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CONTENTS
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TURNPIKE ARCHAEOLOGY

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INTRODUCTION

Widening the Maine Turnpike south of South Portland was a controversial topic a decade ago, while a similar project has recently been approved by referendum. Archaeological studies done at the time of the first project proposal are still valid today. Herein we briefly summarize the Phase I survey results and the historic archaeological results, and present more detailed information on the four prehistoric archaeological sites discovered (sites 4.8, 4.9, 5.12, and 8.15).

Archaeological work on the project began with an historical background search by Emerson Baker (1988), and a Phase I archaeological survey of the strip of land to be consumed by adding a third lane to each side of the Turnpike (Spiess et al. 1988). Phase II testing of the sites discovered along the Turnpike was accomplished in 1989 (Spiess et al. 1990). Phase I and II testing of proposed wetlands creation or enhancement areas (in compensation for wetlands to be destroyed by the turnpike widening) was done in 1991 (Cranmer and Spiess 1991).

PHASE I TESTING

Historic archaeological research consisted of background research in maps and other documentary sources. The information developed from these sources was compared with the historic archaeological material encountered as a result of testpit excavation at or near the locations predicted by the background research and with historic artifacts encountered in testpits dug to test for prehistoric sites. Two historic sites were first identified by the documentary sources, one was identified by fieldwork and one was identified by both activities. Thus, four historic archaeological sites received further Phase II testing, but none of them were judged eligible for listing in the National Register and therefore in need of further archaeological work. The rest of this article focuses on the prehistoric archaeology results.

Since there were no prehistoric archaeological sites known on or near the Turnpike prior to this study, a stratified sampling strategy for prehistoric sites for this project was developed from a general predictive model of prehistoric site location in southern Maine. Our predictive model for non-coastal, prehistoric archaeological site location is based upon topographic features and soil types. Specifically, banks and shores of bodies of water attracted settlement. Two other attributes that can be used to predict site locations (or at least rule out site locations) are soil type and landform slope. Most sites are found only on landforms of 5% slope or less (usually much less). Maine's prehistoric inhabitants also selected, when possible, better-than-average drained soils for a specific region. Thus, we find sites in fine sand as opposed to surrounding silt, in rock-free sandy silt as opposed to glacial till or in other similar situations. Landforms exhibiting a break in slope, such as a river terrace or river bank, the edge of a small delta feature or the edge of a small abandoned water channel also attracted prehistoric settlement. Indeed, it is rare to find prehistoric habitation sites more than ten meters away from such landform edge features. In practice, we divided the total project area into four hierarchies (or classes) of site probability:

One (1) included all habitable landforms within the two largest river valleys of the Turnpike study area: the Mousam and the Saco;

Two (2) included all smaller streams and river head waters that were associated with habitable landforms;

Three (3) included all well-drained level landforms which turned out to include extensive tracts of gravelly sand in the southern portion of the project area; and

Four (4) included all terrain that had a steeper slope or till or poorly drained soil type.

All habitable landforms within the Turnpike expansion strip classed as Class (1) were tested with shovel testpit transects. The choice of transect

