HOLOCENE ASSEMBLAGE VARIABILITY IN THE TANANA BASIN: NLUR ARCHAEOLOGICAL RESEARCH, 1994–2004

Ben A. Potter
University of Alaska Fairbanks, 310 Eielson Building, PO Box 757720, Fairbanks, AK 99775-7720, and Northern Land Use Research, Inc.; ffbap3@uaf.edu

Peter M. Bowers
Northern Land Use Research, Inc.

Josh D. Reuther
Northern Land Use Research, Inc., and University of Arizona

Owen K. Mason
Geoarch Alaska

ABSTRACT

This paper summarizes survey and testing data from a decade of investigations by Northern Land Use Research, Inc. in the Tanana Basin, Interior Alaska. A number of important prehistoric sites have been discovered, test excavated, and radiocarbon dated. Data from these and other investigations are summarized; and patterns such as technological conservatism and typological variability are related to central Alaskan prehistory, cultural chronology, and assemblage variability. These data suggest that current cultural chronologies do not adequately reflect details of intersite variability in this region. Necessary future technological and typological studies should incorporate site structure to more accurately reflect intersite variability in artifacts, features, and sites. Current archaeological constructs need to be reconsidered in this context.

KEYWORDS: Holocene archaeology, intersite variability, Tanana Basin, Interior Alaska

INTRODUCTION

Since its inception in 1991, Northern Land Use Research, Inc. (NLUR) has completed over 320 cultural resource projects throughout Alaska. Since 1994, a number of projects in the Tanana River Basin have resulted in discovery of prehistoric sites ranging in age from early Holocene to late prehistoric. Primary data are needed on radiocarbon-dated assemblages given the relative paucity of information on prehistoric components in this region and lack of a widely accepted cultural chronological framework. This study presents descriptions of at least 14 components from 12 sites discovered by NLUR archaeologists between 1994–2004 in the Tanana Basin. Most of these components were discovered through several large-scale surveys and testing projects: (1) the Golden Valley Electric Association Intertie between Fairbanks and Healy, documenting 21 sites (Bowers et al. 1995), (2) the Yukon Training Area and Fort Greely Army Lands Withdrawal Survey, documenting 22 sites (Higgs et al. 1999), and (3) the proposed Alaska Natural Gas Pipeline Project, which traversed >1,000 km between Prudhoe Bay and the Canadian border, documenting 122 sites (Potter et al. 2002). In addition to these major projects, we include two additional surveys of more restricted geographic focus: the Healy Canyon area along the Alaska Railroad (Reuther et al. 2003), and a proposed seismic exploration area west of Nenana (Potter 2004). Site locations are illustrated in Fig. 1.

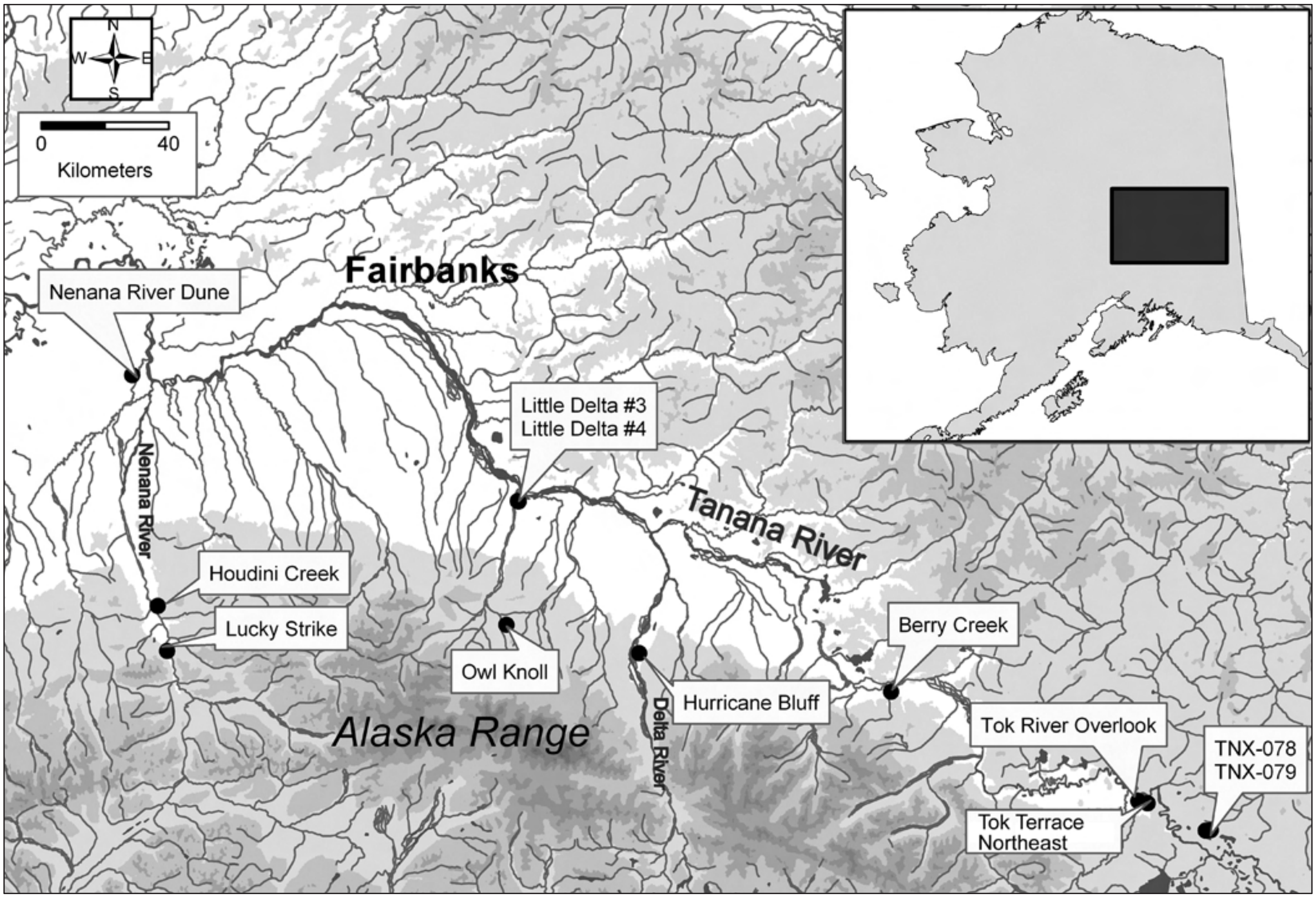

Figure 1. Tanana Basin overview map.

These projects and sites are described in detail in individual survey and site assessment reports (see complete report and project list at www.northernlanduse.com). Descriptions of project areas, research designs, survey strategies, methods, results, and conclusions can be found in each report. Our purpose here is to highlight several sites that have potential to contribute to our understanding of central Alaskan prehistory, in particular those sites with well-defined stratigraphy, unique artifact assemblages, and/or radiocarbon dated components. This paper is organized as follows: each site is described separately, followed by a discussion of cultural chronology and assemblage variability. The sites are ordered by location west to east: the first three sites are in the Nenana Basin, the remaining ten are in the middle and upper Tanana Basin. For consistency and clarity, each site section is comprised of three subsections: an overview and setting, stratigraphy and dating, and cultural material and discussion. When feasible, artifact photographs or drawings, stratigraphic profiles, overview photographs, and site maps are provided (Figs. 2–11). Table 1 summarizes the radiocarbon data, and Fig. 12 illustrates component age estimates. A discussion of the archaeology of the Tanana Basin follows, with emphasis on inadequacy of current cultural chronologies to encompass technological variability demonstrated at these components. In addition, technological conservatism is apparent, and both patterns underscore the necessity for site structural studies incorporating broader consideration of assemblage variability in intrasite and intersite contexts.

SITE DESCRIPTIONS

NENANA RIVER DUNE (FAI-1661)

Overview and Setting: This site is located on a south-facing erosional alluvial terrace (Potter 2004). This landform marks the easternmost vegetated edge of a large sand dune complex lying to the southwest (Collins 1985). Vegetation consists of paper birch, white spruce, and aspen, and a small stream is present about 1 km south of the site. Three depressions were observed on the terrace edge (between 1.5–2 m in diameter and 15–30 cm deep). The site was discovered by NLUR in 2003 through subsurface

Table 1. Radiocarbon date list (all AMS dates).

Site	Lab #	Conventional Date (RCYBP)	Calibrated Age Range (2σ) (IntCal98)	Material and Association
Houdini Creek	Beta-74737	7880±60 BP	8991–8484 cal BP	Charcoal, Band 7 (80 cm BS), stratigraphically associated with component.
Hurricane Bluff	Beta-123339	8810±60 BP	10154–9564 cal BP	Charcoal, stratigraphic date on lowest paleosol (P1), lower limiting date for lower component.
Hurricane Bluff	Beta-123338	1750±40 BP	1812–1545 cal BP	Charcoal, stratigraphically associated with Upper Component, upper limiting date for lower component.
Little Delta River #3	Beta-123331	9920±60 BP	11554–11198 cal BP	Charcoal, stratigraphically associated with upper component
Little Delta River #4	Beta-123332	3700±70 BP	4242–3835 cal BP	Charcoal, upper limiting date for component.
Lucky Strike	Beta-196499	7760±50 BP	8631–8412 cal BP	Scattered charcoal 3–5 cm below *in situ a*rtifacts
Nenana River Dune	Beta-196497	800±50 BP	791–659 cal BP	Charcoal from base of cache pit, dating component.
Owl Knoll	Beta-123340	3010±110 BP	3466–2870 cal BP	Hearth charcoal dating component.

testing on the terrace, and two test units were excavated: one bisecting a depression and another 50 x 50 cm unit expanded to 1 m^2 about 25 m to the west of the depression (Potter 2004) (Fig. 2).

