. The diagnostic features of these points are their width relative to their length, with barbs extending nearly to the base, and their expanding stems with deep, well formed corner notches. They are both planoconvex and lenticular in cross section.
Material: Cryptocrystalline silicate (4), Rhyolite (1)

Measurement Ranges:		Comparisons:
Length:	1.66 cm* - 2.73 cm*	Leonhardy and Rice 1970: Fig.9, f-j
Width:	1.30 cm* - 2.16 cm*	Warren, Sims, & Pavesic 1968: Fig. 9, n-s
Thickness:	.32 cm - .52 cm	
Neck Width:	.62 cm - .87 cm	

Northern Side Notched (Figure 8)
Number of specimens: 1
Description: This is a medium sized dartpoint. It is characterized by straight sides, squared barbs, and a concave base with symmetrical very deep side notches, resulting in an atypically narrow neck width. It is lenticular in cross section.
Material: Cryptocrystalline silicate

Measurements:		Comparisons:
Length:	2.25 cm*	Hanes 1977: Fig.3, c
Width:	1.70 cm	Heizer and Hester 1978:13, h-l
Thickness:	.32 cm	Warren, Sims, & Pavesic 1968: Fig.8, i-l
Neck Width:	.59 cm	

Tucannon (Figure 8)
Number of specimens: 1
Description: This medium sized dartpoint is characterized by slightly convex sides with distinct shoulders. The stem is squared, is slightly contracting, and has a flat base. It is planoconvex in cross section.
Material: Basalt

Measurements:		Comparisons:
Length:	2.62 cm*	Leonhardy and Rice 1970: Fig. 7, c
Width:	2.17 cm*	Warren, Wilkinson, & Pavesic 1971:Fig.5, r
Thickness:	.38 cm	
Neck Width:	1.14 cm*	

Harder (Figure 8)
Number of specimens: 1
Description: This is a small dartpoint. Diagnostic characteristics include straight sides ending in pronounced squared shoulders with a contracting stem and slightly concave base. It is lenticular in cross section.
Material: Quartz crystal

Measurements:		Comparisons:
Length:	2.21 cm*	Gaardner 1967: Fig. 8, ll,mm
Width:	2.13 cm	Warren, Sims, & Pavesic 1968: Fig.10, d-f
Thickness:	.53 cm	
Neck Width:	1.14 cm	

Small Side Notched (Figure 9e)
Number of specimens: 1
Description: This is a basal fragment of an arrowpoint. It is morphologically much like the Northern Side Notched, but is much smaller. The top portion is truncated above the neck, but the barbs are squared with a concave base and deep symmetrical side notches. It is lenticular in cross section.
Material: Cryptocrystalline silicate

Measurements:		Comparisons:
Length:	Base only*	Gaardner 1967: Fig. i-k
Width:	1.09 cm*	Leonhardy and Rice 1970: Fig. 11, g-i
Thickness:	.23 cm*	
Neck Width:	.49 cm	

Middle Columbia Basal Notched (Figure 9a-d)
Number of specimens: 4
Description: These are medium to small sized arrowpoints, characterized by concave sides and long barbs which extend to or past the slightly expanding stem. The notches are relatively deep, and the points are both planoconvex and lenticular in cross section. These type of points are diagnostic of Plateau influence in the Post-Archaic period through the Late Prehistoric periods.
Materials: Basalt (2), Obsidian (1), and Cryptocrystalline (1)

Measurement Ranges:		Comparisons:
Length:	1.33 cm* - 2.51 cm	Gaardner 1967: Fig.8, e-h
Width:	1.20 cm* - 2.05 cm	Leonhardy and Rice 1970: Fig.9, a-e
Thickness:	.26 cm - .36 cm	
Neck Width:	.52 cm - .72 cm	

Unclassifiable Projectile Point Fragments (Figure 10)
Number of specimens: 5
Description: Undiagnostic projectile point fragments included four tips and one barb.
Materials: Cryptocrystalline silicate (3), Rhyolite (2)
Measurements: Not available due to fragmentation of the artifacts.

Other Tools

Additional tools recovered from the excavation of the Lake Creek site included a steepend scraper, 5 biface fragments, 22 utilized flake tools, 3 cobble tools, 2 cores, and a bone awl fragment. The presence of these tools supports the supposition that the site was used for a variety of activities, including weapons maintenance, food processing and preparation, and possibly clothing manufacture. The description of these items is as follows:

Steepend Scraper (Figure 12e)
Number of specimens: 1
Description: This tool was manufactured from a tabular piece of high quality cream colored chert. The ventral surface reveals the bedding plane with a granulated textured surface. The dorsal surface is convex. The distal end is unifacially flaked with a steep edge angle. The proximal end terminates in a point.
Material: Cryptocrystalline silicate
Length: 22.0 mm
Width: 20.5 mm
Thickness: 8.4 mm

Biface Fragments (Figure 11)
Number of specimens: 5
Description: These artifacts are broken, fragmented, bifacially flaked tools.
Materials: Basalt (3), Cryptocrystalline silicate (1), Quartz (1)
Measurement Ranges:
Length: 22.4 mm - 23.8 mm
Width: 8.4 mm - 41.5 mm
Thickness: 3.9 mm - 10.4 mm

Utilized Flake Tools (Figure 12-16)
Number of Specimens: 22
Description: Utilized flake tools are irregularly shaped small flakes. They are made from various types of lithics which have the diagnostic indicator of a one-sided, chipped, worked edge (uniface). This tooled edge is frequently uniform. Some edges are so finely rendered that a magnifying glass is required to recognize it as a flake tool. These tools are not always described in archaeological reports because they are subtle, small, and are often lumped in a generic category of chipped stone. These special micro tools represent a distinct, specialized tool category. Flake tools fit comfortably between the thumb and two fingers. They are used to flesh and cut up small game and fish, and to cut open fruits and vegetables. Four of the recovered flake tools are made from core surface material, and two of the tools are potlidded from heat.
Materials: Cryptocrystalline silicates (9), Rhyolite (6), Quartz (4), and Basalt (3).
Measurement Ranges:
Length: 23.9 mm - 43.8 mm
Width: 12.2 mm - 27.9 mm
Thickness: 3.2 mm - 9.8 mm

Cobble Tools (Figures 17-19)
Number of specimens: 3
Description: Cobble tools are culturally modified water worn rocks that have been percussion flaked on one end. The opposite end is unmodified to be held in the hand. These tools are bifacially flaked in the sharpening process. Archaeologists sometimes call these tools "choppers".
Material: Basalt
Measurement Ranges:

Length:	8.5 cm - 10.7 cm
Width:	6.8 cm - 8.4 cm
Thickness:	3.0 cm - 5.4 cm

Cores (Figures 20-21)
Number of specimens: 2
Description: These are water worn river cobbles selected by the prehistoric flintknapper during the percussion flaking process for making stone tools. Both cores exhibit cortex, striking platform, and percussion bulb scars.
Material: Basalt
Measurement Ranges:

Length:	7.9 cm - 10.1 cm
Width:	7.1 cm - 8.4 cm
Thickness:	5.8 cm - 6.0 cm

Bone Awl Fragment (Figure 16d)
Number of specimens: 1
Description: This single artifact represents a portion of a bone awl. It is made from a solid fragment of long bone that was burnt to a black color and was burnished. When looking closely at this artifact with a 10x lens, elongated striations with flat facets can be seen. The very tip of the awl is broken off. This was the only bone tool found in the excavation. It probably survived the centuries because it was burnt and fire hardened.
Material: Mammalian long bone

Length:	17.9 mm
Width:	5.6 mm
Thickness:	4.7 mm

VI. CHIPPED STONE CULTURAL MATERIAL

Like the majority of prehistoric archaeological sites within North America, chipped stone debitage produced during the process of making stone tools was the predominant artifact type recovered at the Lake Creek site. This debitage consisted of unmodified chipped stone flakes, flake fragments, and shatter. A wide range of lithic material types were identified within the chipped-stone assemblages. Material types were identified on the basis of color, grain size and translucency. Texture and mineral composition were identified only to the extent possible with a hand-held magnifying lens.

The landscape in the area of the Lake Creek archaeological site consists of a mixture of igneous and metamorphic rocks. Metamorphic rocks such as schist; and minerals such as quartz; and cryptocrystalline silicates (CCS) such as agate; jasper, and flint, and volcanic rocks such as basalt, and rhyolite can be found within the drainages and on the gravel bars along the Salmon River.

High-quality raw lithic materials for producing stone tools were selected by prehistoric people and reduced at the Lake Creek site. Types of lithic materials used at the site consisted of cryptocrystalline silicates (CCS), basalt, rhyolite, obsidian, quartzite, and quartz crystal. Table 3 presents the average percentage of chipped stone material types recovered from Test Unit B5. Table 4 presents wasteflake lithic material types recovered from each culture-bearing, 10 centimeter excavation level. Table 5 presents wasteflake reduction types produced during stone tool maintenance and manufacture in percentages.

Water worn cobbles of basalt were the only large cores found at the site. Core forms consisted of two types; multidirectional and bipolar. Unidirectional cores were not found. For a definition of the above mentioned core types, and for the types of stone artifacts found at the Lake Creek site, see Table 2.

Black semitranslucent obsidian, quartzite and, quartz crystal were found in less frequency when compared to CCS, basalt and rhyolite. This suggests that obsidian, quartzite and quartz crystal were not as abundant and/or not as desired in the manufacture of stone tools.

With the exception of one Harder Phase basal stemmed obsidian arrowpoint, all of the remaining obsidian artifacts consisted of tertiary wasteflakes. Tertiary wasteflakes are the smallest reduction unit produced during stone tool manufacture and maintenance. Obsidian is not locally found in the Salmon River Canyon, nor anywhere else on the Payette National Forest. Obsidian, a selected and valued lithic material, was carried to the Lake Creek site by prehistoric Indians from two different sources. The following section explains the scientific process by which chemists can trace an obsidian artifact to its source.

VII. OBSIDIAN SOURCING ANALYSIS

Three obsidian specimens were sent to the Geochemical Research Laboratory in Portola, California, for artifact-to-source, geochemical type, x-ray fluorscence (xrf) analysis. The three obsidian specimens were selected for geochemical analysis based upon visual differences. Xrf data indicated that two obsidian flakes have the same trace element composition as geologic obsidians of Timber Butte, Idaho, geochemical type (Hughes 1997:2). The other specimen has a trace element profile unlike any of the geological samples held in Hughes database file. Hughes goes on to say...

> "This latter sample is superfically similar in trace element composition to samples from Timber Butte, but differs in having ca. 40-50 ppm less rubidium (Rb), ca.20-30 ppm more strontium (Sr), ca. 25-40 ppm more zirconium (Zr), and ca. 20 ppm less niobium (Nb), than rocks from Timber Butte. I have previously identified this unknown variety of obsidian at a site on the Wallowa - Whitman National Forest (Hughes 1993), the Pittsburg Landing site in Hells Canyon (Hughes 1994b) and site 35BA277, Baker County, Oregon (Hughes 1994c and 1997-37.

Kingsbury selected the three obsidian flakes for xrf analysis based upon visual inspection and relying on experience in descriminating differences based upon color and texture. For example, the two semi-translucent, black smokey colored obsidian originated from the Timber Butte source. The third obsidian flake was different than the first two in that it was jet black, nearly opaque, with the exception that the margins were semi-translucent in direct sunlight. This third piece originated from the area of the Baker County, Oregon.

Obsidian does not naturally occur in the geology on the Payette National Forest (PNF). When obsidian is found on the PNF, it was carried into the area by prehistoric Native Americans from sources located elsewhere. Since 1979, PNF archaeologists have had an interest in learning more about prehistoric transhumance within the area of the PNF. Forest Archaeologists have collected, and have had analyzed a total of 144 obsidian artifacts from 28 archaeological sites and 6 isolated finds, along with 11 obsidian artifacts from 11 sites in the area of the Middle Fork of the Salmon. The results to date reflect that nearly 91% of the obsidian artifacts found on the PNF are derived from the Timber Butte source. The secondary source area, representing 7% is located somewhere in the Wallowa Mountains of eastern Oregon. The remaining 2% samples were sourced to the Yellowstone Plateau area.

The Lake Creek site has obsidian sourced from Timber Butte, located near Gardena, Idaho. The distance from the Lake Creek site to the Timber Butte source is approximately 118 linear miles to the south. The distance from the Lake Creek site to the Wallowa Mountains is approximately 50 linear miles to the west.

The linear distance as measured from artifact-to-source is actually greater when considering that there are natural geographical barriers and obstacles preventing linear travel. For example, the area between the Wallowa Mountains source in eastern Oregon includes such physiographic features as Hell's Canyon, the Snake River and north to south trending mountain ranges. A route from the Lake Creek site to the Timber Butte obsidian source can be accessed by travelling through the north to south river valleys where there are few geographical barriers.

At the Lake Creek site, an interesting archaeological observation was made. The recovered obsidian tool kit consisted of only one obsidian arrowpoint. All other obsidian artifacts consisted only of small tertiary wasteflakes. it appears that by the time the prehistoric people reached the Lake Creek site, their supply of obsidian was nearly used up. The tertiary wasteflakes reflect obsidian tool maintenance, and tool sharpening. The single obsidian arrowpoint, and associated debitage at the site suggests that the prehistoric people curated, and thoroughly used their obsidian to exhaustion. Therefore, there was a greater reliance on other more abundant lithic materials such as cryptocrystalline silicates, basalt, and rhyolite.

VIII. VERTEBRATE REMAINS AND THE PREHISTORIC DIET

Jenny Waters is an Archaeofaunal Analyst in Tucson, Arizona who was previously employed as an archaeological technician on the Payette National Forest. At the request of Kingsbury, Waters compared nine vertebrate teeth specimens with the comparative collection located at the Western Archaeological and Conservation Center (WACC), Arizona State Museum, University of Arizona, Tucson. The samples consisted of eight individual artiodactyl teeth and one canid mandible fragment containing the first and second premolars. The taxa identified included bighorn sheep (Ovis canadensis), deer (Odocoileus sp.), and possible wolf (Canis cf. lupus). For illustrations of these teeth see Figures 22 and 23.