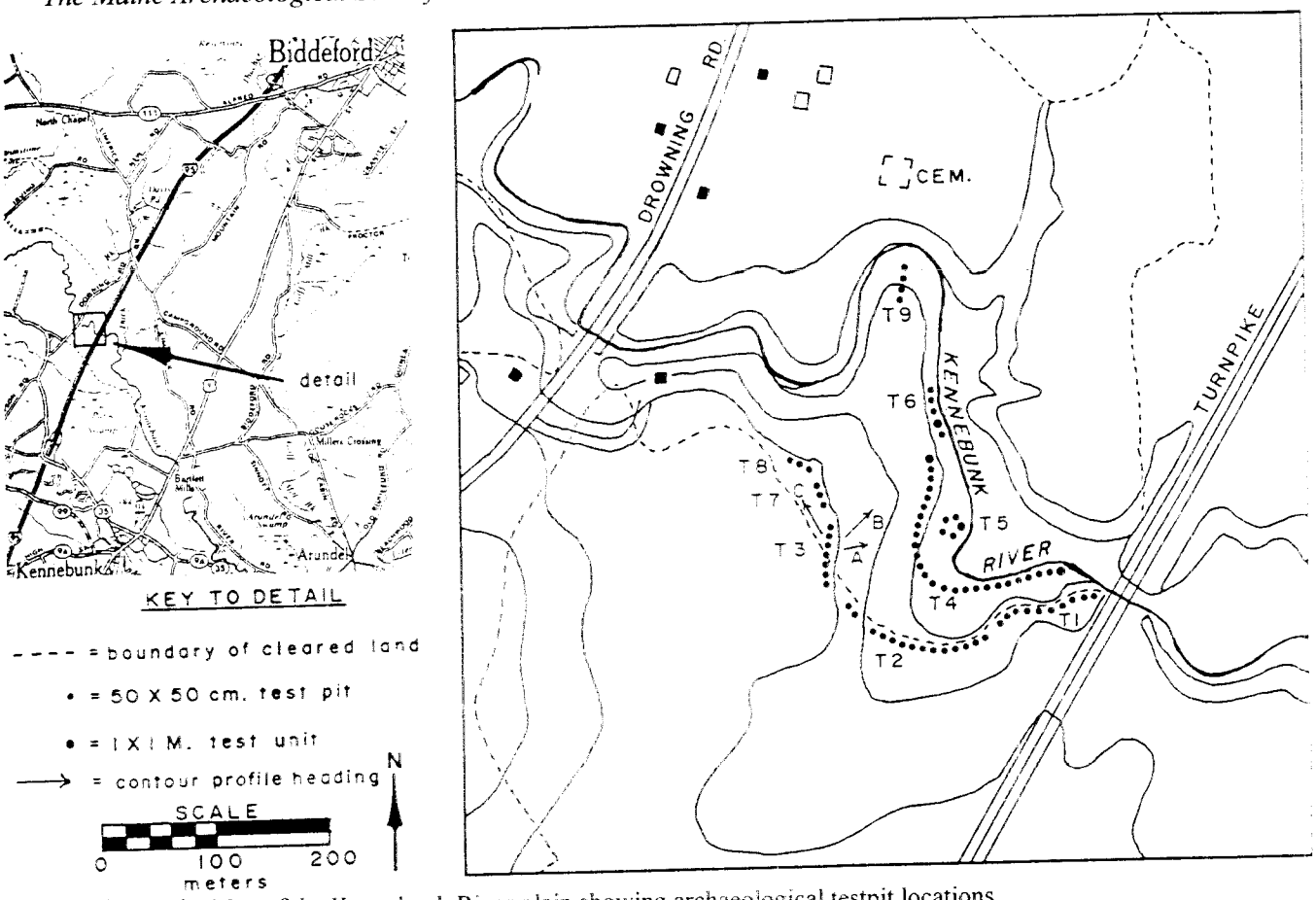


Figure 1. Map of the Kennebunk River plain showing archaeological testpit locations.

locations within Class (2) and (3) was not random, but based upon restrictions of accessibility. Class (4) landforms were not tested. We excavated 17 transects consisting of a total of 103 testpits on Class 1 landforms in the two major river valleys and located 3 prehistoric archaeological sites. Eight transects consisting of 47 testpits were excavated in Class 2 situations, locating no prehistoric sites. Four transects consisting of 62 testpits were excavated on Class 3 landforms and located no prehistoric sites. Testpits were dug in 50 x 50 cm square units in shallow soils, and 1 x 1 m square units in river alluvium. All soil was screened through 3" mesh hardware cloth.

In addition to the Turnpike widening strip, archaeological testing was also done within four wetlands creation areas: the Water District gravel pit in Wells, the Coty field in Biddeford, the Kennebunk River field in Kennebunk, and the Saco River fields. No sites were found in the first three areas. Kennebunk River field data are presented below as an example of the intensity of our testing, and because we obtained a radiocarbon date on a geological stratum.