Stratigraphy and Dating: Soil stratigraphy consisted of humus (0–5 cm BS), oxidized loam (5–25 cm BS), unoxidized loam (25–50 cm BS), and grayish light brown sand (50–105+ cm BS). Within the unoxidized loam, a paleosol stringer of organic rich material was observed at 30–32 cm BS, and an oxidized loam layer at 37–45 cm BS. These both represent buried soils. The paleosols are characterized as typic cryochrepts, developed in calcareous loess deposited over a stabilized sand dune. A radiocarbon date of 800±50 BP was obtained from a concentration of charcoal at the base of a cache pit fill.

Cultural Material and Discussion: One depression was excavated, revealing stratigraphy and morphology suggestive of a cache pit. A biface was found at the bottom of the dark brown silt (interpreted to be fill), as was a charcoal concentration from the center-base of the fill layer. The second test pit, placed nearby on the terrace surface, yielded lithic flakes, tools, and faunal remains just below the humus layer. Lithic items consisted of two rhyolite short-axis beveled flakes (end-scrapers) and 68 lithic flakes of chert, rhyolite, basalt, obsidian, siltstone, and chalcedony, totaling 11.6 g. Two obsidian flakes were attributed to the Batza Tena source (or Group B defined by Cook 1995) based on energy-dispersive x-ray florescence analysis (ED-XRF; Speakman 2006). Faunal remains consisted of 756 fragments (333.7 g total), of which 74% (by weight) was burned or calcined. The materials exhibited spatial patterning in the faunal and lithic distributions, with concentrations of lithics to one side of the densest charcoal and faunal concentration (see Fig. 2). Faunal analysis indicates that at least two size classes of animals were present, with an unburned 2nd phalanx of a small (squirrel-sized) mammal, and numerous burned large, thick long bone fragments (caribou-sized).

The cultural materials had a limited vertical distribution between 10–20 cm BS, and are likely associated with the dated cache pit materials given the stratigraphy, bone preservation, and cultural material. The site is therefore interpreted as a single component site. Given the absence of bone, the presence of a flaked tool and probable culturally derived charcoal cluster, and location near the terrace edge, this feature may represent a hunting blind. The presence of a wide variety of lithic raw material types, the relative small number of flakes, and generally small flake sizes (most are 1.0–1.5 cm in maximum dimension), we interpret site function to include lithic tool maintenance rather than tool manufacture. The presence of burned and calcined bone and the relatively small sizes of the bone fragments suggests that faunal processing took place at the site (perhaps marrow extraction and/or consumption). The general topographic setting suggests the site may have functioned as an observation station. This site is the first in the Lower Nenana region to yield a radiocarbon date associated with cultural materials from the Late Holocene.

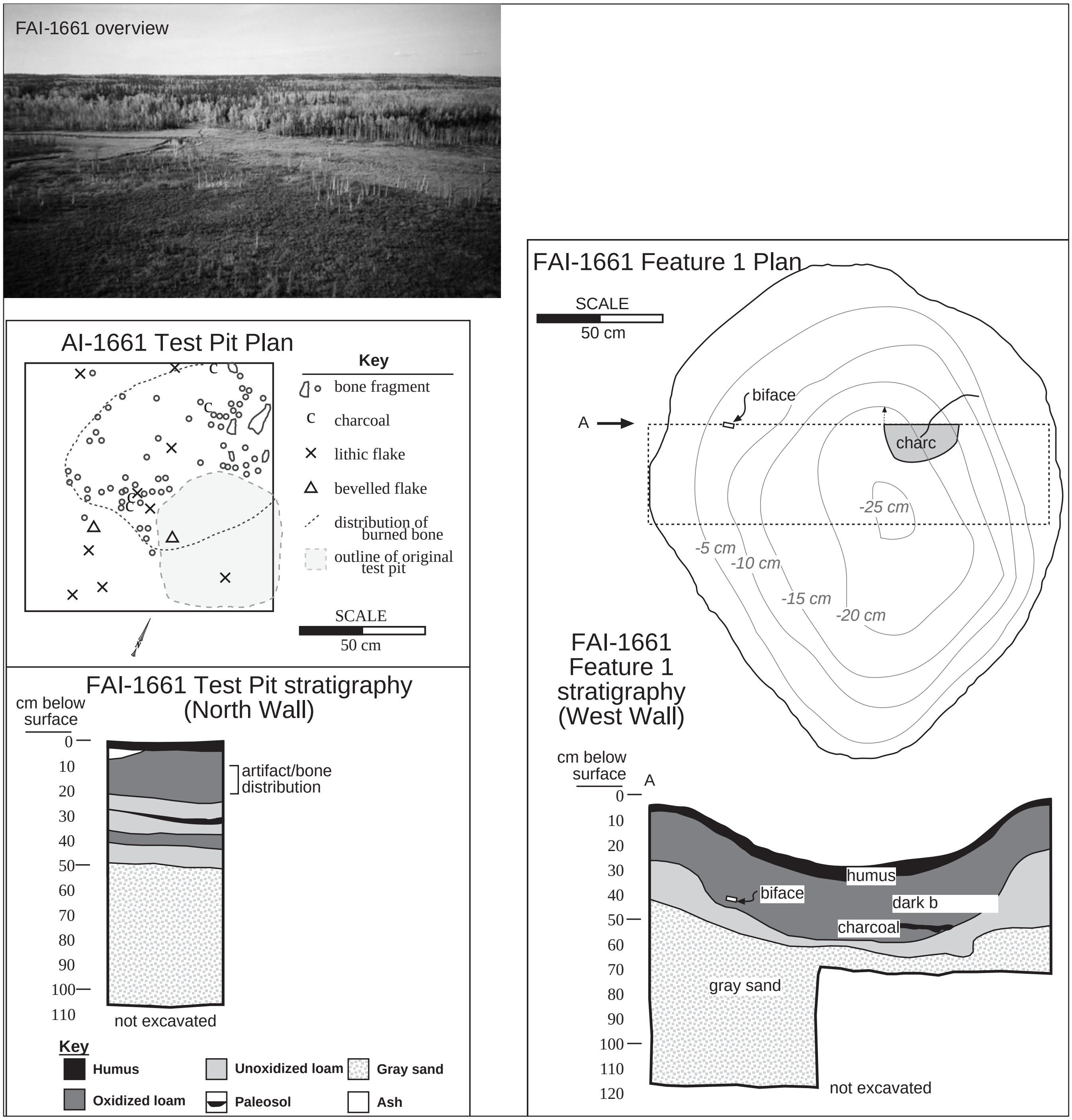

Figure 2. Nenana River dune overview, artifacts, and stratigraphy.

LUCKY STRIKE (HEA-327)

Overview and Setting: HEA-327 is located in Healy Canyon along the Alaska Railroad, approximately 3.3 km south of Healy. The site is situated on a northeast-southwest trending terrace that lies approximately 60 m above the Nenana River. Vegetation consists of an open spruce/birch forest canopy with a moss and grass understory. The site was found by NLUR archaeologists in 2003, who observed lithic artifacts eroding out of an approximately 3 m high cutbank on the terrace (Reuther et al. 2003). Two 50 x 50 cm test units were excavated within a 25 x 25 m area to define the stratigraphy at the site and the artifacts' position within the stratigraphic column (Fig. 3).

Stratigraphy and Dating: The stratigraphy at the site can be characterized as a thick moss forest soil and root mat covering approximately 3 m of alternating silts and paleosols overlying schistic bedrock. Five paleosols were observed and are continuous throughout the site area. In addition, a discontinuous white tephra, located approximately 1.4 m below surface level, was recorded. Based on field observations, this most likely represents the Hayes Volcano ash fall that occurred between 3500 and 3800 years BP (Riehle et al. 1990); however, petrographic or geochemical analyses have yet to be conducted on this tephra. In situ lithic artifacts were found within a loess deposit, approximately 40–70 cm below the lowest paleosol and 2.5 to 2.7 m below the modern vegetated surface. The soils are unusually water saturated and are likely frozen throughout much of the year, which should promote excellent organic preservation. Scattered charcoal fragments were recovered from the loess deposit at approximately 2.7 m below the modern vegetated surface, directly beneath the in situ artifacts, and one charcoal sample produced a radiocarbon date of 7760±50 BP (Beta-196499).

Cultural Material and Discussion: Lithic artifacts were found on an exposed eroding loess surface approximately 2.5 m below the modern surface level. Minimal testing near the surface artifact concentration revealed cultural materials in primary context. A total of 21 artifacts were observed in a 2 x 3 m area (11 on the surface and 10 in primary context). One basalt boulder spall recovered on the exposed loess surface refits to an in situ basalt spall core. One rhyolite bifacial projectile point base (bipointed), one large basalt biface, two large basalt core fragments, one basalt modified flake, and 16 basalt and rhyolite flakes comprise the rest of the assemblage. The lateral extent of the site could not be adequately established due to time constraints; however, based on the topography of the terrace on which the site is situated, a size of 4,820 m^2 is estimated. The site appears to be early to mid-Holocene