The WACC collection does not contain any wolf cranial specimens, so Waters was unable to positively identify the possible wolf mandible fragment. However, because the specimen is morphologically similar to, and much larger than the several coyote (Canis latrans) mandibles examined, it is likely that it is from a wolf. The deer molar was too fragmentary to allow for identification as to species. Table 6 lists the identified vertebrate teeth according to provenience, taxon, element, and side of the dentition for the tooth placement.

Nearly all of the remaining bone fragments, other than teeth, recovered during archaeological excavation exhibit evidence of having been broken and reduced in size. The archaeologists believe that the bones were being reduced for the extraction of bone marrow. Bone marrow is the soft vascular connective tissue that occurs within the cavities and cancellous part of most bones. Marrow is high in fat and protein and was used as a food resource. The majority of bone consisted of fragmented small pieces recognized only as bone fragments. Some of these bone fragments had been heated to the extent that they appeared to be burnt. Only one piece of bone, out of several hundred pieces, appeared to have been modified for use as a piercing tool identified as "awl" fragment. Figure 16 d illustrates this bone tool fragment.

During excavation, a portion of a prehistoric hearth was uncovered. This hearth contained a cluster of fire broken rock, greasy black soil with a nearly complete ungulate vertebra illustrated within Figure 24. During excavation when a large piece of bone was uncovered and exposed to air, the bone dried rapidly and it fragmented into smaller pieces. Since all of the recovered bones were too fragile, it was decided that measuring bone weight was more important that quantifying it by counting pieces. These results are presented in Table 7, page 29.

Based upon the above faunal identification, we can assume that the prehistoric hunters were eating bighorn sheep, deer, and maybe wolf. No fish remains were recovered, although Lake Creek is a tributary to the Salmon River and therefore was a salmon fishery. The mussel shell remains suggest that freshwater mussels may have been part of the diet. No grinding stones were found and therefore it appears that plant foods were being processed elsewhere.

IX. ARCHAEOLOGICAL INTERPRETATION

The analysis of the recovered cultural material from the Lake Creek site revealed that this locus represents a multi-component, stratified prehistoric archaeological site, identified as a seasonal or permanent campsite, used repeatedly during about a 1,660 year period. Several activities have taken place at this campsite, supported by the range of tool types and other cultural debris dispersed throughout the midden. One of these activities pertain to the procurement, preparation, and cooking of red meat, which was available year round in the Salmon River drainage.

Dartpoints and arrowpoints are part of the tool kit used for the procurement of fauna. Faunal remains of identified species included bighorn sheep, deer and one specimen of canid; possibly wolf. The identified fauna at this site demonstrates a reliance on hunting and procuring of ungulates such as bighorn sheep and deer. Burnt and unburnt bone fragments suggest cooking and bone marrow extraction. The greasy black soil is also evidence of this activity.

Mussel shell fragments scattered throughout the archaeological midden suggest another prehistoric activity: the gathering and utilization of freshwater mussels. Freshwater mussels are a food resource. The site's setting within the riverine environment suggests that the prehistoric people were using protein resources from the streams. Also, the bivalve shells were probably being used as tools.

The stone chipping debris reveals that stone tool manufacture and maintenance was taking place. Special lithic items such as obsidian show that there was a preference for this material. The distance from which the obsidian was derived can suggest travel distances from 50 to 118 miles to the two identified sources. The potential for trade in acquiring this resource is a possibility.

The four radiometric dates suggest that this multi-component site was used during a minimum of four events ranging in time from 1,265 +- 100 years to 2,925 +- 100 years before present, or from circa 975 BC to 685 AD. The radiometric date of 2,925 +- 100 years is presently the oldest radiometric date associated with culture in the area of the Payette National Forest.

Some time around circa 600 AD the bow and arrow appears in the North America. The presence of dartpoints and arrowpoints suggest a technological period of transition around 1,265 +- 100 years BP, or circa 685 AD, give or take 100 years. This radiometric date is the earliest date for an arrowpoint being dated on the area of the Payette National Forest. Sometime around 685 AD, the reliance on the dart and atlatl may have changed to the use of the bow and arrow.

The southern boundary of Plateau influence and the northern extent of Great Basin expansion has long been the subject of controversy (Swanson 1968; Butler 1978). The present archaeological investigation at the Lake Creek site has helped to define these ancient settlement patterns during the above indicated period of time. When coupled with other recent excavation results at the rockshelter site 10VY1580 (Winfrey et al. 1993), and at the Indian Creek site, 10VY492, both on the South Fork of the Salmon River, (Kingsbury et al. 1994), a clearer pattern begins to emerge.

From the information now available, it would appear that Plateau influence was dominant south to the Salmon River and east to the South Fork of the Salmon River, where it intermingled with Northern Shoshone culture at least 450 years ago. The presence of Great Basin diagnostic projectile points and pottery at Indian Creek defines a point of northern expansion for the Utoaztecan speakers. Since similar artifacts have been found along Big Creek and east to the Middle Fork of the Salmon River, this territory can be tentatively referred to as Northern Shoshone from at least 450 years BP through the end of the 19th century. Since the excavated sites from the South Fork west and north along the Salmon River yielded Plateau style artifacts and greater time depths, these areas can be confidently ascribed to Nez Perce groups including their forefathers. Results of the current archaeolgical investigation at the Lake Creek site supports this concept.

The authors agree that the Lake Creek archaeological site contains evidence of both Western Archaic Tradition and Post-Archaic Period settlement. The Archaic Period is a continent-wide archaeological manifestation. Radiometric results from this site reveal a repeated occupation within a 1,660 year period between circa 685 AD and 975 BC, give or take 100 years. The stratigraphy at this site was clear, with diagnostic artifacts recovered in dateable context, demonstrated by scientific means, and revealed an important discovery.

Hunters and gatherers travel according to a subsistence cycle in searching for food resources when they become available. We can assume that the fisheries of the Salmon River were an important seasonal food resource. However, no fishing evidence was found at the Lake Creek site. What is clearly obvious is that the prehistoric people at the Lake Creek site were procuring and processing red meat, which was available throughout the year in the Salmon River drainage, even during periods when the surrounding mountains were inaccessible.

In the area of and adjacent to the Payette National Forest, the Lake Creek archaeological site is the first Western Archaic Tradition/Post-Archaic Period site containing both dart and arrowpoints confirmed by radiometric dating.

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TABLE 1

Soil Description
By Dean Martens - Soil Scientist

Parent Rock:	Gneiss & schist
Surface Stone and Rock:	0 to 10%
Landform:	Alluvium
Slope:	5 to 10%
Aspect:	Northeast
Elevation:	1880 feet above sea level
Erosion:	Very low
Litter Type:	Twigs and grasses
Inflation:	Rapid
Water Table:	Greater than 10 feet

Horizon	**Depth** (inches)	**Color**	**Texture**	**Consistence**	**Stone/Rock%**	**ph Reaction**
0	1/2 - 0	Surface area covered with grasses and introduced cultigens				
A	0 - 6	10YR3/2	Sandy loam	Fiable	< 5%	6.3
B	6 - 10	10YR4/3	Fine sandy clay loam	Firm	< 5%	6.4
C 1	10 - 25	10YR4/4	Sandy loam	Friable	30 - 40%	6.5
C 2	25 - 35	10YR4/4	Loamy sand	Friable	< 10%	6.5
A b	35 - 70	10YR2/1	Sandy loam	Friable	< 5%	6.4
C b	70%+	10YR4/3	Coarse Sand		50%+	6.9

TABLE 2

Types of Stone Artifacts Found at the Lake Creek site

TOOLS

Projectile Points: are pointed stone tips placed upon dart foreshafts, arrows, and spears.

Bifaces: are tools exhibiting continous bifacial flake removal, lenticular in cross sections, and oval, triangular, or leaf shaped in outline.

Gravers/Perforators: are fragments exhibiting a pronounced bifacially flaked projection. A bone or stone awl is a perforator.

Utilized Flake Tool/Retouched Implements: are flakes or flake fragments exhibiting microscopically chipped edges where tiny pressure flakes were removed along one or more margins. Sometimes these tools exhibit unifacially and/or bifacially pressured flaked margins.

Scrapers: are flakes or pieces of lithic material exhibiting even and continous unifacial retouch producing a steep angled edge along one or more margins. The majority of these tools are convex on the proximal and concave on the distal along the margin with the sharpened edge.

Cobble Tools: are made by percussion flaking a river cobble, and sharpening one end, leaving the unmodified end to be held by the hand. These tools can be either unifacially or bifacially flaked in the sharpening process. These types of tools are also called hand choppers. In the Old World that are called hand axes

Bipolar Cores: exhibit bulbs of force or battering at both ends of the core. Bipolar cores also may exhibit flake scars at both ends as a result of striking areas at both ends of the nodule or pebble.

Multidirectional Cores: are prepared cobbles or large flakes exhibiting flake removal in more than one direction.

Unidirectional Cores: are prepared cobbles or large flakes exhibiting flake removal in one direction.

ADDITIONAL LITHIC ARTIFACTS

Wasteflakes: are produced during the process of stone tool manufacture and are also referred to as debitage. These unmodified flakes exhibit interior and exterior surfaces of the parent stone, have a striking platform and a bulb of force at the proximal end, and have both lateral and terminal edges. Flake fragments lack one or more of these attributes.

Shatter: are pieces of chipped stone which cannot be oriented in terms of interior or exterior surfaces and lack identifiable points of impact, and lateral margins. Shatter can be angular, rectangular and chunky in shape.

TABLE 3

Average Percentage of Chipped Stone Material Types at 10IH2561/PY-1331
(From Test Unit B5 only)

Lithic Material Types	Numbers of Wasteflakes	Percentages
Cryptocrystalline silicates (CCS)	1340	79.5
Basalt	187	11.1
Rhyolite	83	4.9
Obsidian	45	2.7
Quartzite	22	1.3
Quartz crystal (all specimens are shatter)	8	0.5
Other		
Total	1685	100%

TABLE 4

Wasteflake Reduction Sequence Types in Percentages by Excavated Levels
(From Test Unit B5)

Level	Total Wasteflakes	Primary	Secondary	Tertiary	Shatter
	Number # & Percent %		# %	# %	# %
30 - 40	1	0	0	1/100%	
40 - 50	199	1 (0.5%)	33 (16.6%)	165 (82.9%)	
50 - 60	440	5 (1.1%)	41 (9.3%)	386 (87.7%)	8 (1.8%)
60 - 70	695	13 (1.9%)	44 (6.3%)	638 (91.8%)	
70 - 80	257	3 (1.2%)	25 (9.7%)	229 (89.1%)	
80 - 90	43	0	10 (23.2%)	33 (76.7%)	
90 - 100	42	0	3 (7.1%)	39 (92.9%)	
100 - 110	8	0	0	8 (100%)	
Total	1685	22 (1.3%)	156 (9.2%)	149 (89%)	8 (0.5%)

TABLE 5

Wasteflake Lithic Material Types Produced During Stone Tool Maintenance, and Manufacture from Test Unit B5.

Total Number & %		Obsidian	Quartz	Basalt	CCS	Rhyolite	Crystal
30 - 40	1/100%	0	0	0	1/100%	0	0
40 - 50	199	6 (3%)	8 (4%)	43 (21.6%)	141 (70.9)	1 (05%)	0
50 - 60	440	3 (0.7%)	5 (1.1%)	40 (9.1%)	354 (80.5%)	30 (6.8%)	8 (1.8%)
60 - 70	695	7 (1%)	2 (0.3%)	59 (8.5%)	591 (85%)	36 (5.2%)	0
70 - 80	257	11 (4.3%)	7 (2.7%)	36 (14%)	192 (74.7)	11 (4.3%)	0
80 - 90	43	10 (23.3%)	0	3 (7%)	27 (62.8%)	3 (7%)	0
90 - 100	42	8 (19%)	0	5 (11.9%)	29 (69%)	0	0
100 - 110	8	0	0	1 (12.5%)	5 (62.5%)	2 (25%)	0
Total	1685	45 (2.7%)	22 (1.3%)	187 (11.1%)	1340 (79.5%)	83 (4.9%)	8(0.5%)

TABLE 6

Identified Vertebrate Remains

Provenience	Taxon	Element*	Side
Test Unit B5 40 - 50 cm below surface (BS)	Deer (Odocoileus sp.)	Upper M2	Left
Test Unit B5 40 - 50 cm BS	Bighorn Sheep (Ovis canadensis)	Lower P4, M1 (same individual)	Left
Test Unit B5 56 cm BS	Bighorn Sheep	Upper M3	Right
Test Unit B5 50 - 60 cm BS	Wolf? (Canis cf. lupus)	Mandible with lower P1, P2	Right
Test Unit B4 45 cm BS	Bighorn Sheep	Upper P4	Left
Isolate, exposed from erosion	Bighorn Sheep	Lower M2	Right
Isolate 15 cm NE of Datum A	Bighorn Sheep	Lower M3	Right

*P = premolar, M = molar

TABLE 7

Fragmented Bone Weight From Test Unit B5 by Excavated Level

Level centimeters (cm) below surface (bs)	Weight in Grams (gms)	
0 - 40 cm bs	.0	
40 - 50 cm bs	28.4 gms	
50 - 60 cm bs	185.9 gms	
60 - 70 cm bs	215.6 gms	
70 - 80 cm bs	48.7 gms	
80 - 90 cm bs	6.5 gms	(26.0) gms *
90 - 100 cm bs	1.5 gms	(6.0) gms *
100 - 110 cm bs	0.2 gms	(0.8) gms *

* Weights in parentheses are extrapolated from the actual weight because only the southwest 1/4 was excavated within the 1 X 1 meter Test Unit B5.