Kennebunk River Field Wetland

The Kennebunk River Field wetland area occupies the concave portion of a southward facing meander on the Kennebunk River, just west of the Turnpike (Figure 1). Two small streams enter the wetland area beginning just a few dozen meters west of the Turnpike. The land is terraced from the heights of the wooded southern margin to the large open flood plain along the river. Two depressions, which appear to be cut-off (fossil or abandoned) meanders or channels of the Kennebunk River, cut across the

field generally in a northwest/southeast to north/south direction. The fields, including the terraces, have all been disturbed by plowing. We felt that the wooded area along the southern margin of the wetland area might be undisturbed. Nine transects were selected, having a total of 77 test pit locations. Transects 1, 2, and part of 3 were located in the woods along the margin of the highest terrace of the area, following the contour of the woods/field boundary. This highest terrace probably represents the bank of a glacial stream and would be the oldest visible landform in this wetland area. The remaining transects were all established in the flood plain or lower field. Transect 9, for example, consisted of 4 shovel testpits which ran down the middle of the field on top of a slight rise which probably represented the bank of one of the cut-off channels.

All test pits on the upper terraces of the site were dug as 50 X 50 cm squares. On the lower flood plain a different approach was necessary because of the possibility of deeply buried "A" horizons. ("A" horizons are those soil strata that are or at one time were the ground surface, and thus might have evidence of human occupation.) In order to test for buried "A" horizons when conducting a Phase I survey of