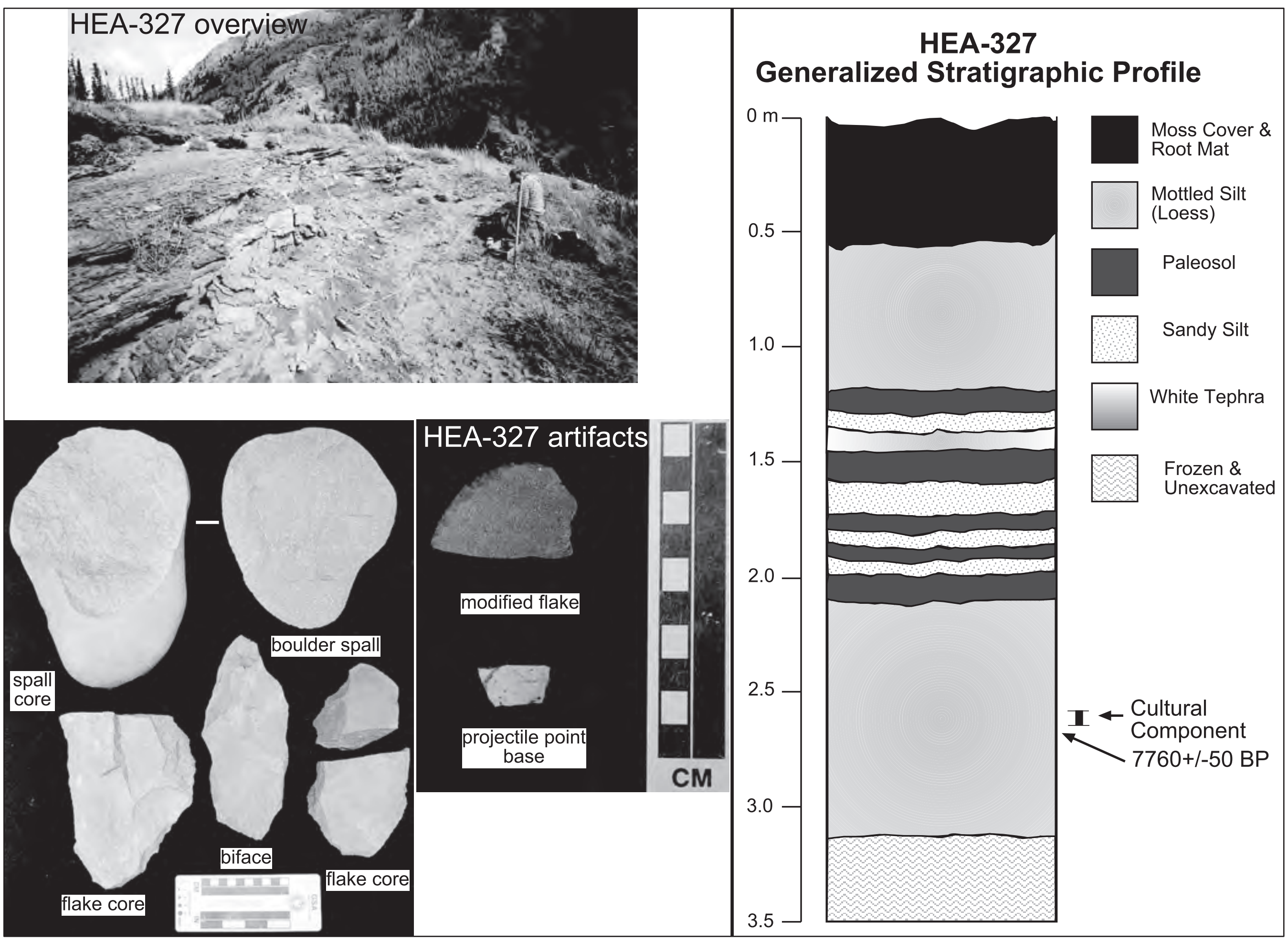

Figure 3. Lucky Strike overview, artifacts, and stratigraphy.

based on the stratigraphic provenience of cultural materials found in primary context and a lower limiting radiocarbon date of 7760±50 BP.

HOUDINI CREEK (HEA-295)

Overview and Setting: HEA-295 is located on Houdini Creek, an eastward-flowing tributary of the Nenana River, about 10 km north of Healy, and about 3 km SE of the Walker Road site (HEA-130). It was discovered in 1995 when artifacts were observed eroding from the edge of a strath terrace cut by Houdini Creek. The terrace bluff is steep, about 30 m high, and has a limited southeast exposure. HEA-295 is located on the late Pleistocene Healy outwash terrace, near the base of the Dry Creek terrace (Wahrhaftig 1958). The bluff edge is well drained and is vegetated by white spruce and willow, with an understory of cranberry and fireweed. The site was mapped, with 4.12 m^2 test excavated out of an estimated area of approximately 240 m^2 (Fig. 4).

Stratigraphy and Dating: At Houdini Creek, upwards of 1 m of silt and sand caps the Healy outwash gravel; several zones of discontinuous buried soils are present. The uppermost Unit 7 consists of 30 cm soil A horizon developed within silt. Beneath this is Unit 6 (29 cm thick), a weakly bedded sandy silt. The underlying Unit 5 (59–63 cm BS) is composed of oxidized silt. Beneath this is Unit 4 (63–72 cm BS) silt, which contains charcoal and an artifact horizon. Unit 3 (72–80 cm BS) is comprised of weakly oxidized silt and medium sandy silt. Unit 2 (80–81 cm BS) is a thin discontinuous paleosol; beneath this is Unit 1 (81–100 cm BS) silt and sand overlying outwash gravel. A single AMS date was obtained from charcoal fragments directly associated with lithic artifacts in Unit 4: 7880±60 B.P. (Beta-74737).

Cultural Material and Discussion: Lithic artifacts were found eroding out of the bluff edge sediments, as well as in situ within Unit 4 silt. Materials found on the slope below the site consist of two bifaces, one blade-like flake, and 35 unmodified flakes. In situ artifacts excavated from test pits included over 600 lithic flakes, cobble tools, a lanceolate biface, asymmetrical lanceolate bifaces, and a sandstone abrader.

While several occupations may be represented, it is most likely that HEA-295 is a single component site. The exact relationship between the displaced artifacts and those found in situ is unclear; although similar lithologies and biface reduction technologies strongly suggest a single component. Based on lithic morphology, the most likely affinities lie with the early Holocene Denali Complex (keeping in mind that microblades may not have been left behind at every Denali site; e.g. Mason et al. 2001; Mason and Bowers 1995). Because of the panoramic view within the Houdini Creek drainage, it most likely served as a game lookout and flaking station. The setting differs from most other known Nenana Valley sites in that it is located near the inner margin of the Healy Terrace rather than on the front overlooking the Nenana River. Houdini Creek is broadly comparable in age and stone working technologies to the Carlo Creek Site (Bowers 1980), Eroadaway Site (Holmes 1988), and Lucky Strike Site (Reuther et al. 2003; this paper).

OWL KNOLL (XMH-839)

Overview and Setting: The site is located on a kame east of the Little Delta River near the northern foothills of the Alaska Range with a 360-degree view of the surrounding glaciated highlands. Vegetation includes typical tussock-tundra, including birch, lowbush cranberries, and moss cover. The site was discovered by NLUR archaeologists in 1998 through subsurface testing on the kame. A total of five test units were excavated (50 x 50 cm including three expanded to 100 x 100 cm, totalling 4 m^2) (Higgs et al. 1999) (Fig. 5).

Stratigraphy and Dating: Tests revealed shallow stratigraphy and little soil development. The stratigraphy consists of a reddish-brown organic loam (0–3 cm BS) overlying an undulating sandy silt layer (4 to 6–15 cm BS), and a basal beige sand unit mixed with pebbles (7 to 16–23+ cm BS). Three test pits contained artifacts. All artifacts were found exclusively within the sandy silt and its contact with the upper loam. A charcoal sample obtained from Feature 1 hearth at 13 cm BS yielded a radiocarbon date of 3010±110 BP (Beta-123340).

Cultural Material and Discussion: Test Pits 2 and 3 yielded 236 flakes but no utilized or worked items. Test Pit 5 contained 113 flakes, three bifaces (one lanceolate projectile point preform, one bimarginally worked flake fragment, and two conjoining biface fragments broken at mid-section), a modified microblade medial segment, and numerous bone fragments all associated with a hearth.

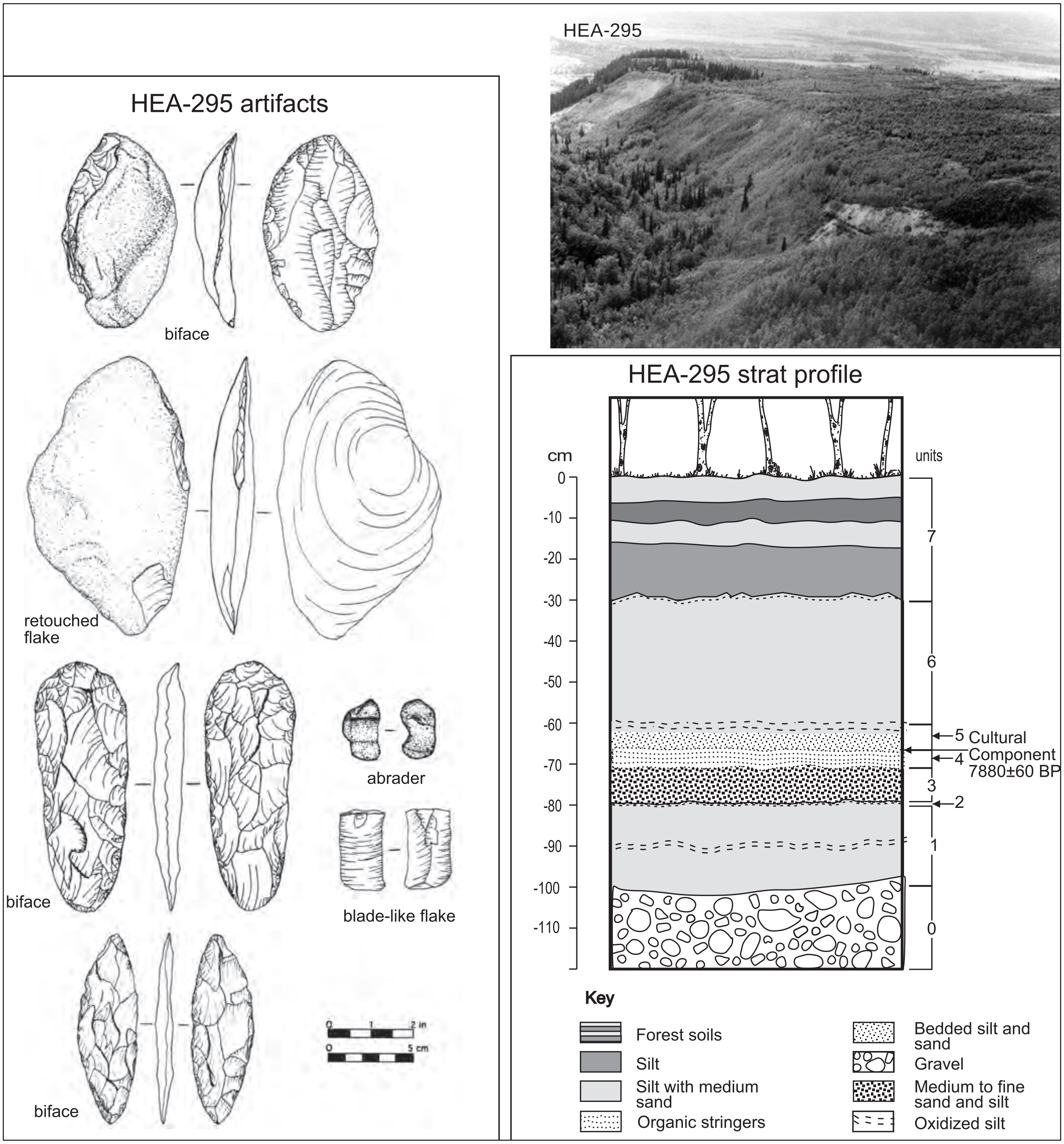

Figure 4. Houdini Creek artifacts and stratigraphy.