TABLE 8

Radiometric Dating Results Processed by the Radiocarbon Dating Laboratory, Department of Geology, Washington State University (WSU), Pullman, Washington

WSU Number #	Sample ID#	Carbon 14 Age Years Before Present (BP)
4968	#1	2,090 +- 70 years BP
4969	#2	2,540 +- 100 years BP
4970	#3	2,925 +- 100 years BP
4971	#4	1,265 +- 100 years BP

TABLE 9

Prehistoric Time Line Chronology for the Payette National Forest, Idaho
Based Upon Projectile Point Change and Radiometric Dating Through Time

Relative Age Before Present (BP)	Phase and/or Tradition
11,500 - 10,000 years BP	Llano Tradition Clovis
11,000 - 8,000 years BP	Plano Tradition Alberta (Cody Complex) Eden (Cody Comples) Haskett
10,000 - 8,000 BP	Windust
9,000 - 6,000 BP	Cascade (Cold Springs subphase)
8,400 - 650 BP	Elko Series Side Notch Corner Notch Eared
7,845 - 2,250 BP	Humboldt Series Basal Notch
7,400 - 1,000 BP	Northern Side Notch
5,700 - 2,650 BP	Pinto Series
4,500 - 2,500 BP	Tucannon
2,500 - 700 BP	Harder
1,500 - 100 BP	Wallula
1,500 - 100 BP	Middle Columbia Basal Notch
1,500 - 500 BP	Rose Spring (Rosegate)
1,500 - 500 BP	Eastgate Expanding Stem
700 - 100 BP	Desert Side Notch (Sierra Type)
500 - 100 BP	Cottonwood Triangular

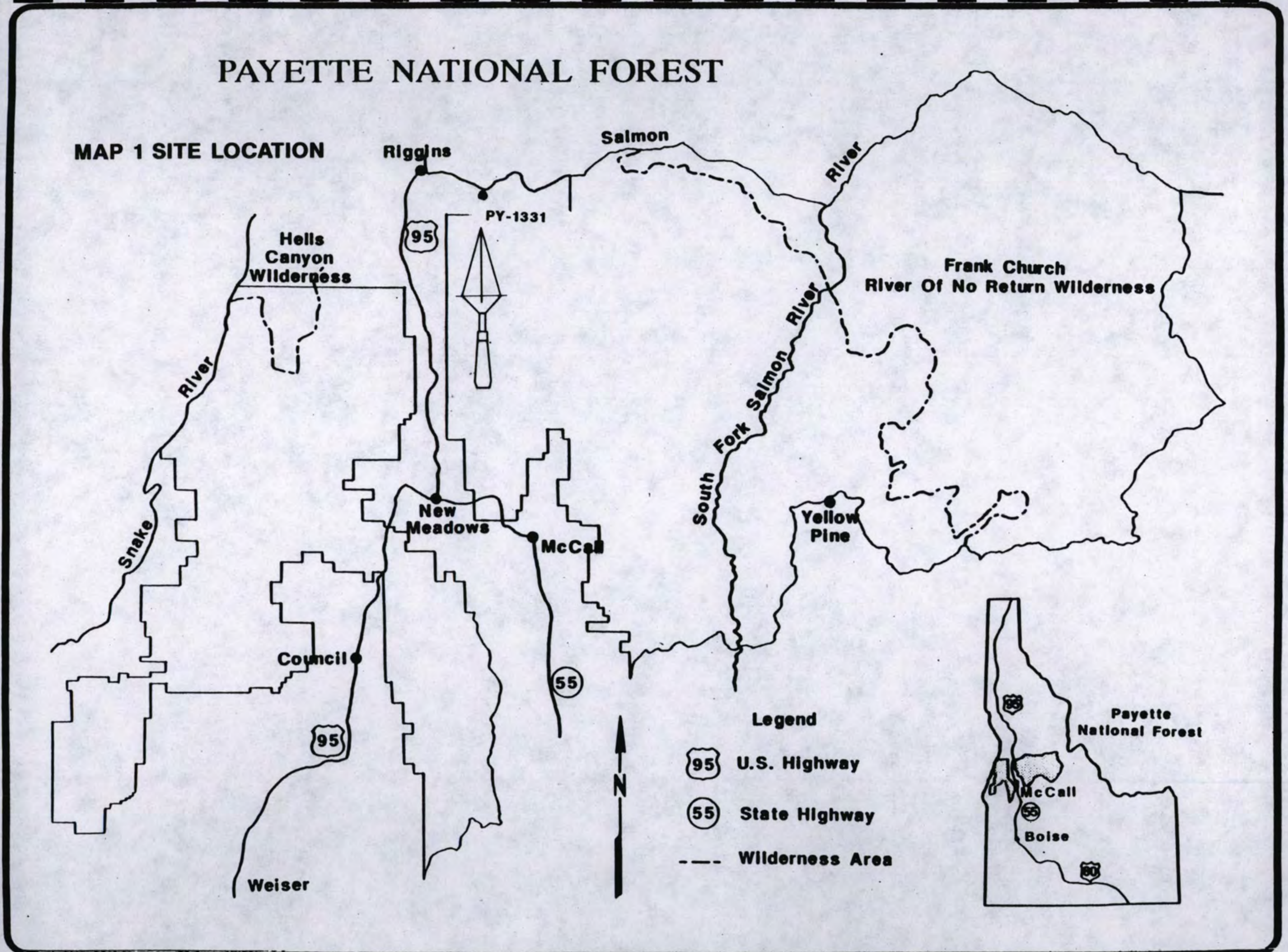


Figure 1. Map of the Payette National Forest, Idaho.

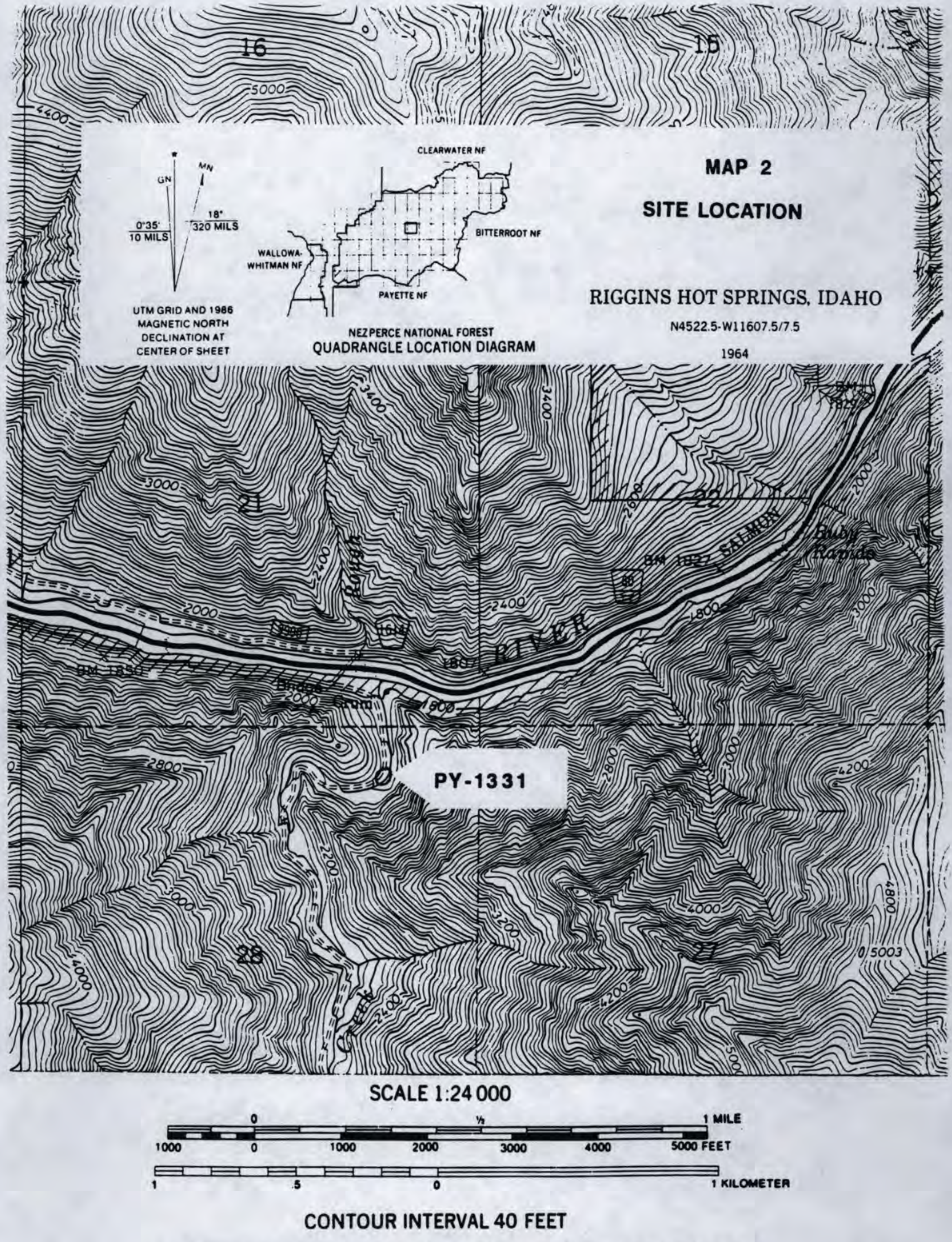


Figure 2. Location of flood damaged archaeological site.

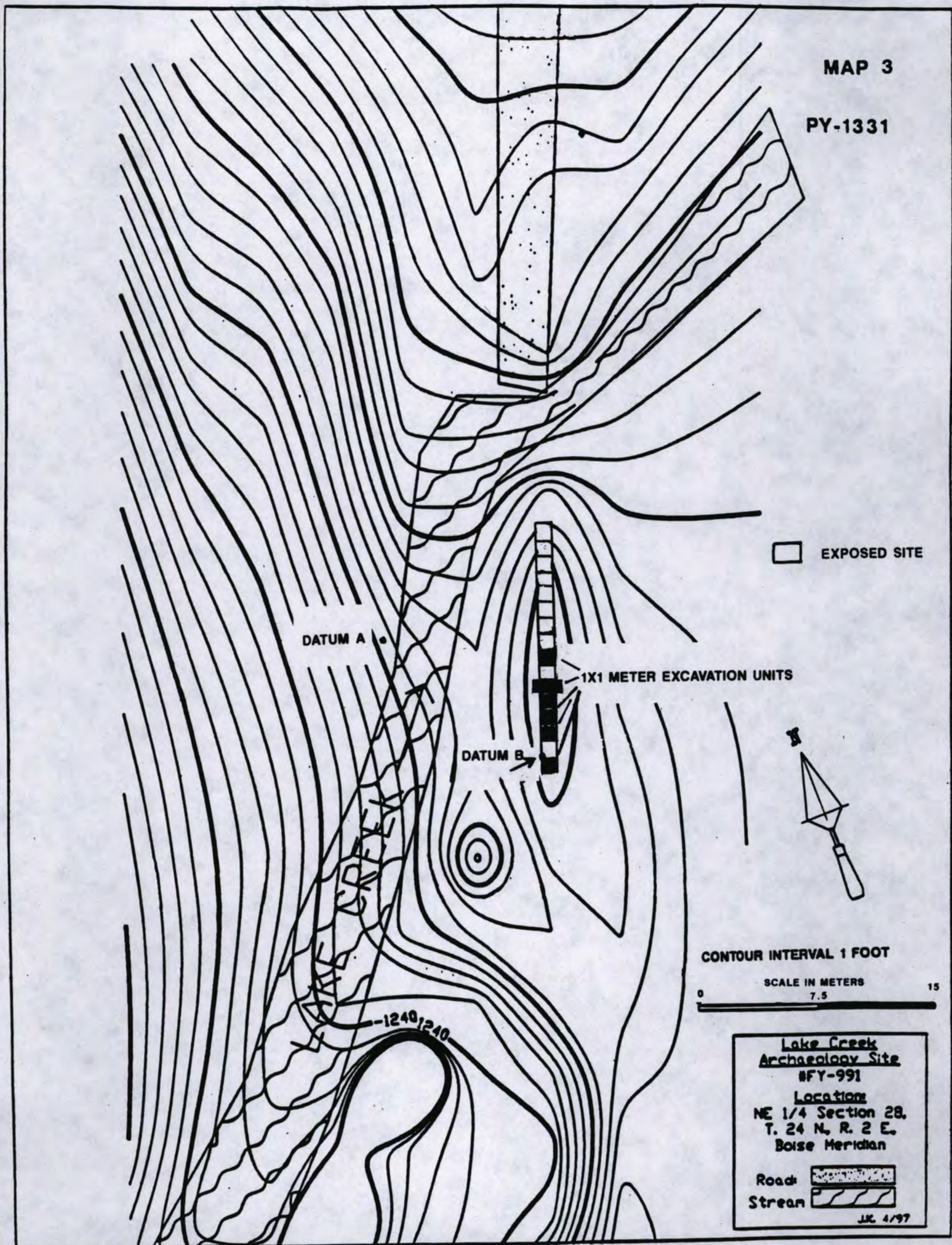


Figure 3. Excavated test units at PY-1331.