river alluvium, some of the testpits must be dug to a depth of 150 cm (where not prohibited by the water table). The most practical method of doing this is to dig that test pit as a 1 x 1 meter unit. On the Kennebunk River wetlands area there were 40 test locations on the flood plain, and four of these were dug as 1 x 1 meter test pits, while the remaining 36 excavations were dug as 50 x 50 cm testpits, generally to a depth of 80 cm. The four 1 x 1 m pits were: T4 TP1; T4 TP26; T5 TP5; and T6 TP2. Also, at T5 TP5 and T6 TP2 a 3" hand bucket auger was used to sample the soils below the limit of excavation, and these samples were saved for future analysis as well. A total of 223 cubic meters of soil was excavated at the Kennebunk River wetlands area.

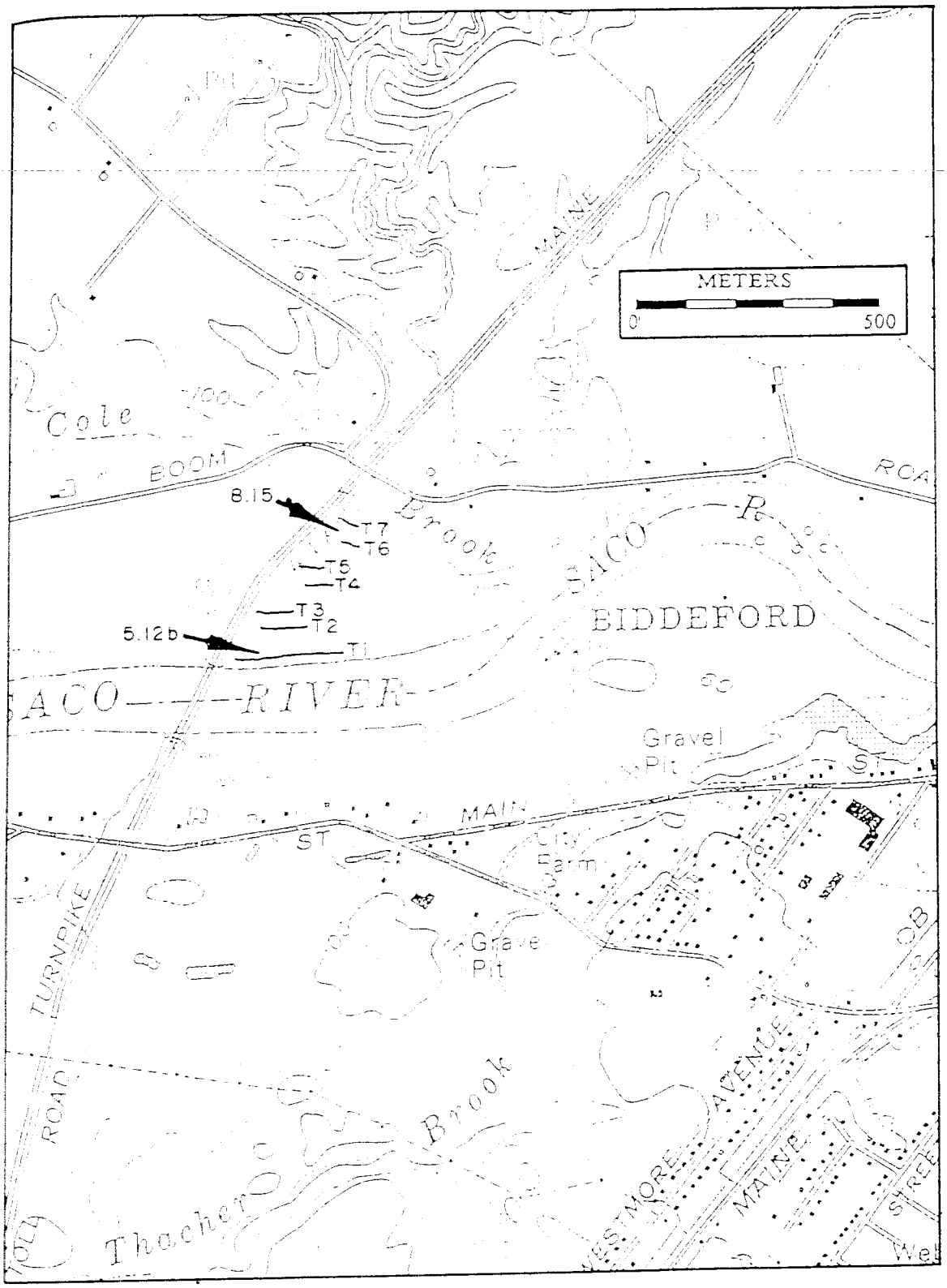
Transect 5 was located on the flood plain on a slight circular rise at a point formed by a meander of the river. The four shovel testpits exposed identical stratigraphy consisting of a plowzone of 30 cm., a light brown (olive) gley soil of very fine sandy silt (containing lumps of charcoal) ending between 75-85 cm where grey silt began. The average depth of the Shovel testpits was 86 cm below surface. TP5 was excavated as a 1 x 1 m test unit to a depth of 150 cm, and then the bucket auger was used to test the soils to a further depth of 245 cm. where the bucket could no longer hold the wet material. From 150 cm down, the material was gray sand, ranging from silty fine sand to coarse sand. A fragment of wood (not charcoal) recovered by the bucket auger from between 235 and 245 cm returned a radiocarbon date of 2040"80 B.P. (Beta-50499), C13/C12 -27.6 0/00, for a C13 adjusted age of 2000"80 B.P. Thus, the last 2.5 meters of material on this flood plain has accumulated in the last 2000 years.