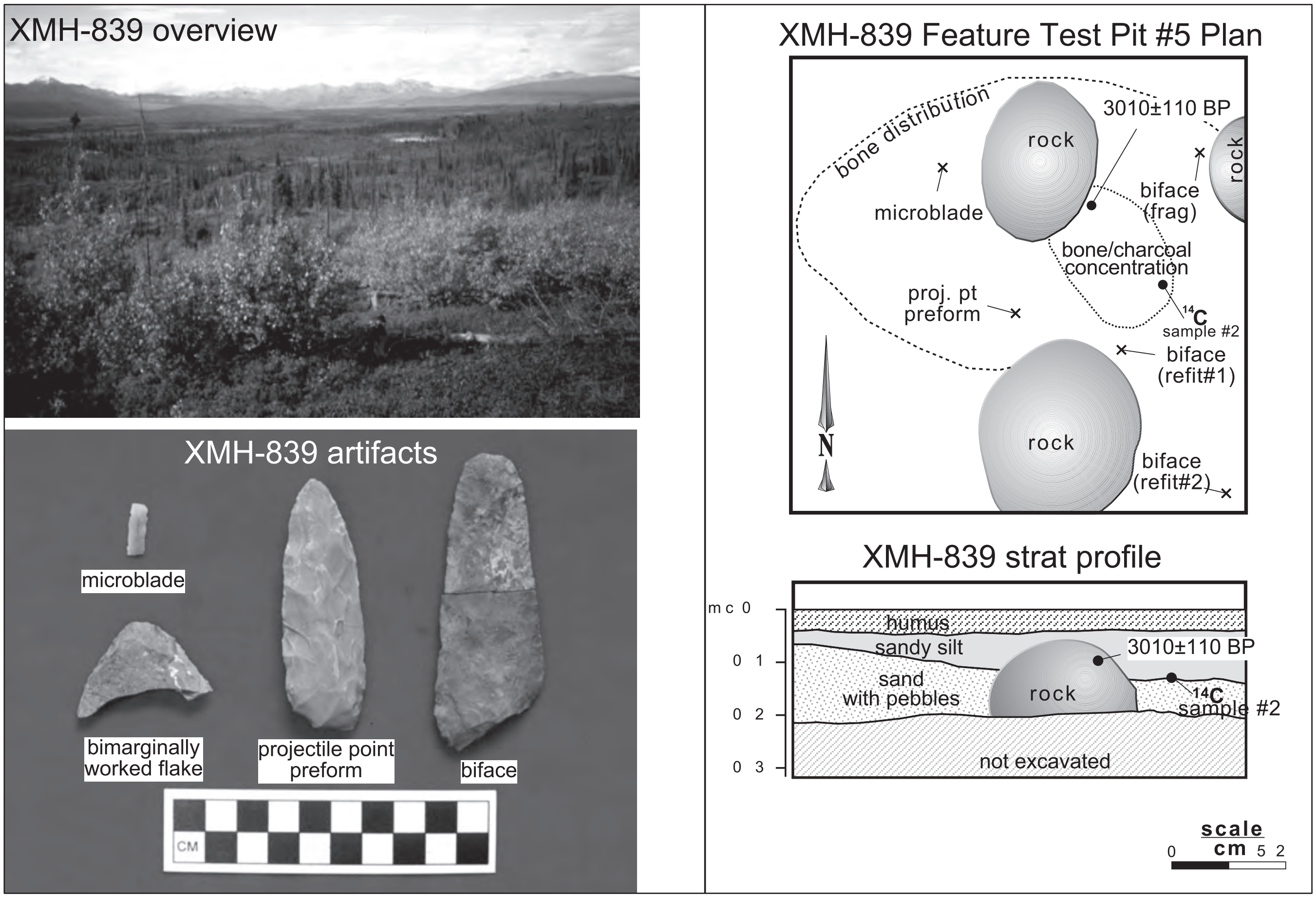

Figure 5. Owl Knoll overview, artifacts, and stratigraphy.

The bone fragments were distributed within the sandy silt over a 65 x 90 cm horizontal area that included a 20 x 50 cm charcoal concentration in the northeast quarter of Test Pit 5; this is interpreted to be a hearth. The stone artifacts were found both within and outside of the bone distribution. Thirteen analyzed bone pieces consist of one humerus fragment, one phalange, two unidentified long bone fragments, two unidentified axial elements, and six unidentified skeletal elements, all part of a large to medium mammal (perhaps caribou). Bone fragment sizes ranged from 0–2 cm (n=9) to 2–5 cm (n=4). The bone fragments, stone tools, and charcoal concentration were found among three small boulders.

The cultural origin of the charcoal feature in Test Pit 5 is supported by the association of the artifacts and faunal remains with the charcoal, the localized distribution of the charcoal within the test pit, and the lack of any charcoal or faunal remains within any of the other test pits. The association of the cultural materials, including the microblade and lanceolate projectile point with the radiocarbon date appears to be warranted. The observed site size is 300 m^2 based on the subsurface testing results and estimated site size is 600 m^2 based on the topography.

LITTLE DELTA CREEK #3 (XBD-167)

Overview and Setting: The site is located 70 m above the Little Delta River floodplain near its confluence with the Tanana River. It is situated on a level terrace overlooking the floodplain to the south. Vegetation consists of an open spruce/birch forest canopy with a moss and grass understory that covers the terrace. The site was discovered by John Cook in 1996; at that time, a single shovel test located stone flakes and possible microblade at a depth of 40 cm BS. NLUR archaeologists investigated the site in 1998 and excavated two 2 m^2 units (Higgs et al. 1999) (Fig. 6).

Stratigraphy and Dating: The generalized stratigraphy of the units consists of a thick moss forest soil root mat covering 70–75 cm of loess deposits overlying bedrock.

The loess is characterized as a reddish silt (6–35 cm BS), underlain by a beige silt (36–74 cm BS), that encloses the majority of the artifacts. The basal levels consists of a thin, compact tan silt with schist (75–83 cm BS) overlying shattered schist bedrock (>83 cm BS). A charcoal sample collected at 50 cm BS associated with the heaviest clustering of artifacts (50–55 cm BS) produced a date of 9920±60 BP (Beta-123331).

Cultural Material and Discussion: The two test pits yielded 3290 flakes (mainly primary and secondary decortication flakes), six biface preforms or roughouts, one pointed uniface, one pebble tool, and three chert cobble fragments distributed from 35–77 cm BS. Over 90 percent of the artifacts were distributed from 50–55 cm BS, associated with the dated charcoal fragment. A possible lower component was found about 5–10 cm below the main concentration at 60–77 cm BS, consisting of 149 flakes and two biface preform fragments. Within both test pits, the upper component was associated with the reddish silt and beige silt interface and throughout the upper part of the beige silt. The uniformity and density of the artifacts suggest that both tests located a portion of a large horizontal occupational surface. Although the two test pits did not reveal site boundaries, estimated site size could be as much as 880 m^2 (40 x 22 meters) based on the level terrace area. This site may reflect acquisition and primary reduction of chert cobbles derived from the Little Delta River outwash plain.

LITTLE DELTA CREEK #4 (XBD-183)

Overview and Setting: The site is located 80 m above the Little Delta River floodplain near its confluence with the Tanana River. It is situated on a level terrace overlooking the floodplain to the south. The terrace extends southwest, with an exposed weathered schist bedrock outcrop. Vegetation consists of an open spruce/birch forest canopy with a moss and grass understory that covers the terrace. NLUR archaeologists discovered and investigated the site in 1998 and excavated four units; three were 50 x 50 cm, and one was 100 x 50 cm (Higgs et al. 1999) (Fig. 7).