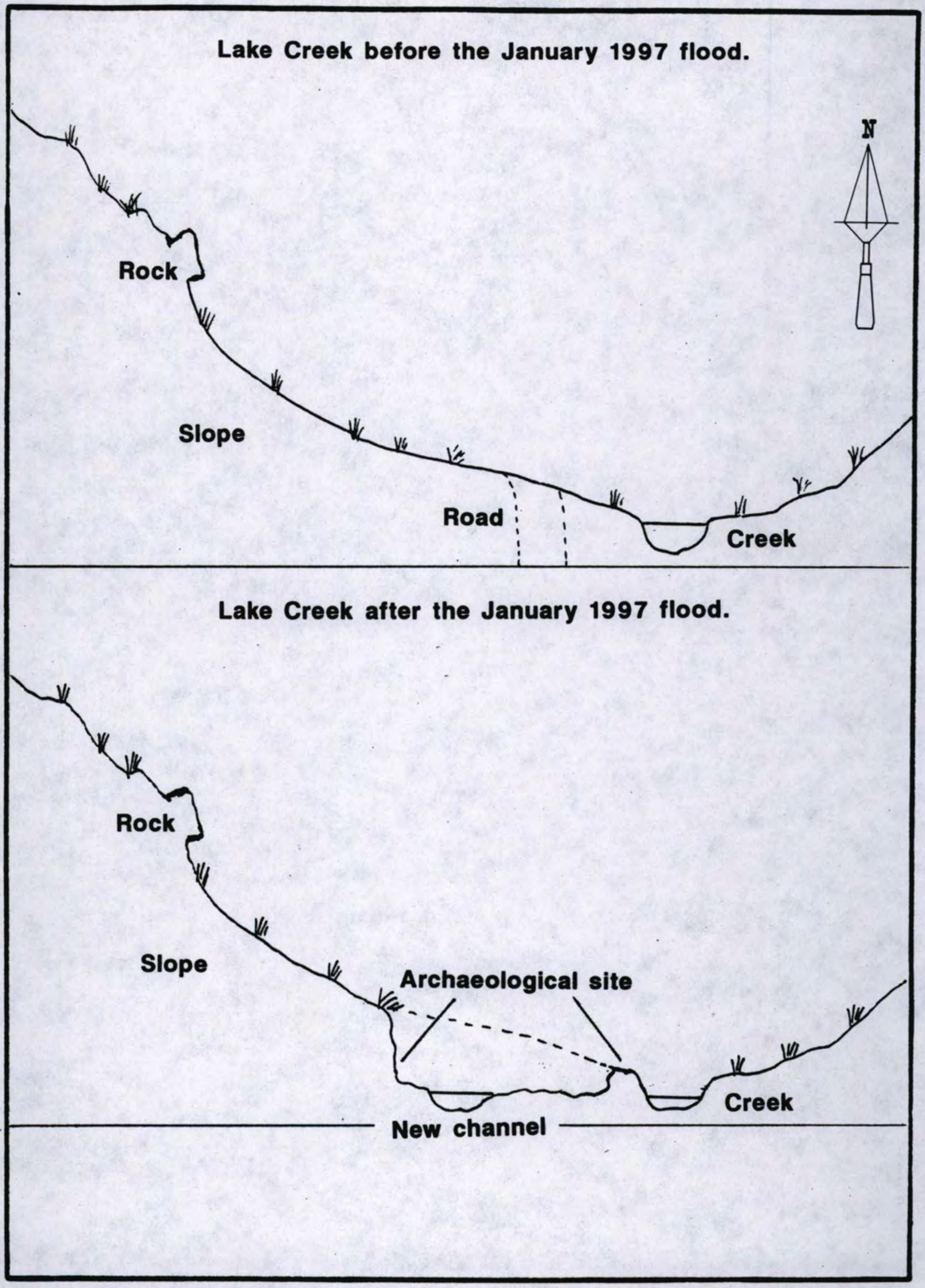


Figure 4. Before and after topographic cross section of Lake Creek.

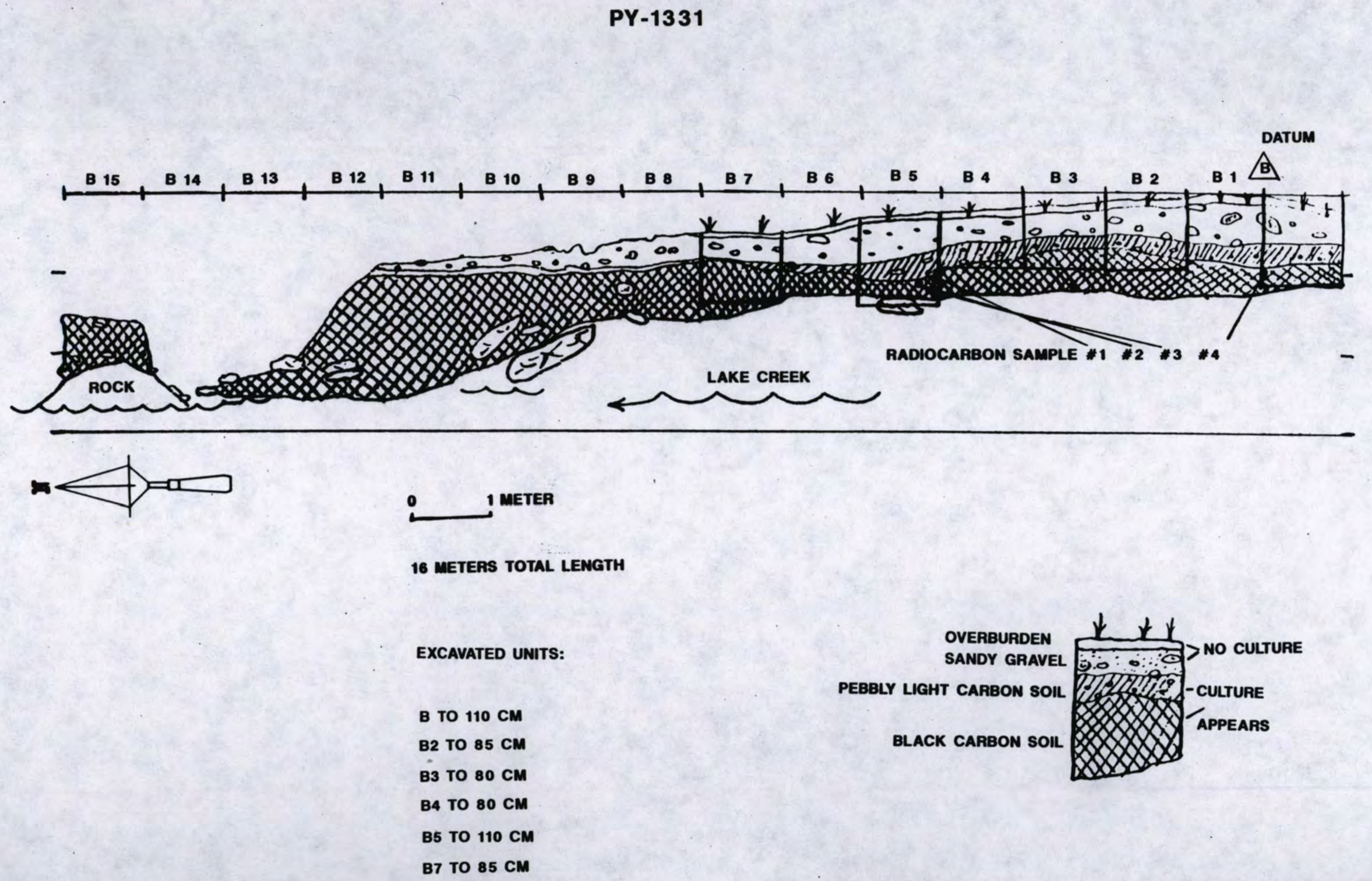
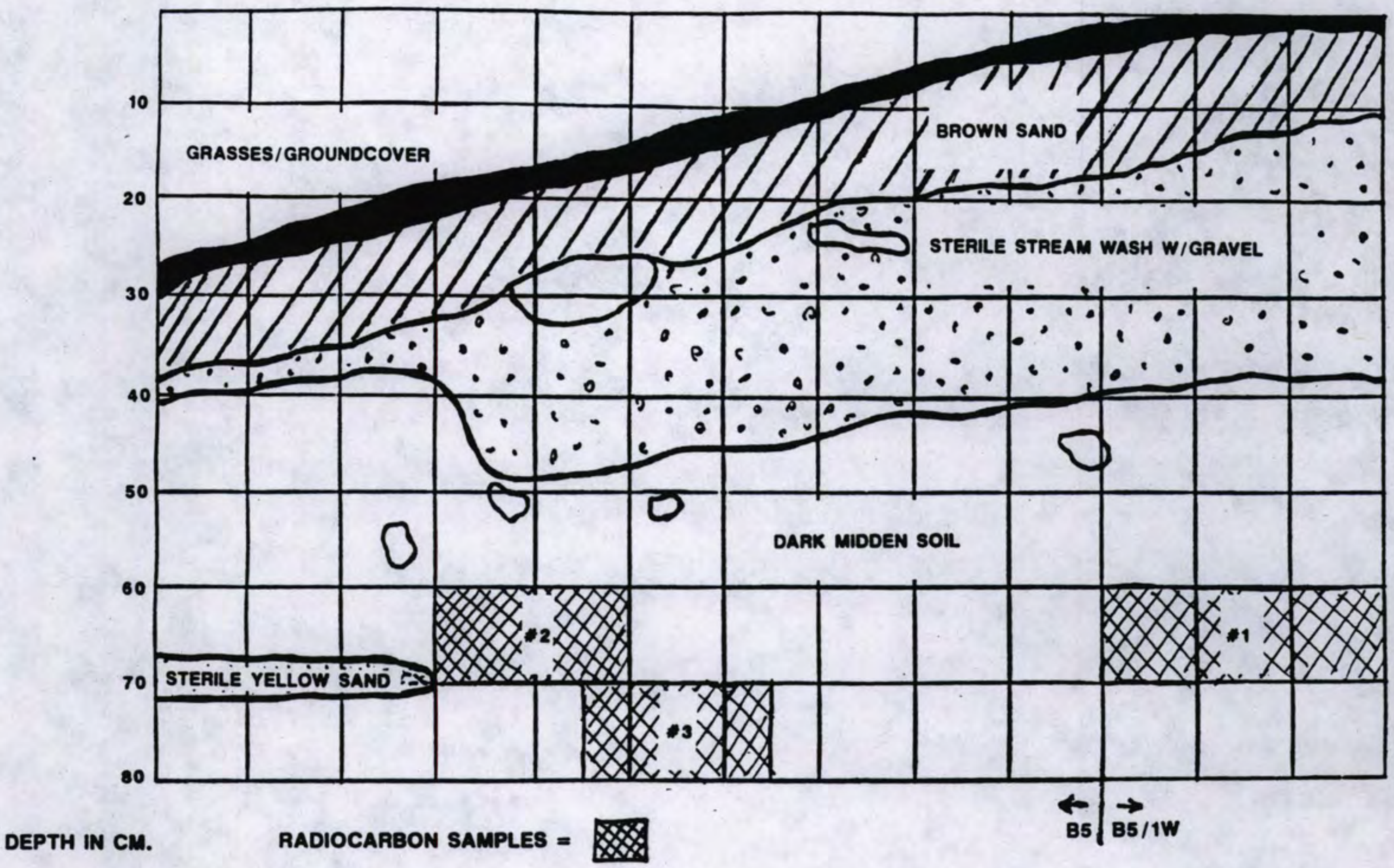


Figure 5. Soil profile of the east elevation.

RADIOCARBON SAMPLE LOCATIONS FROM UNITS B5 & B5/1W



ECN PROJECTILE POINTS FOUND IN ASSOCIATION (NOT TO SCALE)

RELATIVE AGE IN YEARS B.P.

RADIOCARBON SAMPLE #1 (WSU #4968) 2,090 ±70

RADIOCARBON SAMPLE #2 (WSU #4969) 2,540 ±100

RADIOCARBON SAMPLE #3 (WSU #4970) 2,925 ±100

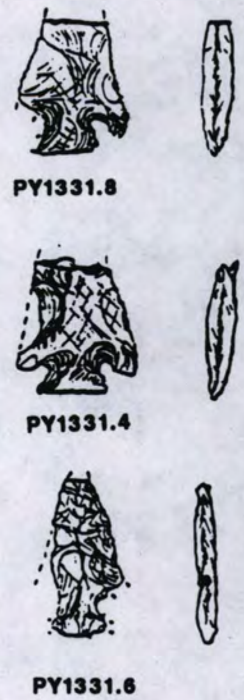


Figure 6. Soil profile exhibiting radiocarbon loci, east elevation.

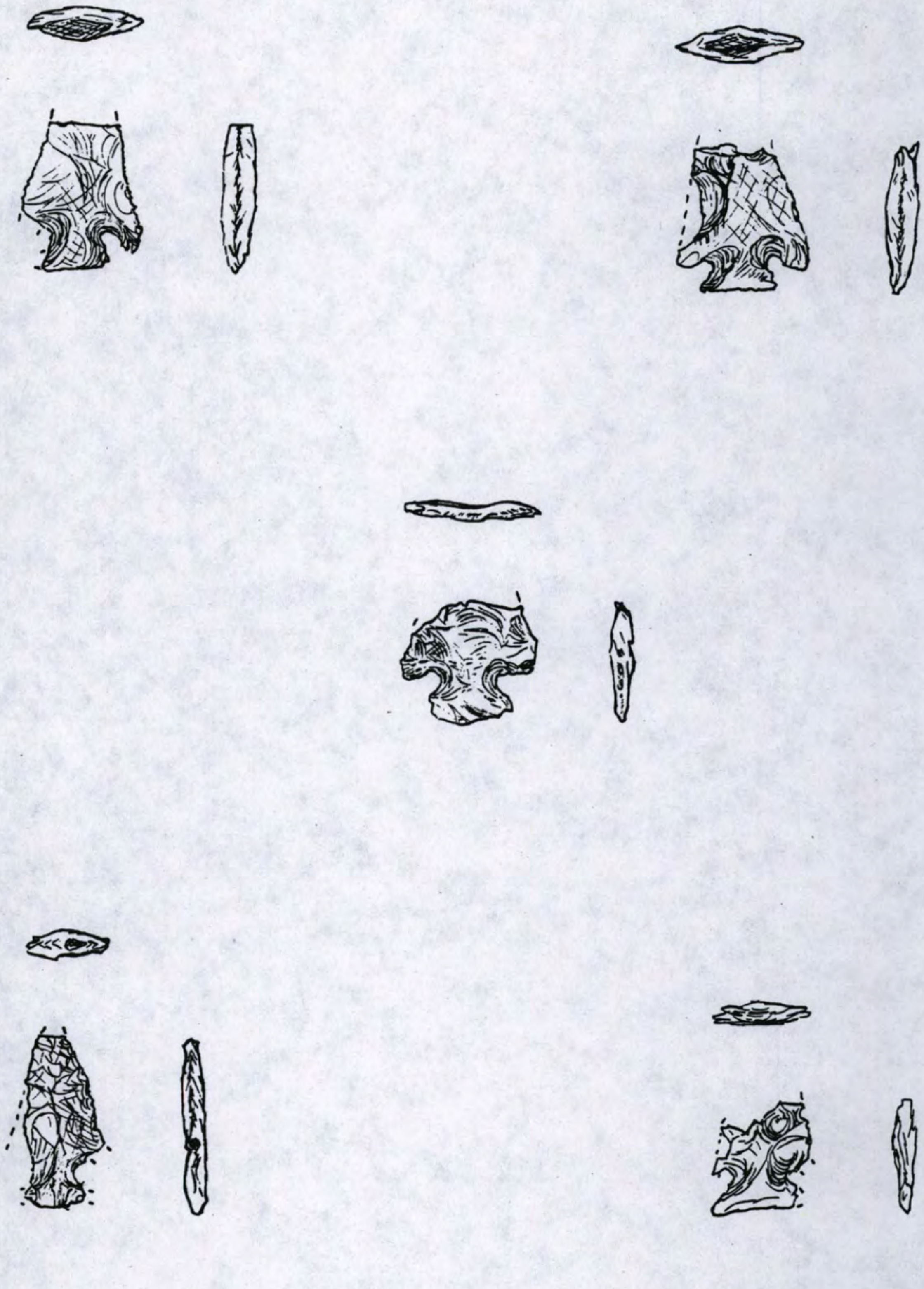


Figure 7. Elko Corner Notched dartpoints.