The flood plain at the Kennebunk River wetlands area was not occupied by prehistoric peoples. It was probably too wet. Furthermore, no evidence of prehistoric occupation was found along the upper terraces along the margins of the field, suggesting that prehistoric occupation in this particular area was sparse or non-existent. Perhaps the south facing terraces on the other side of the Kennebunk River were more attractive to native peoples. We return to a discussion of the Saco River Fields wetland survey in the discussion of sites 5.12b and 8.15 below.

SITES 5.12b AND 8.15, SACO RIVER FIELDS SURVEY

This large area of proposed wetland enhancement yielded two prehistoric sites. The proposed Saco River Fields wetland is a rectangular area (approximately 125 x 500 meter) bounded by the Saco River to the south, the Turnpike to the west, a dirt access road to the east, and extends just beyond Cole Brook to the north. The wetlands area consists of a series of cut-off fossil (abandoned) river banks (levees) and intervening wetlands at descending altitude as one approaches the river. These landforms probably record southward migration of the river channel over an unknown number of thousands of years. The levees are now four active

Figure 2. Location of the Saco River fields, sites and testpit transects on the east side of the Turnpike.



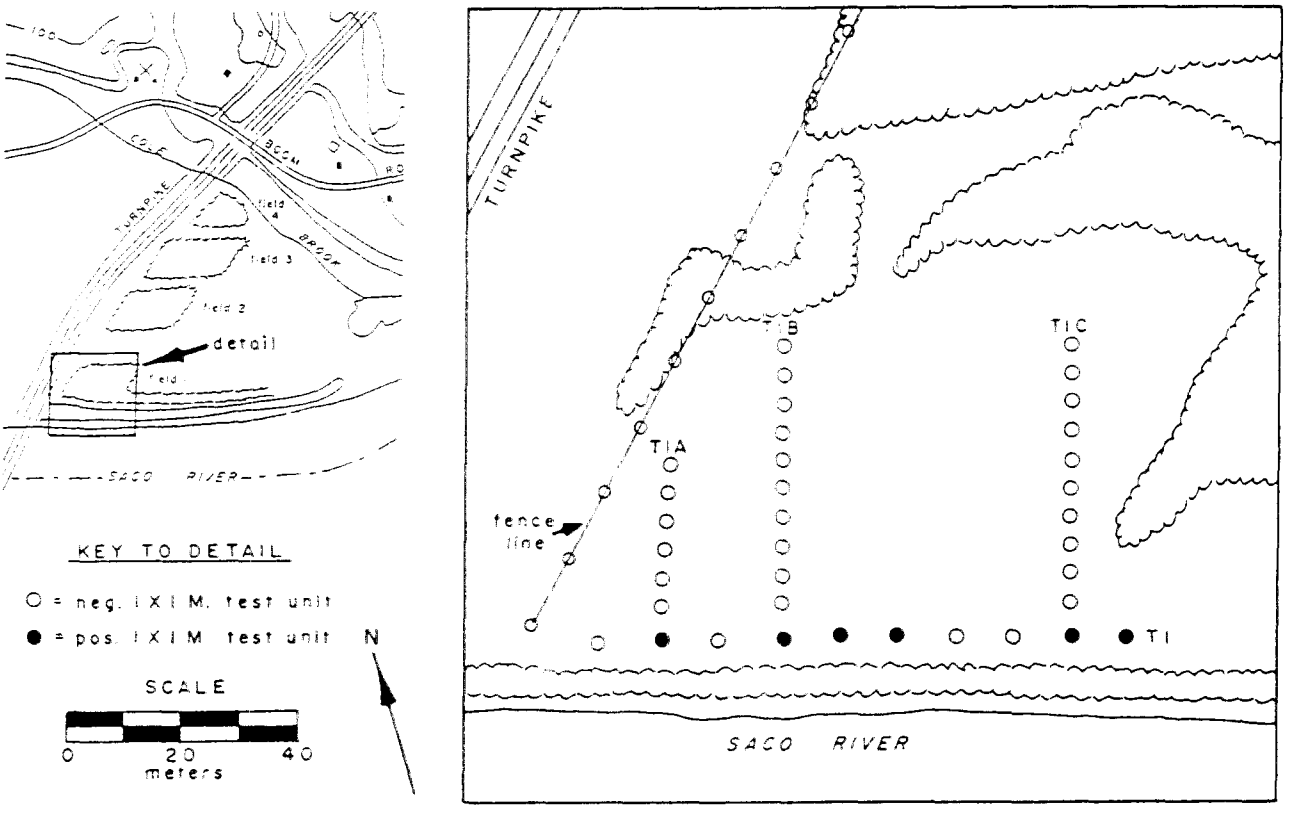


Figure 3. Map showing the Saco River fields and Phase I and Phase II testpits in field one.

fields (Figures 2 and 3) with intervening wooded wetlands separating the fields. (We designated the fields 1 to 4 beginning at the river with 1 and moving northward.)

Phase I testing of the Turnpike widening corridor had identified site 5.12b on the basis of two large pieces of fire-cracked rock recovered in two testpits at depths over 100 cm in alluvial silt near the Turnpike bridge piers. The phase I work at the Saco River Fields wetland area resulted in the discovery of site 8.15 and 5.12b was further extended eastward. Transect 1 in field 1 (site 5.12b) produced evidence of at least two distinct periods of prehistoric occupation along the present river bank: an Archaic occupation, and a poorly defined Late Ceramic period occupation. Radiocarbon dating of charcoal taken from about 150 cm below surface produced radiocarbon dates of 6000 to 7000 B.P. Higher still, at 76 cm below surface, a corner notched point is believed to date to between 300-800 BP. Thus the dates for the sequential prehistoric occupations follow the natural development of the river bank, with the earliest datable material at the lowest level excavated and newer material sequentially higher in the soil profile as would be expected in a minimally disturbed site.

The other site was located in field 4, and has been designated site 8.15. This site has produced no diagnostic artifacts with which to date it. It could be assumed, since it lies along a fossil river channel of the Saco River, that the site should be older than the dated site along the present river bank at site 5.12b.