Stratigraphy and Dating: The stratigraphy at the site consists of a thick moss forest soil root mat covering 90 cm of

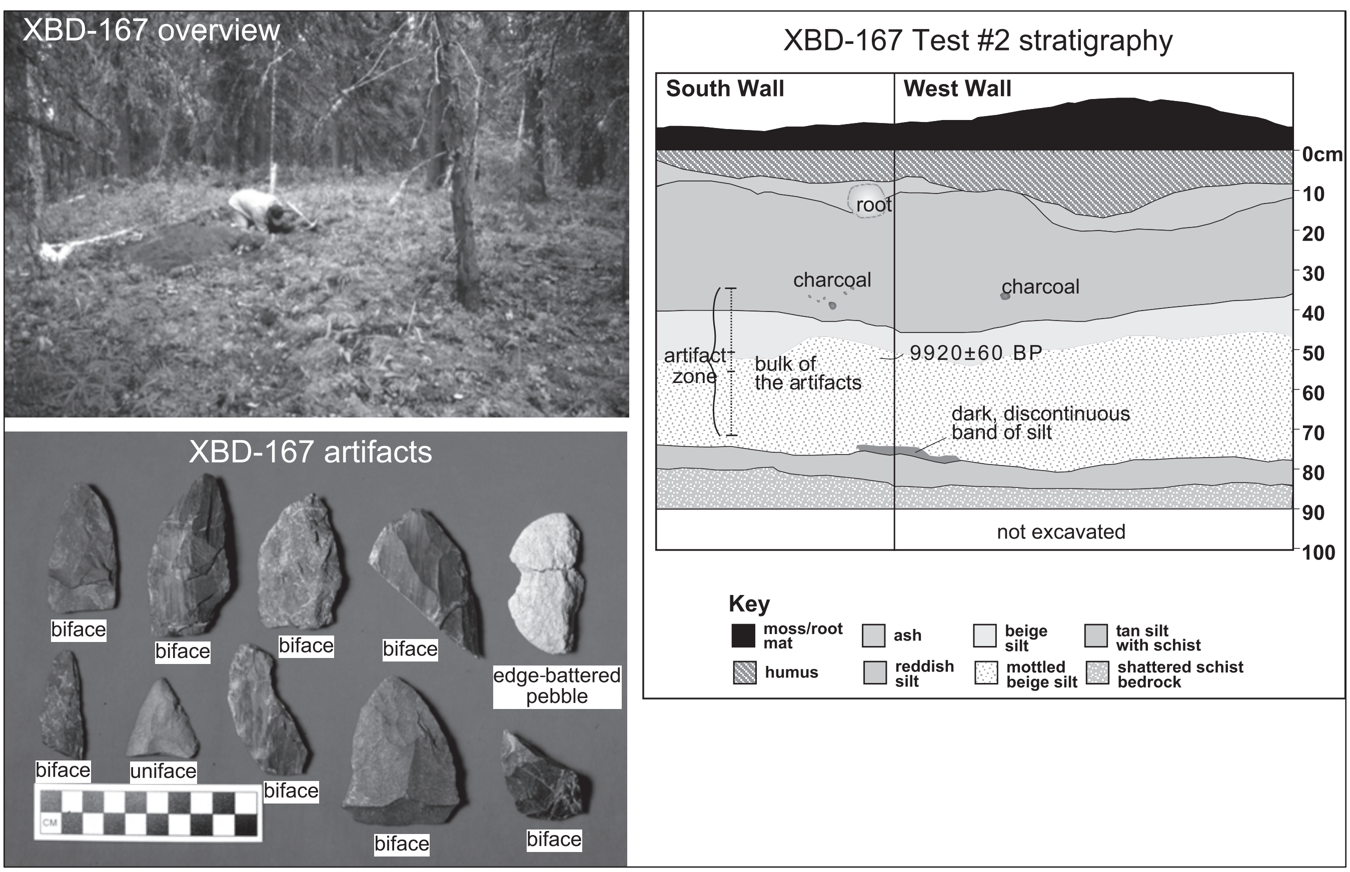

Figure 6. Little Delta River #3 overview, artifacts, and stratigraphy.

loess, in turn overlying bedrock. The loess is composed of reddish silt (10–40 cm BS), beige silt (40–66 cm BS) grading to a gray/tan silt loess (67–92 cm BS). A charcoal lens was discovered 30–34 cm BS, and a sample was dated to 3700±70 BP (Beta-123332). Nine gray/brown chert lithic flakes were found associated with this date (30–45 cm BS); however, the majority of flakes were found between 45–60 cm BS (n = 128 flakes). The date is viewed as an upper limiting date.

Cultural Material and Discussion: The two positive test pits yielded 138 flakes of at least seven varieties of chert and one split chert cobble. These materials are very similar to those at XBD-167, located about 400 m to the northwest, in terms of lithologies and similar chert cobble fragments. A single component is inferred, dating to before 3700 BP. Both XBD-167 and XBD-183 may reflect similar activities in acquisition and primary reduction of locally derived chert cobbles. The estimated site size is 200 m^2, based on observed artifact distribution and on the ridge microtopography.

HURRICANE BLUFF (XMH-838)

Overview and Setting: The Hurricane Bluff Site is situated about 20 km south of Delta Junction, on a southward-facing bluff about 45 m above the Delta River floodplain. The site is located <1 km from XMH-297 (Bacon and Holmes 1980). Vegetation consists of open white spruce forest with sage and grass understory. The observed site size is 408 m^2, based on observations of both surface and subsurface artifacts, although the inferred size based on microtopography is approximately 1,000 m^2. Although there is a military access road 150 m away, there is little evidence of recent human disturbance. Eolian erosion is severe, and modern bison trampling affects the site (Fig. 8).

Stratigraphy and Dating: The stratigraphy revealed at XMH-838 is remarkable. It is nearly 4 m deep, consisting of a complex sequence of eight sand units, six silt units, seven paleosols, and at least two tephras overlying Pleistocene outwash gravel. Cultural materials were found in situ within Paleosols 3 and 5. A sample of organics in Paleosol 3 (87–103 cm BS), dating Cultural Component 2, was radiocarbon dated to 1750±40 BP (Beta-123338). A lower limiting ^{14}C date (noncultural) from Paleosol 7 (300–325 cm BS) returned a date of 8810±60 BP (Beta-123339). Positioned between these two dated strata is a tephra (250 cm BS), which probably represents Hayes tephra, locally referred to as the Jarvis Ash Bed, dating between 3800–3500 BP (Reihle et al. 1990). A second tephra, above Cultural Component 2, is of unknown source, and appears to be younger than 1750±40 BP.

Cultural Material and Discussion: At least two stratigraphically distinct cultural components are present, based

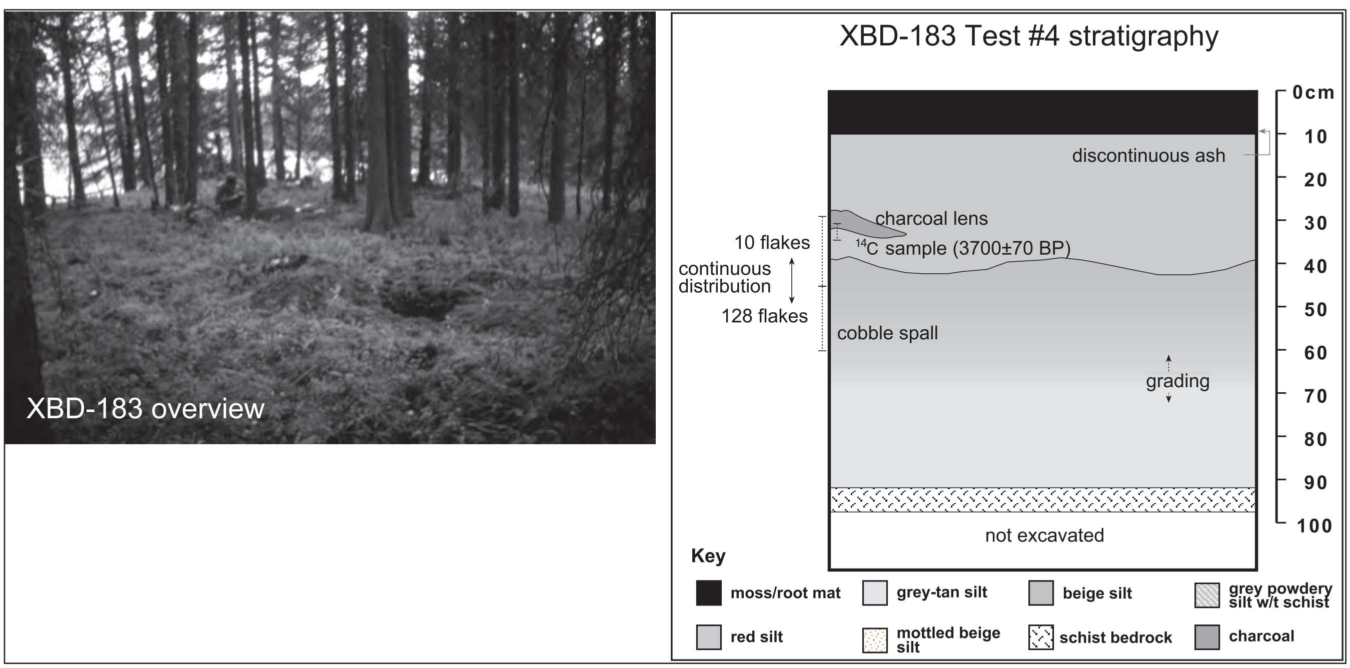

Figure 7. Little Delta River #4 overview and stratigraphy.