Harder dartpoint

Tucannon dartpoint

Northern Side Notched dartpoint

Figure 8. Archaic Period dartpoints.

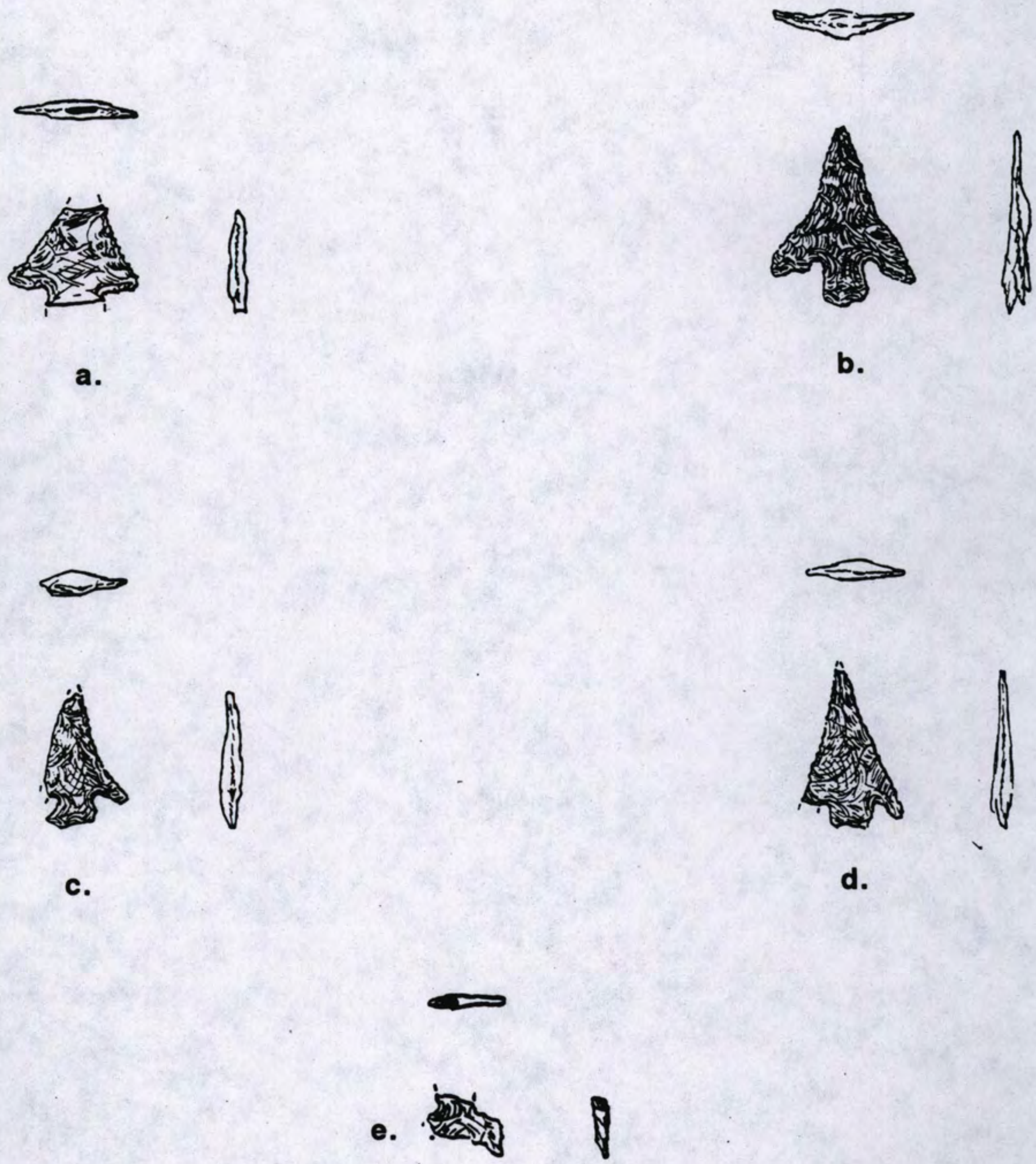


Figure 9. Middle Columbia Basal Notched arrowpoints a-d,

Small Side Notched arrowpoint e.

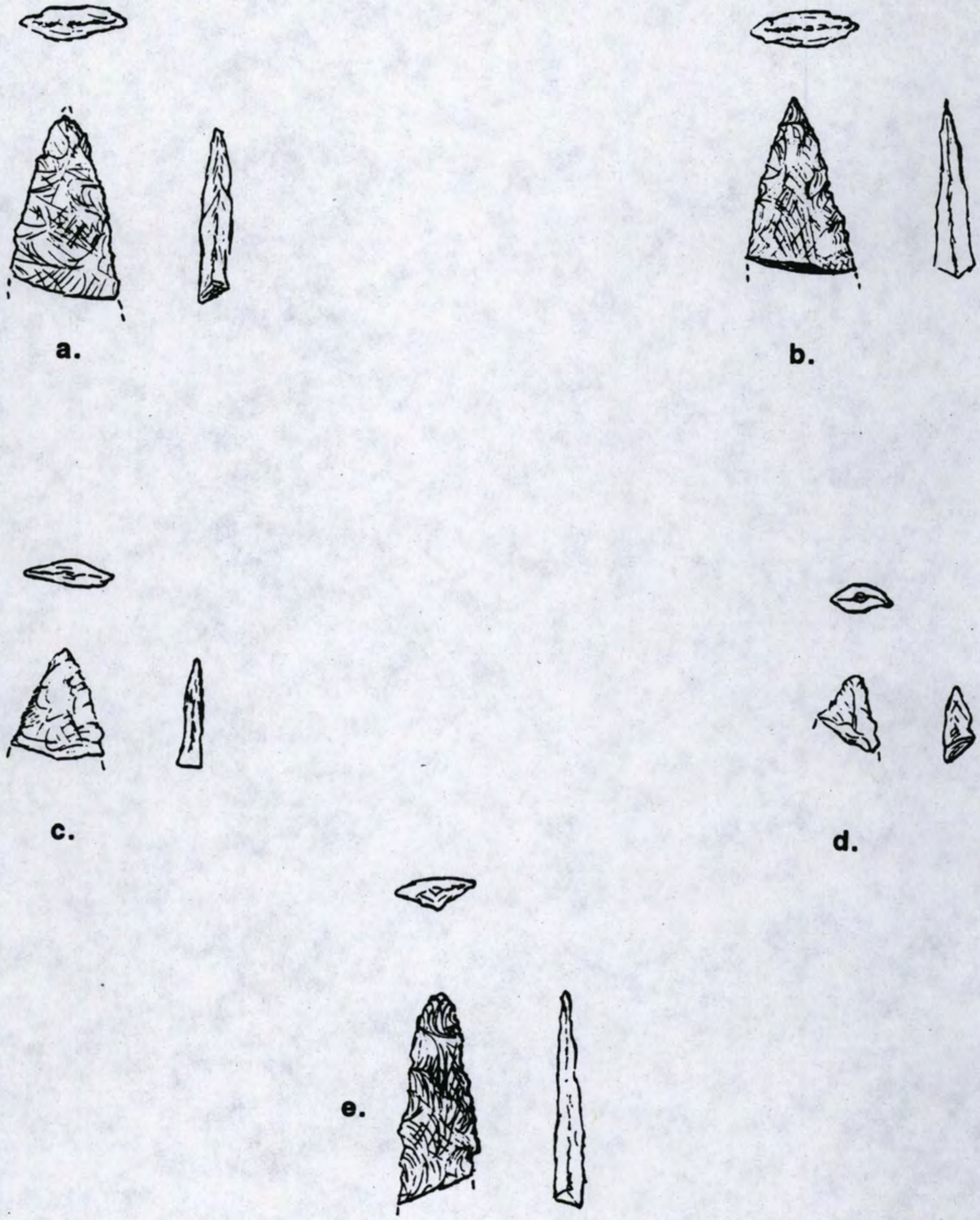


Figure 10. Unclassified Projectile Point Fragments a - e.

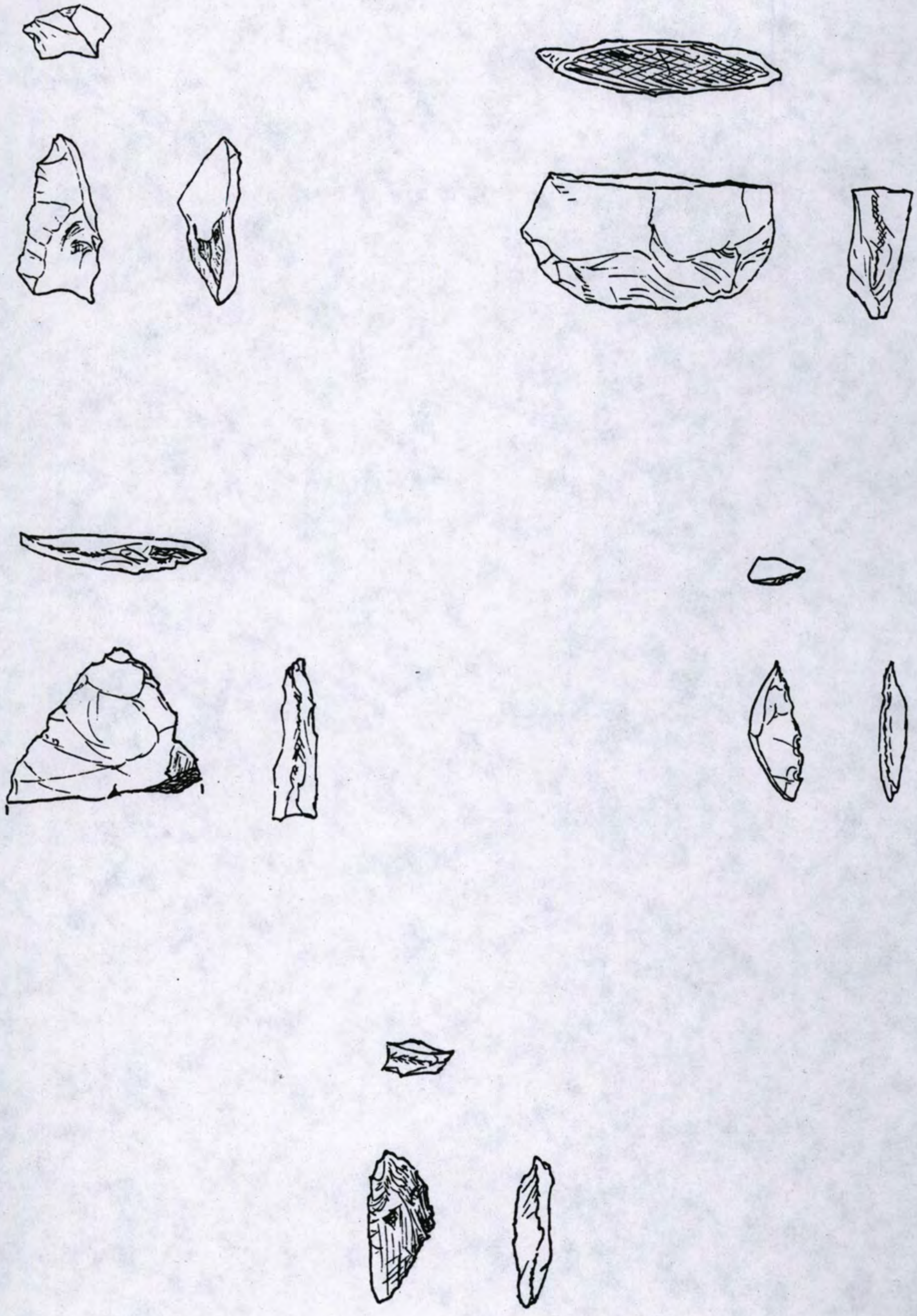


Figure 11. Biface fragments.