Site 5.12b

We begin our description of site 5.12b with stratigraphy. All test pits at Transect 1 in field 1 were stratigraphically similar in that they contained

Figure 4. Two diagnostic points from site 5.12b. The corner-notched point (lower) comes from approximately 76 cm depth in T1 tp2, associated with Feature 1. The narrower point (upper) comes from approximately 120 cm depth associated with Feature 3 in T1 tp 9.

a 20-38 cm deep plowzone below which were stratified fine sands and silts with an occasional lens of medium sand. These strata varied from fine sand to fine sandy silt, generally becoming siltier with depth.

T1 TP 1 was excavated to a depth of 200 cm with water encountered at 195 cm. A bucket auger was used to further test to a depth of 320 cm, beyond which testing with this method was not possible. From 175 to 220 cm a buried "A" horizon was encountered which contained charcoal and organic material. Analysis of this charcoal (Sidell 1991) found that the only identifiable wood species was pine. One piece of fire-cracked rock was found in TP1, but it was recovered from the plowzone.

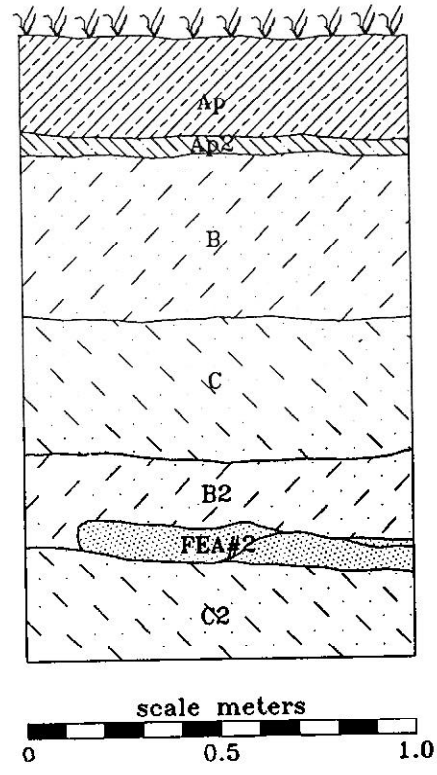


Figure 5. Profile of T1 tp4 with Feature 2, site 5.12b. Munsell soil colors and stratigraphy is as follows: A 10YR4/3 brown sandy loam, plowzone; A1 plowscar mottled with B soil; B 10YR5/6 yellowish brown fine sand with charcoal; C 2.5Y5/4 light olive brown fine sand; 2B 2.5Y5/6 light olive brown silty fine sand with orange tint, lower half contains bone from Feature 2; 2C 2.5Y5/6 light olive brown silty fine sand (gray-olive upper part contains bone from Feature 2).

T1 TP2 contained Feature 1. This feature consisted of a north/south line of 6 fire-cracked rocks ranging in depth from 65 to 76 cm, all contained in the southern half of the square. Ten other fire-cracked rocks were found at this depth in the southern half of the square. Other evidence of Feature 1 was slightly darkened and reddened soil stains with flecks of charcoal beginning at about 50 cm below surface, probably indicating a buried A or B soil horizon. Associated with the fire-cracked rock at approximately 70-76 cm depth we recovered a broadly corner-notched point of white quartzite (Figure 4:lower). The point has one ear and the tip broken off. It has been retouched, probably several

Quarter-Quad	Depth	Count	Weight	ID	Body Part
SE	125-130	21	0.3	Unidentifiable	Unidentifiable
		20	1.4	Mammal	Unidentifiable
		25	6.5	Large or Medium Mammal	Unidentifiable
SW Corner SE Quad	135-138	3	0.3	Mammal	Unidentifiable
S 1/2 NW	132-138	12	3.5	Large or Medium Mammal	Unidentifiable
		67	0.9	Unidentifiable	Unidentifiable
		40	2.2	Mammal	Unidentifiable
SW	134-138	57	0.9	Unidentifiable	Unidentifiable
		50	5.0	Mammal	Unidentifiable
		14	6.7	Large or Medium Mammal	Unidentifiable
SW	130-135	10	4.4	Cervid	Rib edge??
		1	0.9	Cervid	Rib fragment
		1	0.6	Cervid	? Antler fragment or distal rib fragment
		17	10.6	Large mammal	Longbone fragment
		8	4.7	Large mammal	Unidentifiable
		257	57.2	Mammal	Unidentifiable
		2	0.1	Unientifiable	Unidentifiable
		140	4.7	Unidentifiable	Unidentifiable
		74	0.5	Unidentifiable	Unidentifiable
		270	25.3	Mammal	Unidentifiable
		1	1.1	Alces	Left rib, head, anterior rib, ep o
		1	1.4	Alces	Rib, head, anterior rib, ep o
		1	1.0	Alces	Rib tubercle, anterior rib
		1	1.3	Alces	Vertebra, anterior articular facet, (anterior thorassic vertebra)
		1	1.0	? Alces	? Vertebral articular process
		1	1.1	? Alces	? Vertebral articular process