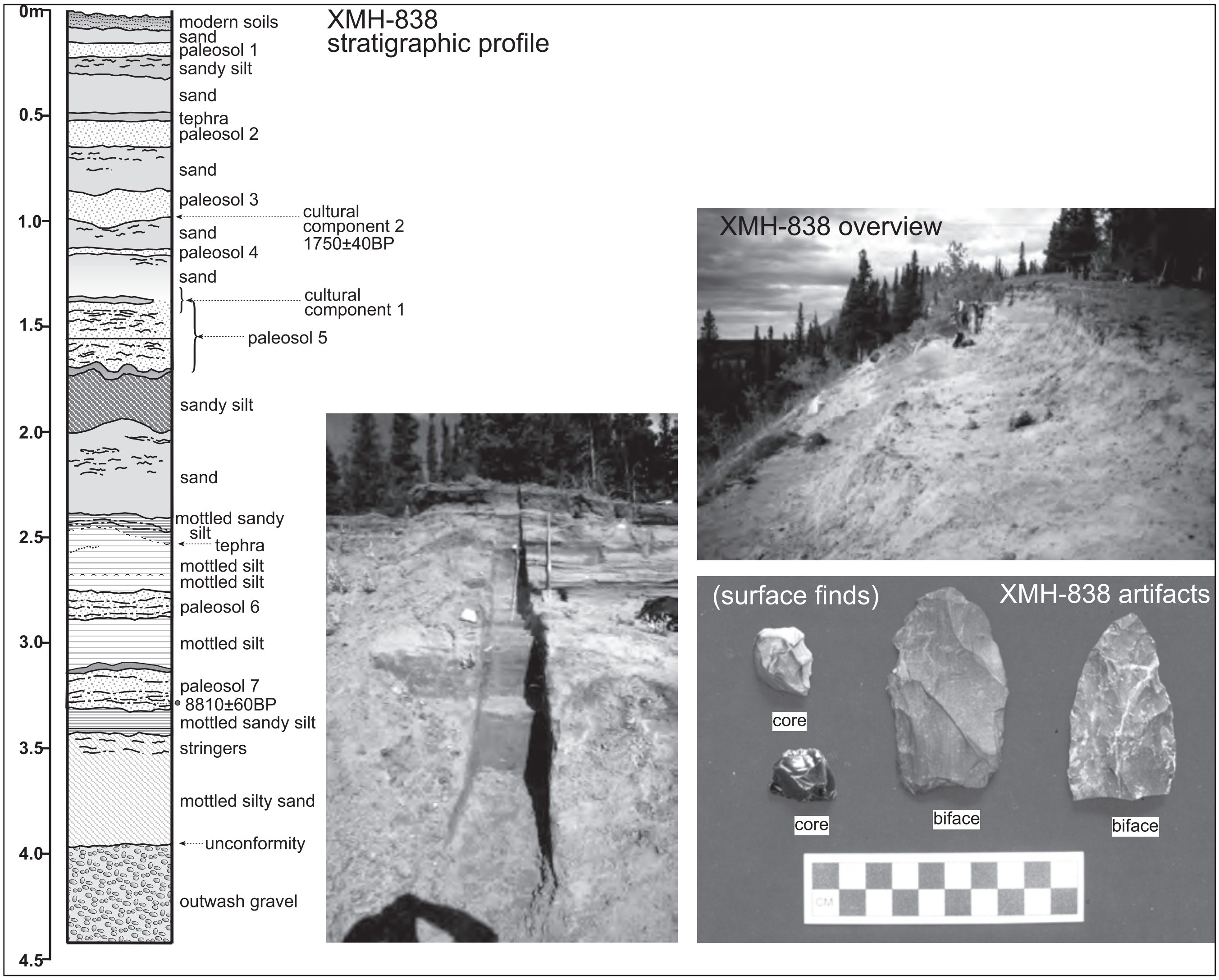

Figure 8. Hurricane Bluff overview, artifacts, and stratigraphy.

on relative vertical position of in situ lithic flakes. No formal tools or diagnostic artifacts were found in any of the controlled excavations. The upper component, consisting of 31 flakes, is within Paleosol Complex 3, which dates to 1750±40 BP. The lower cultural component, consisting of 40 chert flakes and one bone, is located within the upper soil stringers in Paleosol Complex 5. Tools recovered from surface erosional areas include an exhausted flake core, an obsidian flake core, and two bifaces. The obsidian was attributed to the Wiki Peak source (or Group A defined by Cook 1995) located in the Wrangell Mountains based on ED-XRF analysis (Speakman 2006). None of these can be associated clearly by age or cultural affiliation, nor can they be assigned with certainty to a stratigraphic layer.

The thick sand and silt deposits, good preservation, and excellent stratigraphy, make this site of major potential significance. It was not possible to fully assess this deeply buried site due to the time constraints of our limited testing program. Although no detailed cross correlations have been made between the stratigraphy of XMH-838 and XMH-297 (Bacon and Holmes 1980), the two are remarkably similar. The lowest paleosol at XMH-297 has been dated to between 8555±380 and 7190±200 BP, while the P7 paleosol at XMH-838 dates to 8810±60 BP. These appear to be related to a widespread forest soil formation event, documented throughout Interior Alaska (e.g. Mason et al. 2001; Potter 2005).

BERRY CREEK (XMH-869)

Overview and Setting: The Berry Creek Site, located about 15 km west northwest of Dot Lake, is situated on a south-facing bluff that overlooks a broad alluvial flood plain and Berry Creek. Canopy vegetation consists of an open black spruce forest with aspen, birch and white spruce dominating the bluff edge at the southern end of the site. The understory is dominated by moss. The site was discovered and investigated by NLUR archaeologists in 2001 during subsurface testing on the bluff, and 45 50 x 50 cm shovel tests were excavated within a 27,000 m^2 area (Potter et al. 2002) (Fig. 9).

Stratigraphy and Dating: The Berry Creek Site is located on an area of the bluff where sediment deposits tend to be shallow (less than 50 cm below surface level). The site stratigraphy is characterized as a thick organic forest soil and root mat (7–13 cm thick) overlying sandy silts and poorly sorted pebbles (approximately 17 cm thick). The percentage of pebbles mixed with silt increases with depth, as does pebble size. Fine to coarse-grained sand mixed with poorly to well-rounded pebbles and cobbles extends below 50 cm in depth. Dates of the cultural component(s) at the Berry Creek Site have yet to be determined.

Cultural Material and Discussion: A total of 118 lithic artifacts were observed in 19 of the 45 shovel tests within 12,000 m^2 along the southern edge of the bluff. The artifacts were found between 7–35 cm below the surface level and include two dacite unifaces, one cobble hammerstone, and 115 flakes made of a variety of materials from obsidian, chert, dacite, and rhyolite. The Berry Creek Site appears to be an extensive lithic scatter that covers a large area of the bluff's southern edge. The range and diversity of lithic materials and the site's large size compared to other Interior Alaska sites are noteworthy.

TOK TERRACE NORTHEAST (TNX-088) AND TOK RIVER OVERLOOK (TNX-089)

Overview and Setting: The Tok Terrace Northeast site is situated on a terrace edge that overlooks the Tanana River and its adjacent flood plain to the northeast, approximately 10.5 km east of Tok. The Tok River Overlook Site is located approximately 2.4 km west of the Tok Terrace Northeast site along the same terrace. The Terrace Site (TNX-033) is located approximately 2.4–3.2 km south of the two sites, and is situated on the southern edge of the same terrace (Sheppard et al. 1991). The Tok River Overlook Site overlooks the Tok River and its adjacent flood plain to the west. The terrace is approximately 5–10 m above the flood plain and former river channels of the Tanana and Tok rivers. A majority of the open black spruce forest vegetation within the areas surrounding the sites was burned in the 1990s by natural forest fires, and a number of early successional species such as fireweed, grasses, and aspen saplings are recolonizing the area. The sites were discovered and investigated by NLUR archaeologists in 2001 during subsurface testing of the terrace (Potter et al. 2002). At the Tok Terrace Northeast site, 53 50 x 50 cm shovel tests and three 1 x 1 m test excavations were placed within a 7,800 m^2 area. At the Tok River Overlook Site, 65 50 x 50 cm shovel tests and 4 1 x 1 m test excavations were placed within a 6,000 m^2 area. The depth of the subsurface tests ranged from 30 cm to 150 cm below the surface. Thirteen of the 53 tests excavated at the Tok Terrace Northeast site were positive for cultural material, while 25 of the 65 tests placed at the Tok River Overlook Site yielded artifacts (Potter et al. 2002) (Fig. 10).

Stratigraphy and Dating: The stratigraphy is similar at both sites and can be generalized as a thin forest mat (approximately 4 cm thick) overlying a silt (loess) deposit

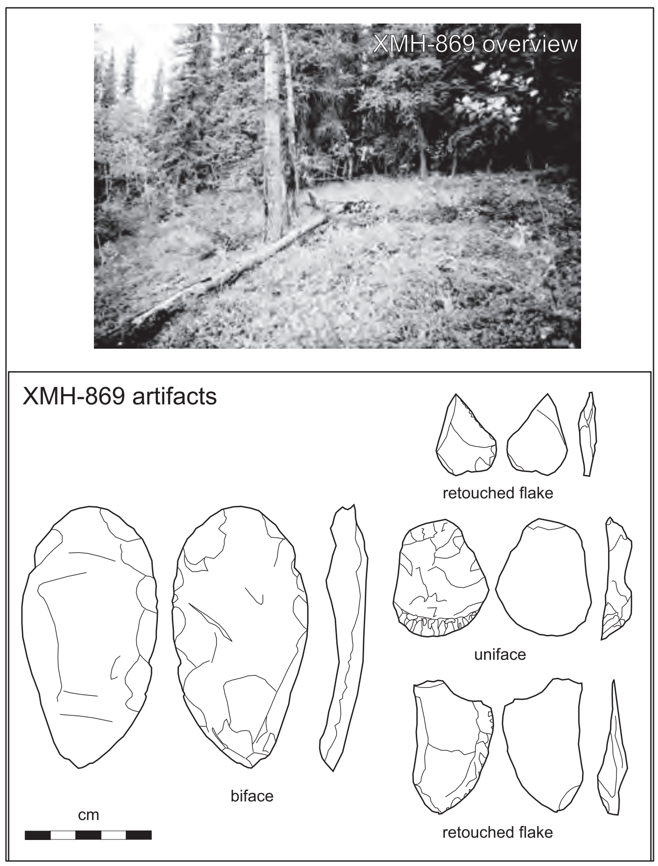

Figure 9. Berry Creek overview, artifacts, and stratigraphy.

mixed with discontinuous white volcanic ash (approximately 5 cm thick). Based on field observation, the ash appears to be White River Ash; however, petrographic and geochemical analyses have yet to be conducted. The silt loses the traces of the ash and begins to grade into an underlying reddish grey silt, followed by yellow sandy silt to about 20 cm below surface. The ash was likely reworked into a lower silty deposit similar to processes observed at the Terrace Site (Sheppard et al. 1991). Beyond a depth of 20 cm, alluvial silts mixed with outwash gravels are found below 150 cm below surface. The artifacts were consistently found between 5–15 cm below the surface level in and below the silt mixed with ash layer. The two sites also are similar in stratigraphy to the Terrace Site, where Sheppard et al. (1991; also see Bigelow and Steffian 1992) determined that a majority of the artifacts were discarded within loess overlain by White River Ash. The volcanic ash was subsequently reworked into the upper portions of the lower silt, probably through cryoturbation (Sheppard et al. 1991:42–43). A noncultural radiocarbon date of 5110±100 BP was obtained on organic materials from a contact between the silt deposit and outwash gravels at the Terrace Site, assumed to be the maximum age of the silt deposit (Sheppard et al. 1991:20). A date range for occupation(s) at the Tok Terrace Northeast and Tok River Overlook sites can thus be estimated between 5100 BP and 1900–1500 BP (see Lerbekmo et al. 1975; and Robinson 2001 for the extent and dating of the northern lobe of White River Ash).