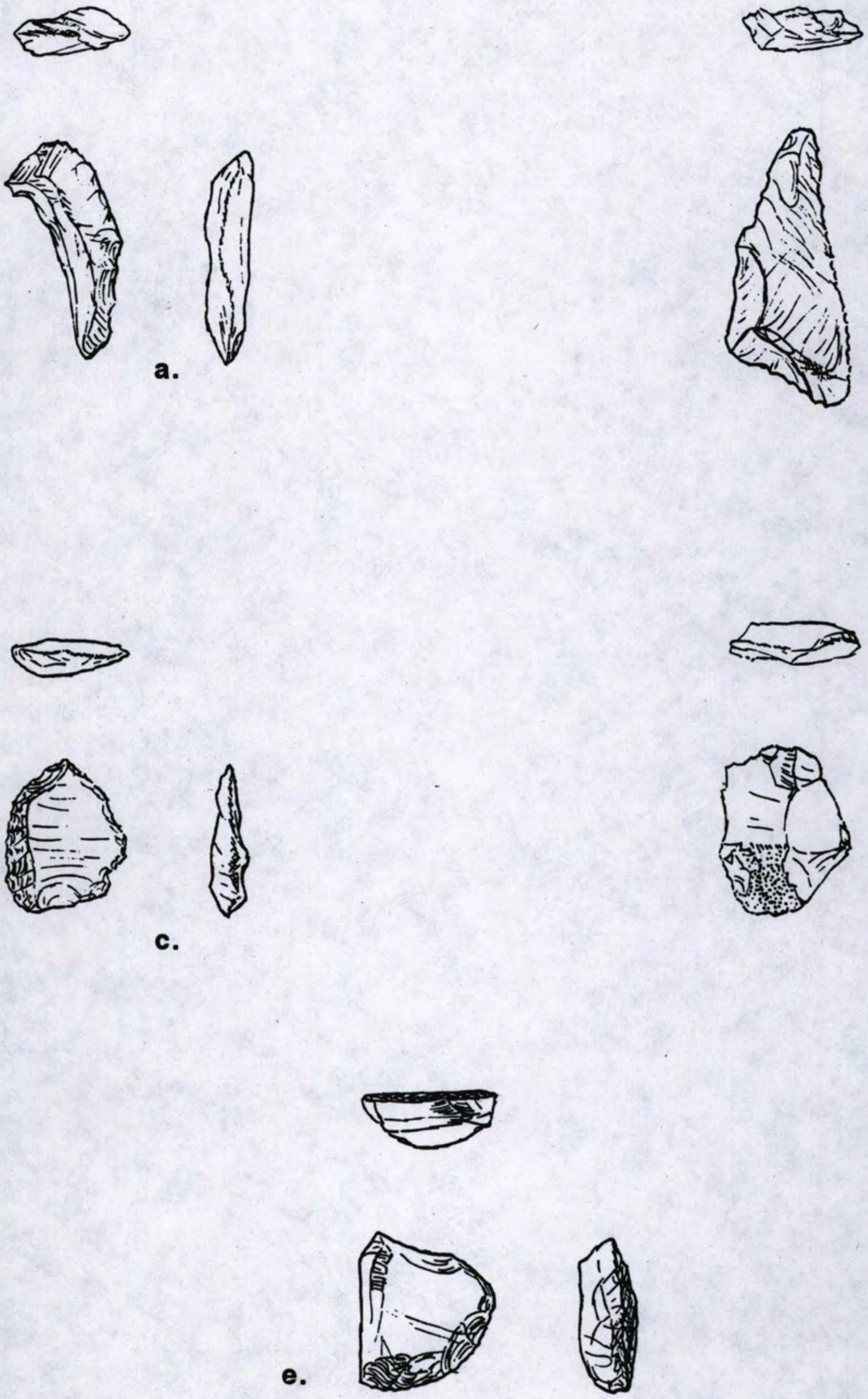


Figure 12. Utilized flake tools a-e,

Steepend scraper e.

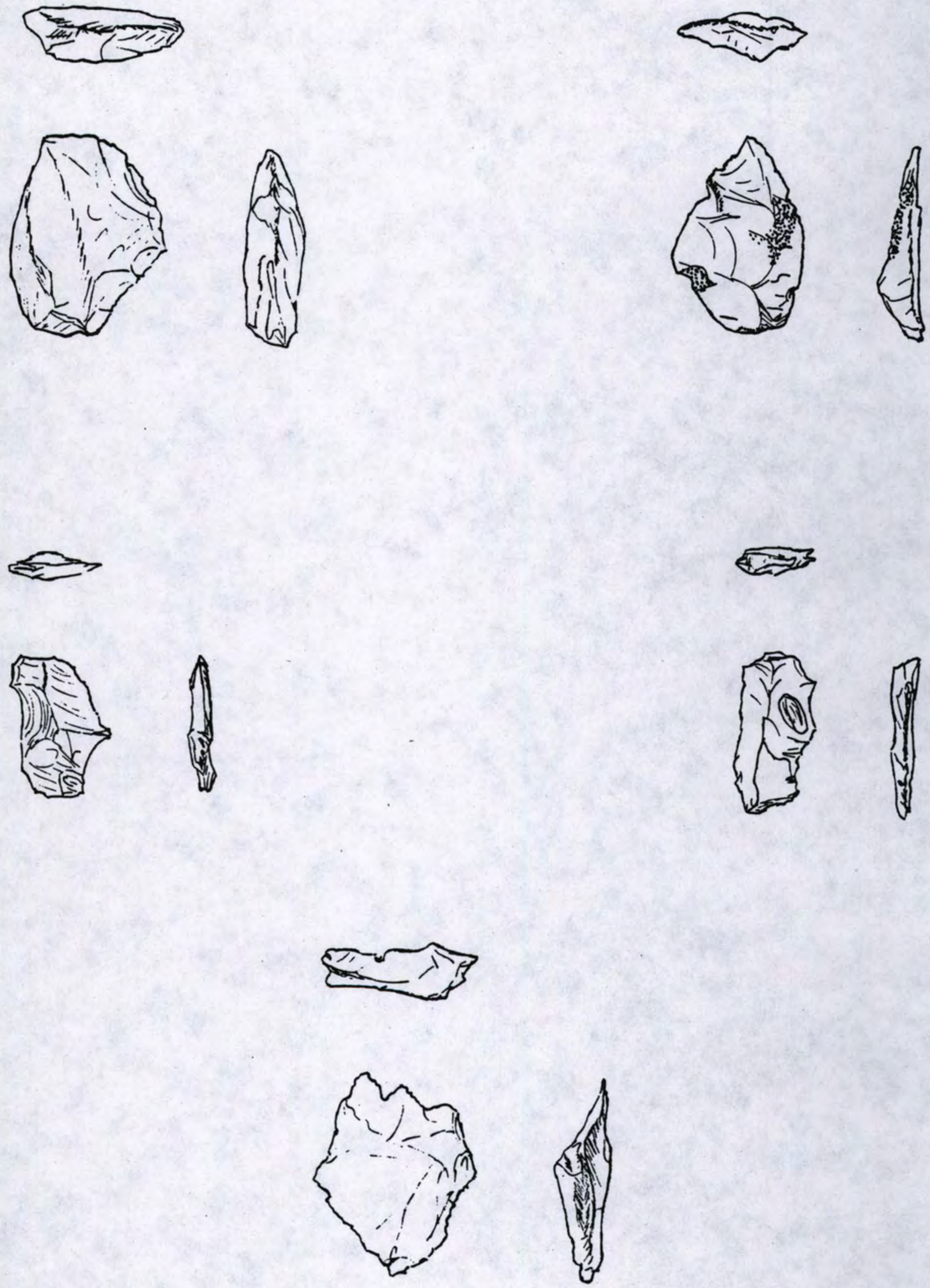


Figure 13. Utilized flake tools.

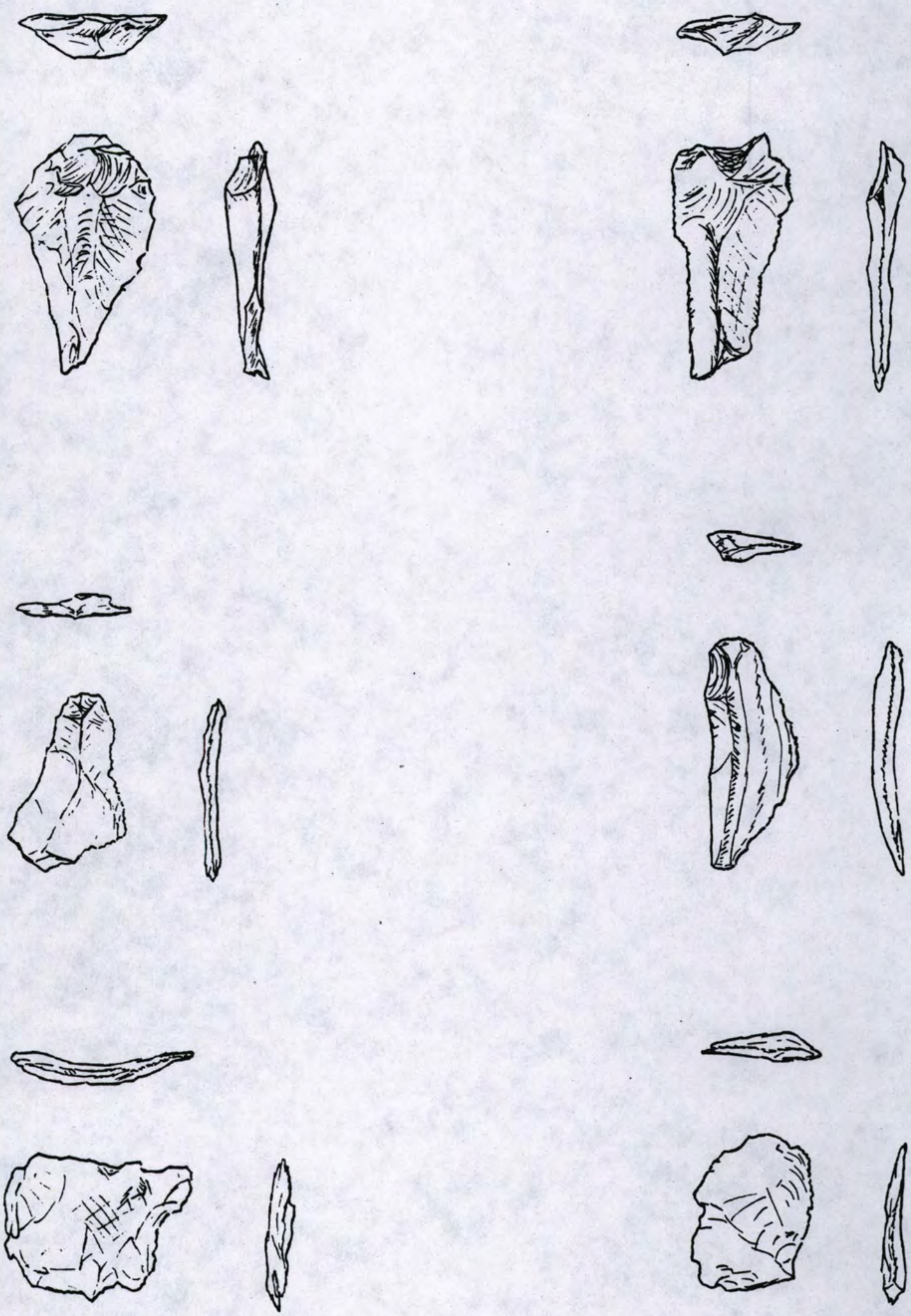


Figure 14. Utilized flake tools.

Figure 15. Utilized flake tools.

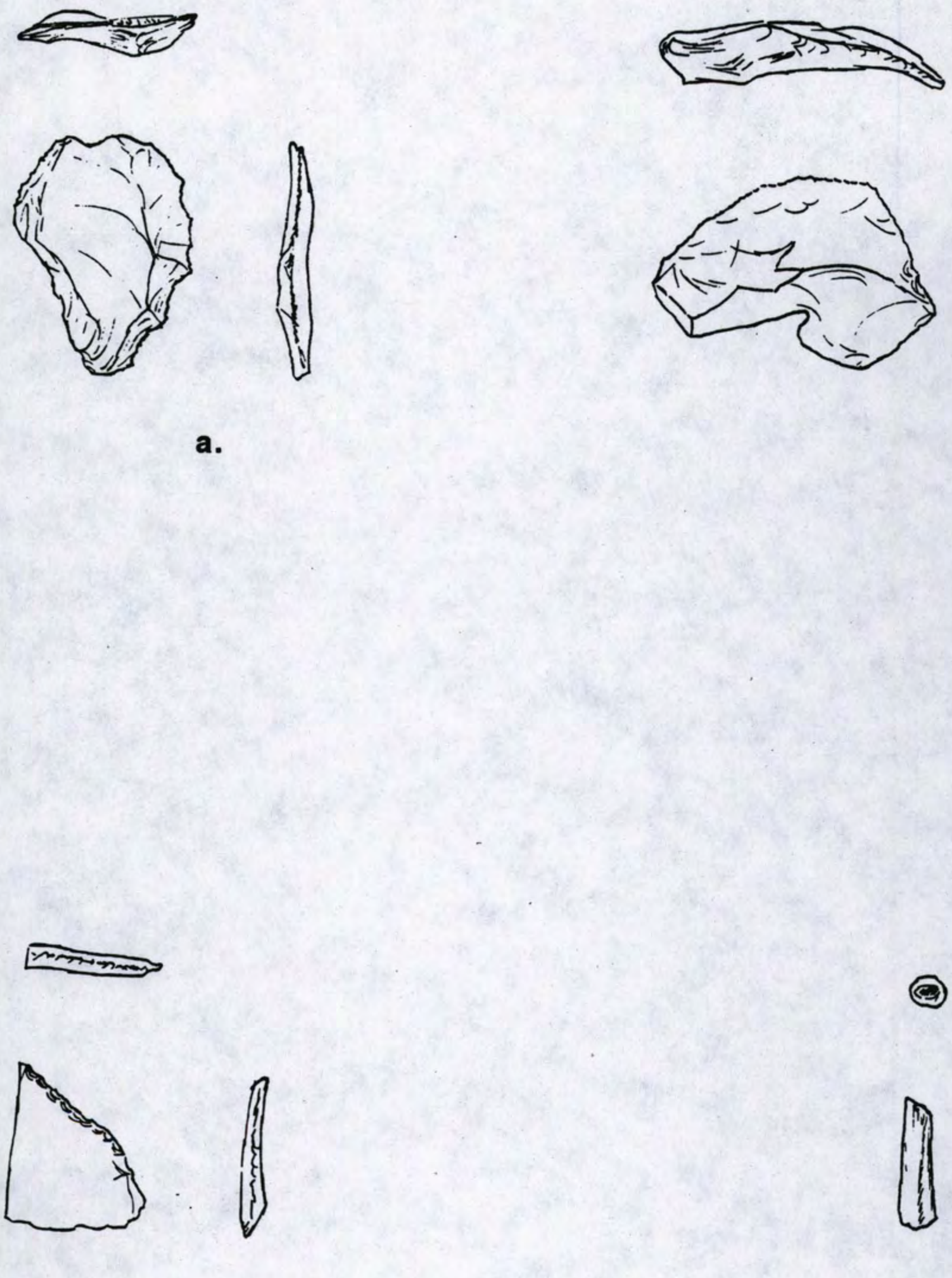


Figure 16. Utilized flake tools a-c,

Burnt bone awl d.