Cultural Material and Discussion: At the Tok Terrace Northeast site, 13 test pits produced over 200 lithic artifacts that were primarily debitage made from a variety of materials including basalt, chert, and chalcedony. At the Tok River Overlook Site, 25 test pits yielded almost 600 lithic artifacts, seven large mammal cortical bones, and several smaller unidentifiable bone fragments. Among the lithic artifacts recorded at the Tok River Overlook Site were three wedge-shaped microblade cores, 20 micoblades, one microblade core tablet, two bifaces, one uniface, two retouched blades, five retouched flakes, and one amorphous flake core fragment. The lithic artifacts were composed of a variety of raw materials that included basalt, obsidian, and a variety of cherts.

TNX-078 AND TNX-079

Overview and Setting: TNX-078 and TNX-079 are located about 31.2 km east southeast of Tok and are situated on a low south-facing alluvial terrace overlooking the

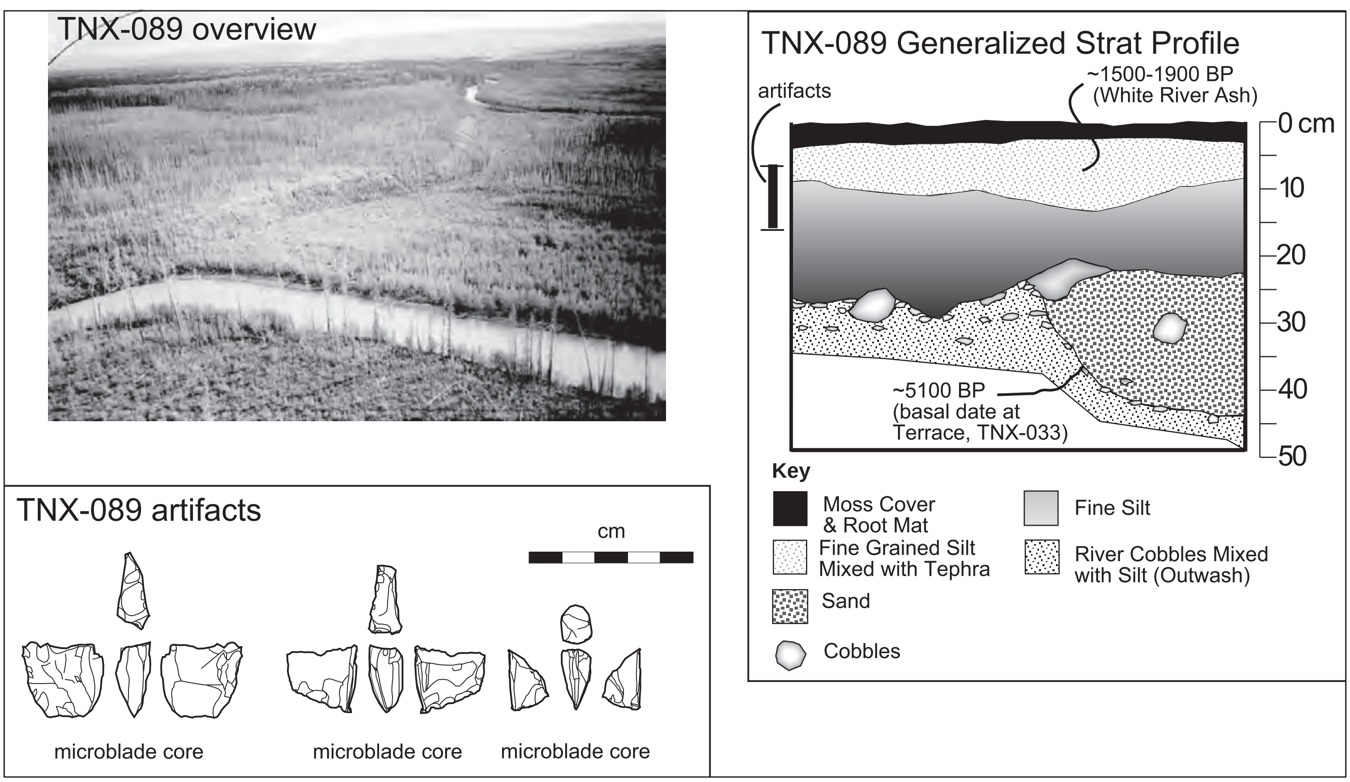

Figure 10. Tok Terrace Overlook overview, artifacts, and stratigraphy.

Tanana Flats. The sites are located within approximately 1.6 km of each other. Vegetation along the terrace consists of an open black spruce/birch forest canopy with a thick moss forest soil and root mat understory. Muskeg and low-lying marshes interspersed with small lakes, streams, and creeks that characterize the Tanana Flats are located approximately 300 m to the south of the terrace. A majority of the vegetation along the terrace has been burned by natural forest fires. The sites were discovered and investigated by NLUR archaeologists in 2001 (Potter et al. 2002). Twenty-three 50 x 50 cm shovel tests were placed within a 600 m^2 area at TNX-078, and 22 tests were placed within a 6400 m^2 area at TNX-079. Shovel test depths varied between 50–100 cm at each site. One of the 23 shovel tests excavated at TNX-078 produced over 77 lithic artifacts and 11 bone fragments. Three of the 22 tests conducted at TNX-079 produced 10 lithic artifacts (Fig. 11).

Stratigraphy and Dating: At TNX-078, the stratigraphy consists of a shallow moss forest soil and root mat (2–8 cm in thickness) immediately overlying sandy silt (15 cm thick). A discontinuous lens (1–4 cm thick) of white volcanic ash, which appears to represent the White River Ash based on field observation, underlies the upper sandy silt deposit. A deposit of mottled sandy silt underlies the ash deposits and grades to a coarser silt at 40 cm; this in turn overlies a coarse gray sand below 100 cm. Artifacts from a single shovel test were recovered from a depth between 15–17 cm below the surface, just above the ash layer. The stratigraphic sequence at TNX-079 consists of a shallow burned moss forest soil and root mat (2–4 cm thick) overlying a 25–30 cm thick deposit of silt. The upper 10–15 cm of silt has discontinuous lenses of white volcanic ash. At 25–30 cm below the modern surface vegetation, silt grades into light brown sand containing reddish clay lenses approximately 5 cm thick. Underlying this, at a depth of 30–35 cm, are gravels of schist and granite, intermixed with silt that extends beyond 50 cm in depth. Artifacts were found in three tests at approximately 15 cm below the surface level and immediately above the tephra. Based on the dating elsewhere of the White River Ash, a lower limiting age of 1,500–1,900 radiocarbon years can be estimated for these two sites (Lerbekmo et al. 1975; Robinson 2001).

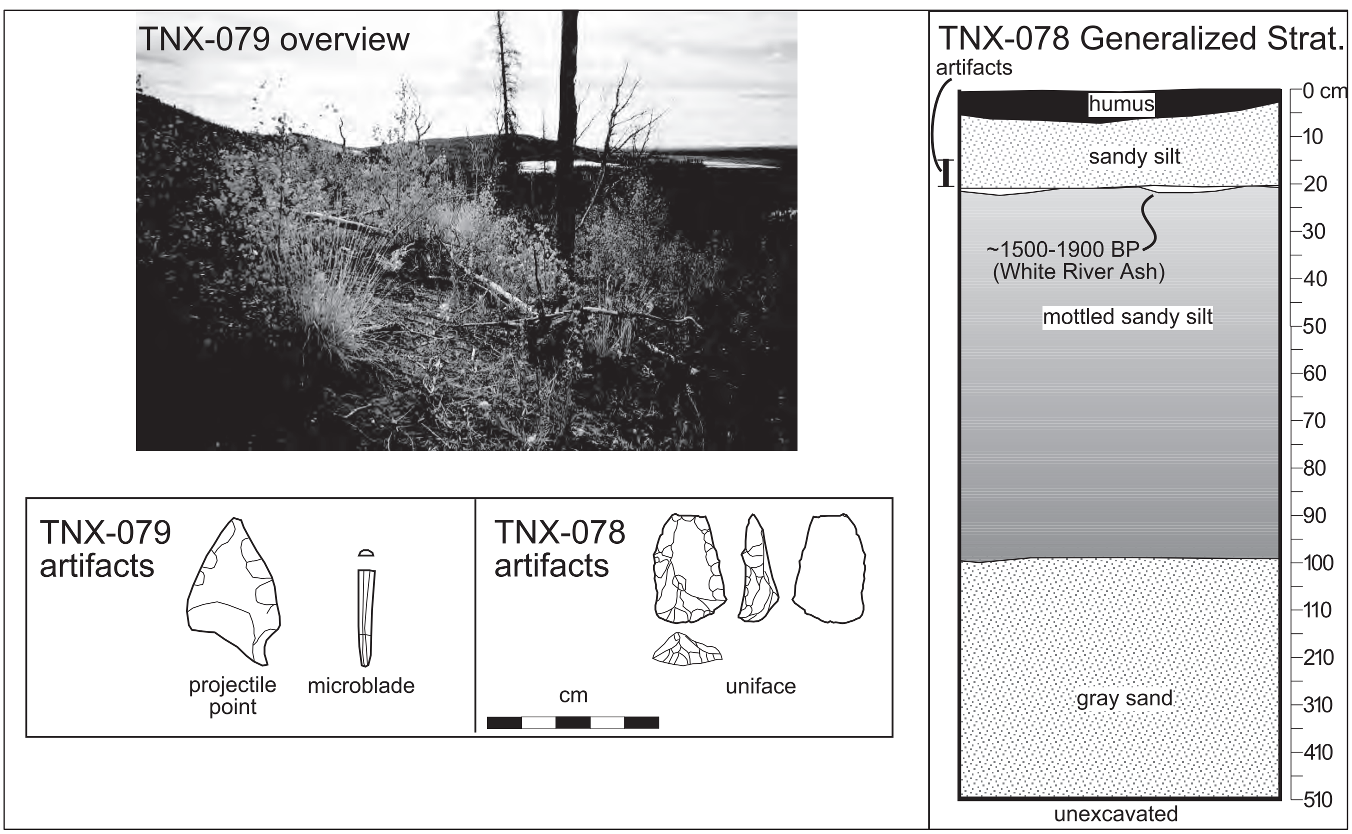

Figure 11. TNX-078, TNX-079 overview, artifacts, and stratigraphy.