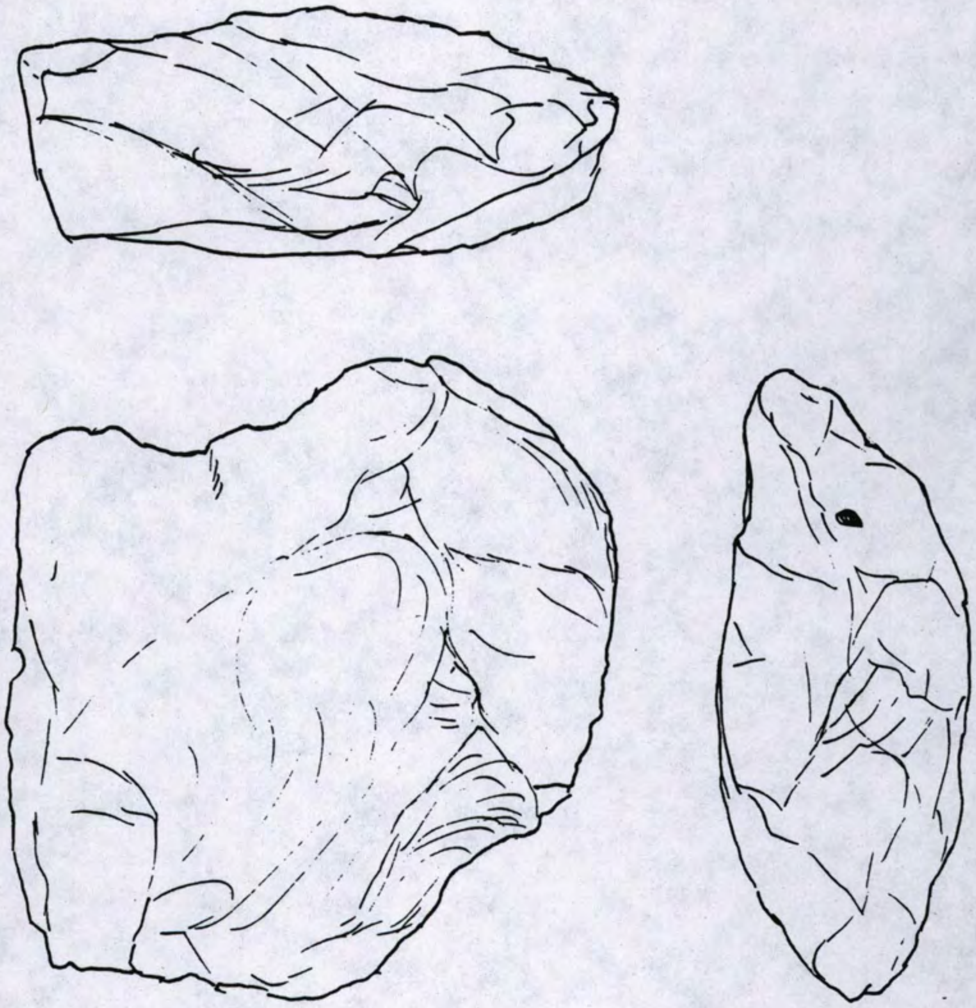


Figure 17. Cobble tools.

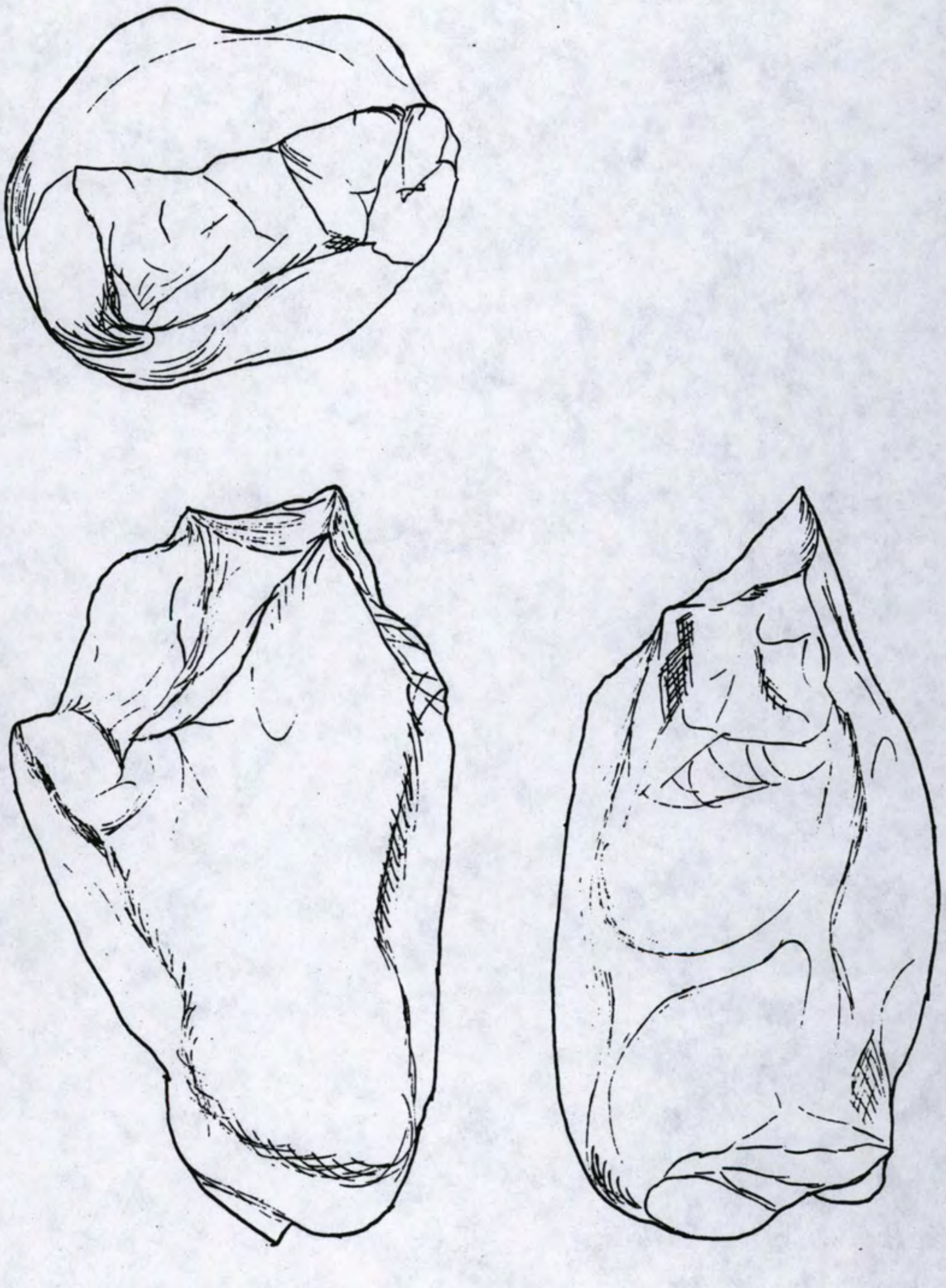


Figure 18. Cobble tools.

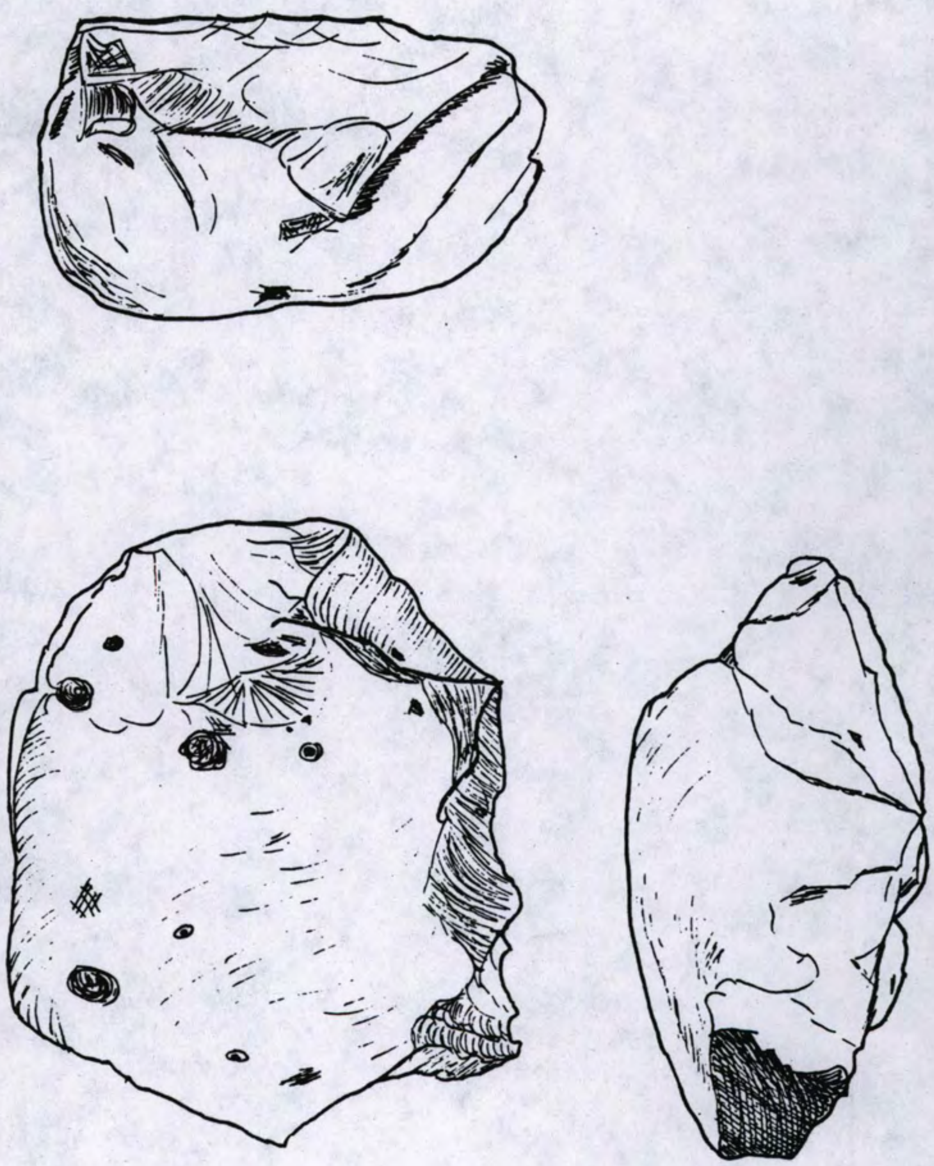


Figure 19. Cobble tools.

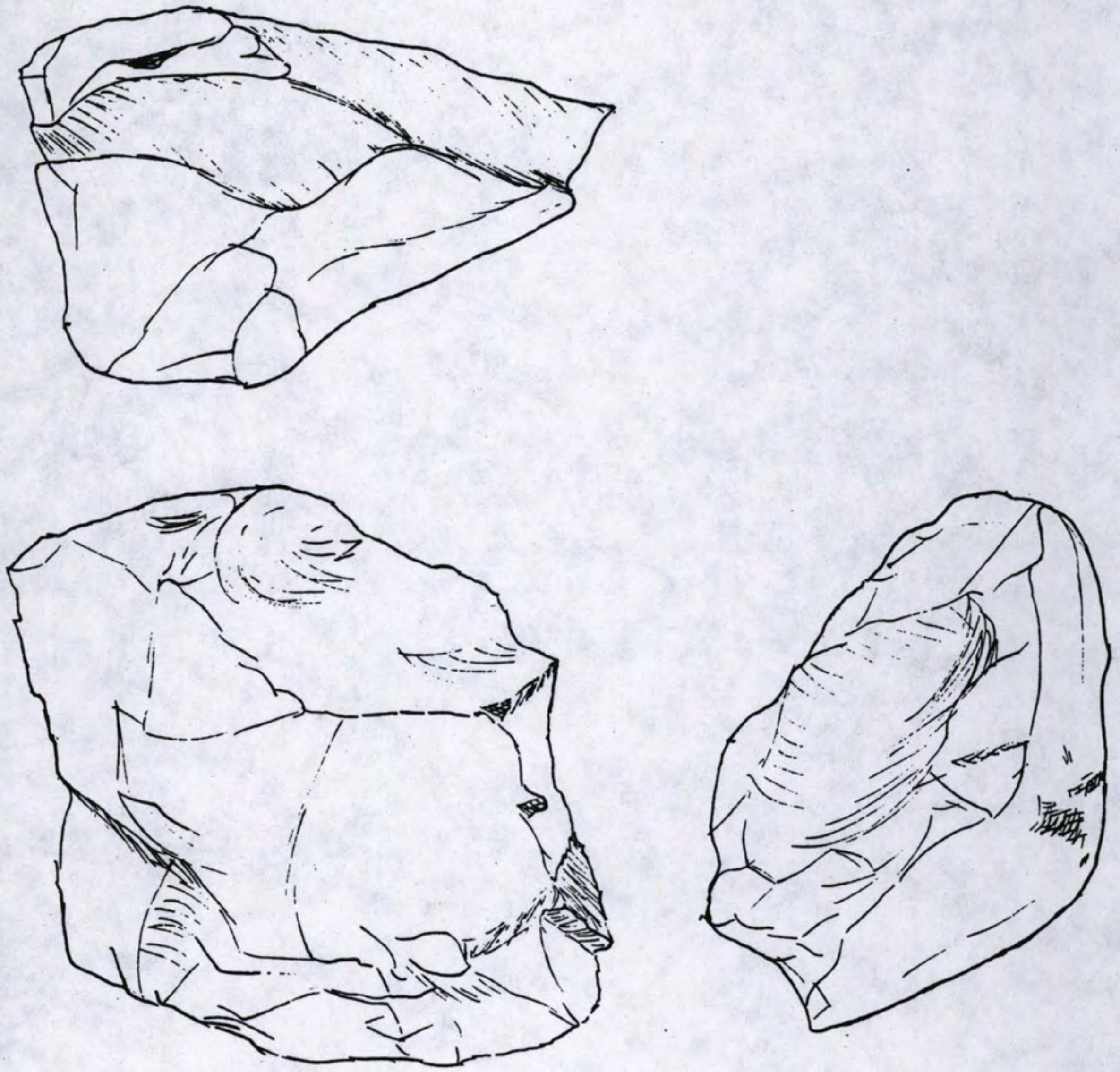


Figure 20. Core of basalt.

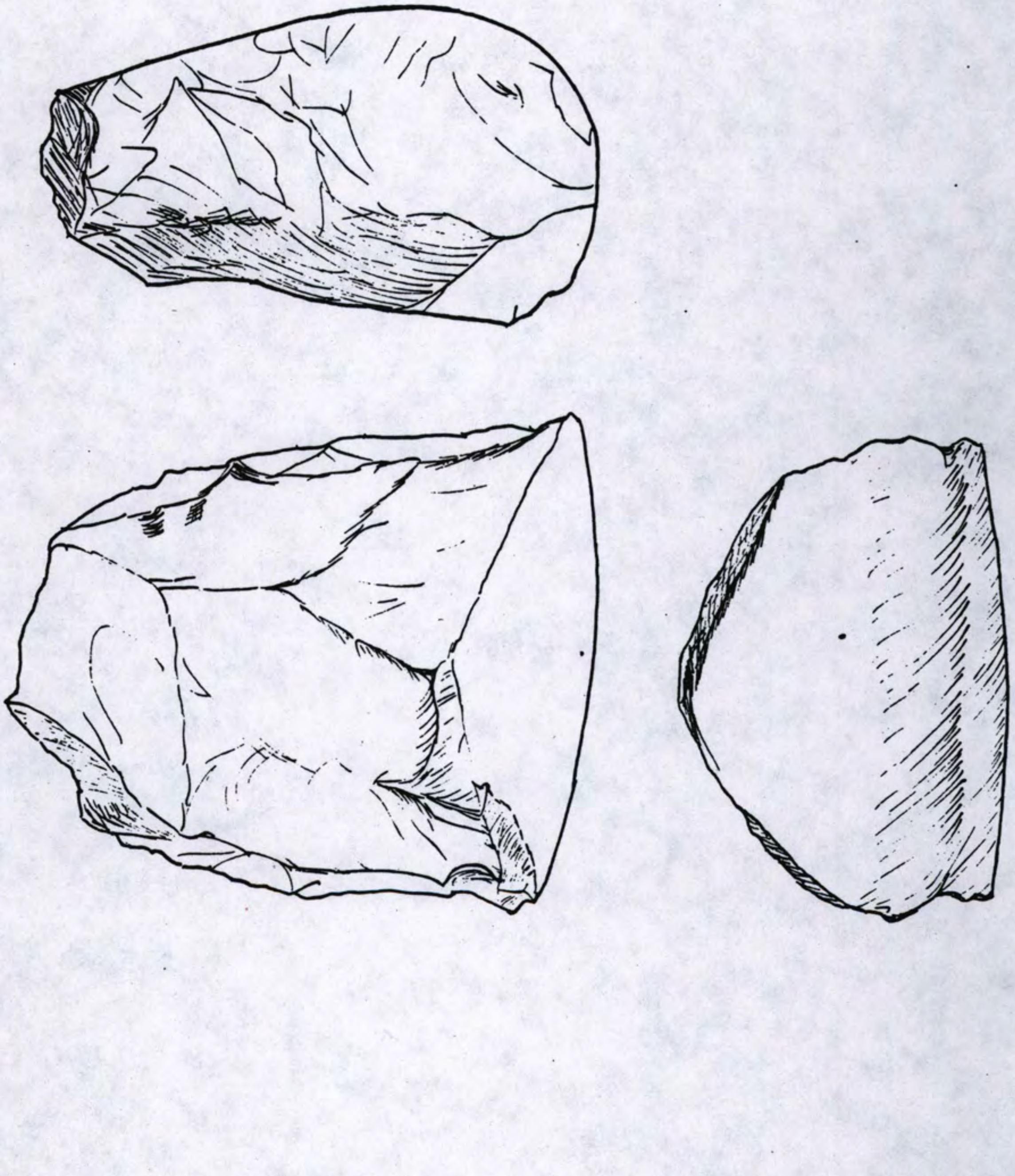
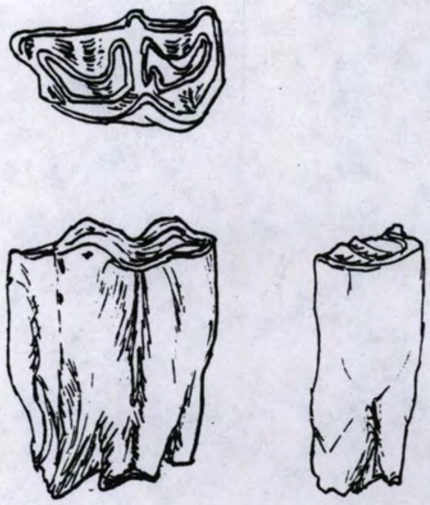


Figure 21. Core of basalt.

Lower second molar.



Upper third molar.

Lower third molar.

Upper fourth premolar.

Figure 22. Big horn sheep teeth.

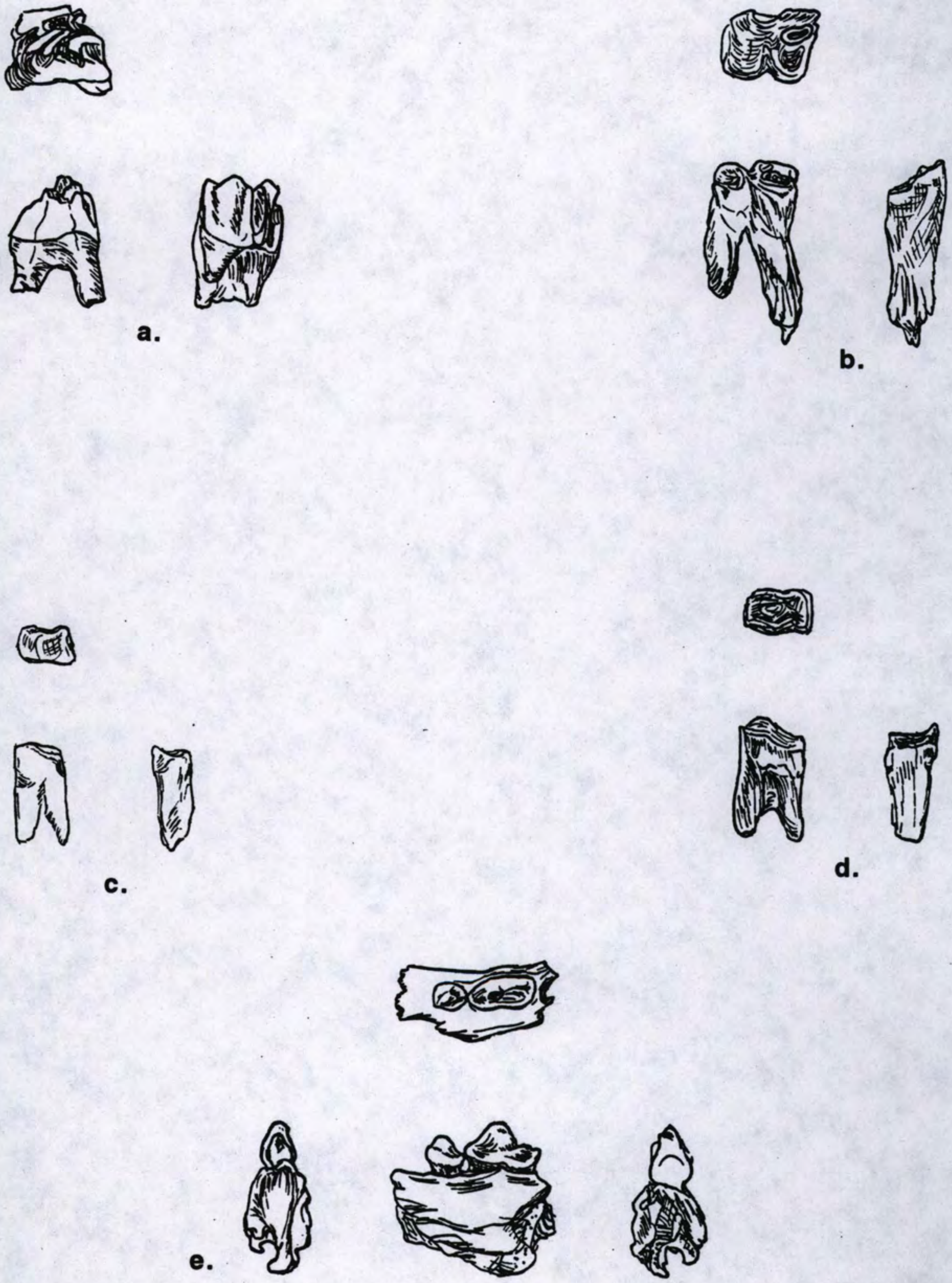


Figure 23. Bighorn sheep (*Ovis canadensis*) a,b,d,

Deer molar (*Odocoileus* sp.) c,

Possible wolf teeth (*Canis* cf. *lupus*)

mandible with lower premolars e.

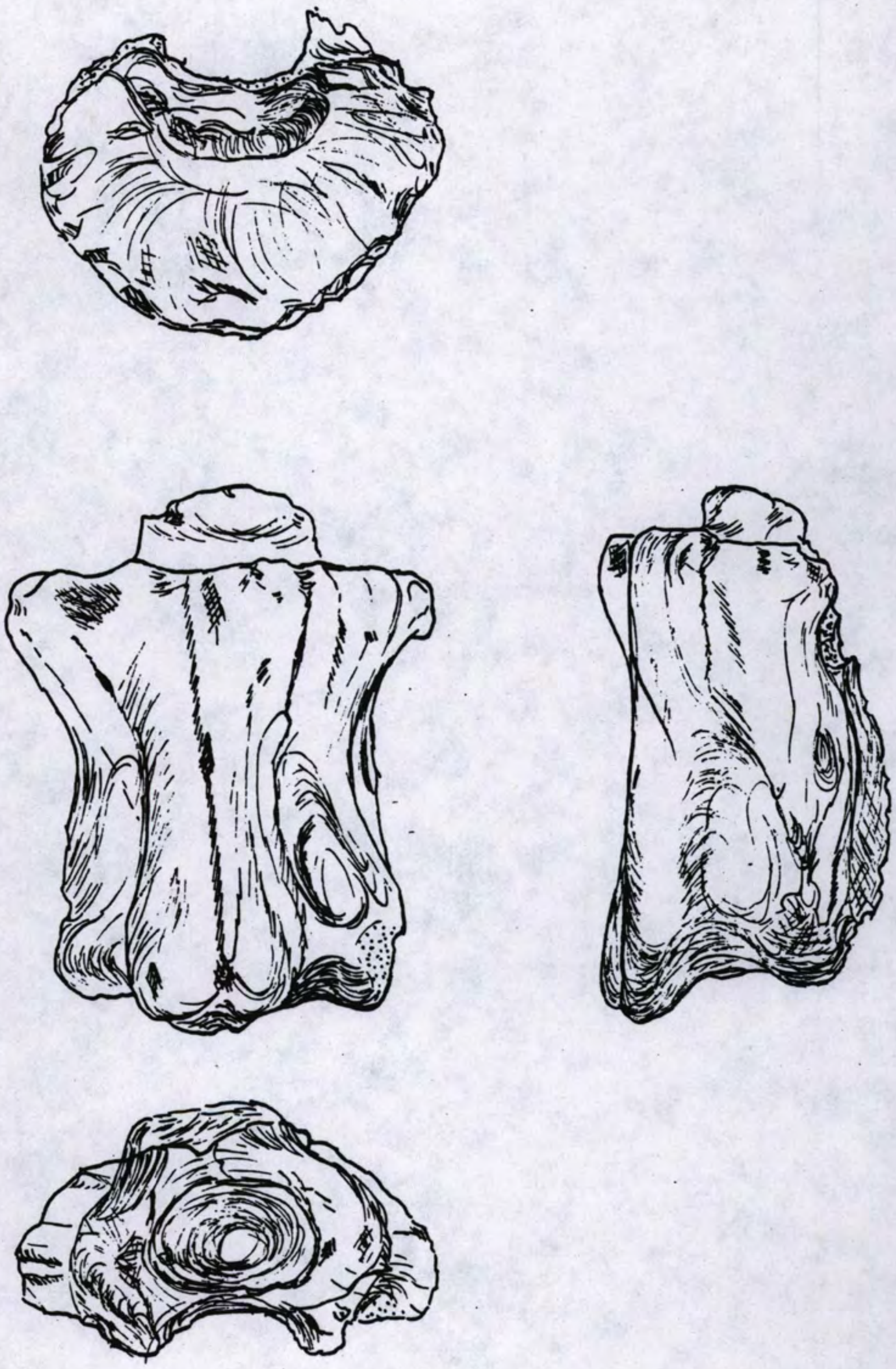


Figure 24. Ungulate vertebra found in the hearth feature.