Cultural Material and Discussion: At TNX-078, a single test pit yielded 66 lithic artifacts and 11 small mammal bone fragments. Among the lithic artifacts observed at TNX-078 are a black obsidian unifacially retouched scraper, 63 obsidian flakes, and two black chert flakes. At TNX-079, 20 lithic artifacts and six animal bone fragments were observed on the surface of the terrace within an estimated 3600 m^2 area. The surficial lithic artifacts included one obsidian microblade, one dark grey chert uniface, a reddish-brown chert side-notched point, 15 smoky black obsidian flakes and two dark grey basalt flakes. Three test units within this area produced a total of 11 lithic artifacts that include four grey chert flakes and seven black basalt flakes.

DISCUSSION

For the purposes of placing these assemblages within cultural frameworks, a brief review of some existing cultural chronologies is appropriate. A number of archaeological constructs have been postulated on the basis of a few excavated assemblages and rather limited intersite variability studies (e.g., Bacon 1976, 1987; Cook 1969; Dixon 1985, 2001; Goebel et al. 1991; Hamilton and Goebel 1999; Holmes 1974, 2001; Powers and Hoffecker 1989; West 1967, 1981, 1996). Terms used to describe Interior Alaska assemblages variously include American Paleoarctic Tradition, Denali Complex, Nenana Complex, (Northern) Paleoindian Tradition, Chindadn Complex, Beringian Tradition, Tuktu Complex, East Beringian Tradition, and others. These groups are generally derived from presence/absence of specific tool classes (e.g., microblades) or tool types (e.g., side-notched bifaces, "Kavik," and "Chindadn" points).

Probably the most widely cited cultural chronology for the Alaska interior is Dixon (1985). While comprehensive in its scope in 1985, subsequent research has made portions of a sequence of Chindadn–American Paleoarctic–Northern Archaic–Athabascan somewhat untenable (cf. Bever 2001). For example, recent work has clearly demonstrated that microblade technology (with wedge-shaped microblade cores) is present from the earliest components: Swan Point CZ 4a and 4b, (Crass and Holmes 2003; Holmes 2001) to some of the latest: Healy Lake Village and Garden sites (Cook 1969), Lake Minchumina Levels 1–3 (Holmes 1986), Swan Point CZ 1a (Holmes 2001), Fish Creek Concentration A11 (Cook 1977), and Dixthada Component 1 (Shinkwin 1979). This paper documents three additional components with Late Holocene microblade technology (Owl Knoll, Tok Terrace Northeast, and TNX-079).

In practice, only a few items generally considered to be culturally diagnostic have been considered sufficient to establish or posit a cultural affiliation (e.g., discussion of Chindadn points in Robertson et al. 2005: 62, 125). For the Late Pleistocene/Early Holocene period, essentially two "diagnostics" have been promulgated: "Chindadn" points and variable presence/absence of microblade technology (see Potter 2005:70–74). While no Chindadn-like bifaces were found at the components described in this paper, the temporal distribution of microblade technology is contrary to expectations from established cultural chronologies. A number of Early Holocene components, situated in the timespan of the Paleoarctic Tradition or Denali Complex (defined primarily on the basis of microblade technology) have not yielded microblades, such as Little Delta Creek #3 components, Houdini Creek, and HEA-327, described in this paper, as well as other sites in the broader Tanana Basin, such as Gerstle River Component 1 (Potter 2005), and Erodaway (Holmes 1988). While sample size might be a factor in the absence of microblade technology at some of the sites, this is likely not the case at Gerstle River, Erodaway, or Houdini Creek. Thus, a more complex relationship of assemblage variability affected by technological organization, site structure, and site function may be reflected in these patterns. It is beyond the scope of this article to develop cultural chronological units more consistent with the data; however, we discuss cultural chronology of the Tanana Basin based on the data presented above.

A consistent pattern revealed by these disparate sites is that of technological conservatism throughout the Holocene. A number of the components presented here contain microblade technology in the later Holocene (<5,100 BP). Microblades were found at Owl Knoll and TNX-079, and wedge shaped microblade cores were found at Tok River Overlook. Another pattern is the variability in bifacial forms, especially projectile points, in the Late Pleistocene and Early Holocene. Within the period 12,000 to 7,000 years BP, projectile point types include tear-drop or "Chindadn" points (Type 1 as described by Holmes 2001) found at Walker Road, Moose Creek, and Chugwater (Maitland 1986; Lively 1988), short triangular points (Holmes' 2001 Type 2) found at Healy Lake, Owl Ridge, and Swan Point, concave-based lanceolate points (Holmes 2001 Type 3) found at Eroadaway (Holmes 1988), Jay Creek Ridge (Dixon 1993), convex or bipointed lanceolate points (Holmes 2001 Type 4) found at Houdini Creek and HEA-327, spatulate lanceolate points found at Dry Creek Component 2 (Powers et al. 1983), and flat-based lanceolate points found at Dry Creek Component 1 and Moose Creek (Hoffecker 1996). The association of microblades with a lanceolate projectile point form is demonstrated at Owl Knoll in the later Holocene. Microblades and notched projectile points are possibly associated at TNX-079. The association of notched bifaces and microblades is well demonstrated by Cook and Gillispie (1984). The presence of multiple weapons systems suggests that microblades may represent one or more functional categories within assemblages rather than performing the same function (dart tip) within different demes or cultures.

The sites discussed here are also important in understanding assemblage variability and site structure, despite the fact that limited testing has been conducted to date. Some sites or components (e.g., Houdini Creek, Hurricane Bluff Component 1) exhibit thin deposits of cultural material suggestive of single occupations, while others have thick cultural deposits perhaps indicative of multiple occupations or longer term use (Little Delta Creek #3). Little Delta Creek #3 in particular is illustrative of how established cultural chronologies cannot adequately deal with Holocene variability. The cultural material at this

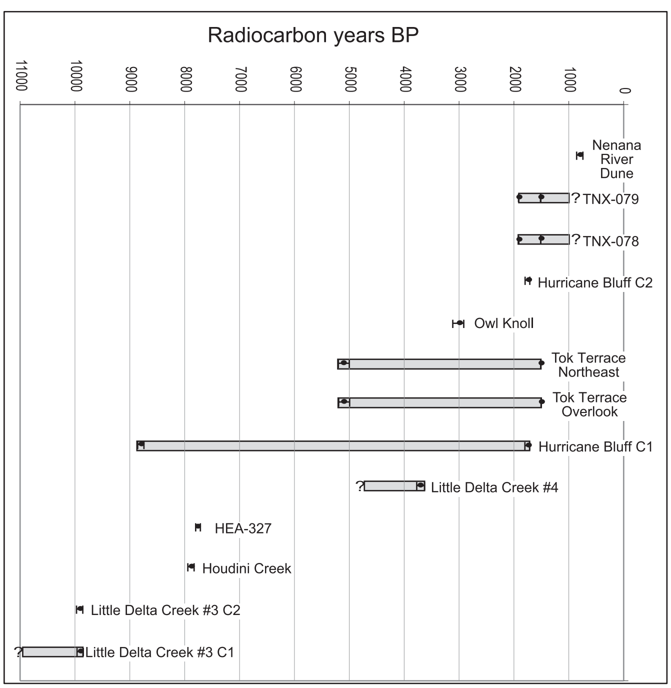

Figure 12. Radiocarbon dated components.

site contains almost exclusively early stage primary reduction and bifacial reduction with no evidence of microblade technology that is considered widespread at ca. 10,000 BP. Houdini Creek bifaces are similar to those at Carlo Creek (Bowers 1980) and Dry Creek Component 2 (Powers et al. 1983; cf. Bowers et al. 1995). Variability in assemblage characteristics as well as typology suggests that site structural studies may be critical in understanding how tools and sites were used in systemic contexts. Such studies will be important in developing cultural chronologies that more accurately reflect intersite variability.

When these data are considered within the wider context of Tanana Basin archaeology, the technological conservatism discussed above is even more evident, with wedge-shaped and sub-conical microblade core varieties, flake burins, various unifacial forms, lanceolate biface forms, and boulder spall scrapers present throughout the record (see site summaries in Dixon et al. 1980; Dixon et al. 1985; Holmes 1979; Potter et al. 2002).

A reasonable conclusion is that microblade technology and generalized projectile point forms may not be considered to be culturally diagnostic. A re-evaluation of archaeological constructs in Interior Alaska therefore seems appropriate. Assemblage variability should be incorporated into any such future analyses given the variation of assemblage characteristics described in this paper. The possibility that the composition of components may reflect both technological and typological traits in addition to other variables such as technological organization, site structure and site location should be addressed.

More refined dating and block excavations (with consequent control of horizontal space) are necessary for many of the sites presented here to fully explore technological, spatial, and assemblage variability. There are few large excavated sites in the Tanana basin, and the investigations conducted to date have revealed substantial variability in assemblage characteristics and tool types within sites (compare Mobley 1991 with Pearson and Powers 2001; see also Cook 1969; Maitland 1986; Lively 1988; Potter 2005). Detailed technological and typological studies are necessary in order to document the nature of the variability in various formal and expedient tool forms. Site structural studies at an intrasite level (e.g., Hoffecker 1983a, b; Potter 2005), and usewear analyses (e.g., Flannigan 2002) are necessary to develop and test hypotheses about site utilization, technological organization, and tool use; these in turn will provide insights into settlement systems and subsistence strategies of these populations.

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