Table 1. Calcined bone identifications from T1 tp4, Feature 2, site 5.12b. Note, all the bone could be from a few ribs and a few vertebrae of one moose.

times, and is thus asymmetrical. No debitage and no prehistoric ceramics were recovered. In fact, no prehistoric ceramics were recovered from the site.

T1 TP4 contained Feature 2. It consisted of a lens or heavy concentration of 1095 small fragments of calcined (burned chalky) bone and bits of charcoal at a depth of 125-135 cm (Figure 5) associated with a buried soil horizon. An analysis of the bone (Table 1) suggests that it all could be from a few ribs and a few vertebra of a moose and may represent part of the process of removing bone grease from bone and/or discarding it into a campfire. No diagnostic artifacts were recovered from this feature. A small amount of charcoal (0.3 grams), identified as maple (Sidell 1991), produced an accelerator radiocarbon date of 6965"70 B.P. (Beta-48173,ETH-8654). This is one of the earliest records of moose in the southwest corner of Maine.

In T1 TP6 a biface retouch flake of crystal quartz was recovered from a depth of 90-100 cm. No other prehistoric artifacts were found. However, a sufficient amount of scattered wood charcoal was found at a depth of 130-150 cm to permit radiocarbon dating of the sample which returned a date of 6050±210 BP (Beta-48174). This date may or may not be Acultural.@ Even if it is naturally deposited fire charcoal (e.g., forest fire), it confirms the circa 6000 B.P. age for the 125 to 135 cm deep level of Feature 2.

Feature 3 was found in T1 TP9. This feature was a heavy concentration of fire-cracked rock in a lens at a depth of 114 to 125 cm. The fire-cracked rock, although several layers thick and heavily concentrated, occupied roughly only the southern half of the square. Feature 3 contained 481 pieces of fire-cracked rock weighing 39.1 kg. There was little or no charcoal associated with the rock, at least in the square excavated. A point was found among

Figure 6. The floor of T1 tp9 showing Feature 3 and the limits of its fire-cracked rock distribution.

the fire-cracked rock of this feature (#5.12b:142). This rhyolite point is long and narrow, slightly side-notched with an expanded stem (Figure 6). The small size of the side notches and the presence of a striking platform on the base suggest that this point may not have been completed. Based upon the depth of the point, slightly above the level dated circa 6000-7000 B.P. in other testpits, this point might be an aberrant Archaic small-stemmed point. There appears to be a widespread Archaic occupation level at about 130 cm depth in this site.

The purpose of the Phase II work at site 5.12b was to determine the inland limit of the site. Three transects were set perpendicular to T1 and the river bank (Figure 3). Two of the transects were 50 meters long, extending northward across b of the field in order to assure finding the inland boundaries of the site. The third transect was limited in length by the Turnpike fence. All test units were 1 x 1 meter squares, dug to a depth of 150 cm or when water was encountered. Phase II excavation of the site was completed by 9/5/91 after excavation of 23 test pits (23m^2). All Phase II test pits were negative. Therefore, site 5.12b is confined to a 10 meter wide strip along the current river bank.

Further Inland and Discovery of Site 8.15

In fields 2 and 3 (see inset map, Figure 3), all testpits (ten in Field 2, six in Field 3) were negative for prehistoric artifacts. There was little distinction between the type of soils encountered in the transects along the southern margin of the two fields and those in the transects down the high center ridge of the fields. Below the plowzone, the soils tended to be

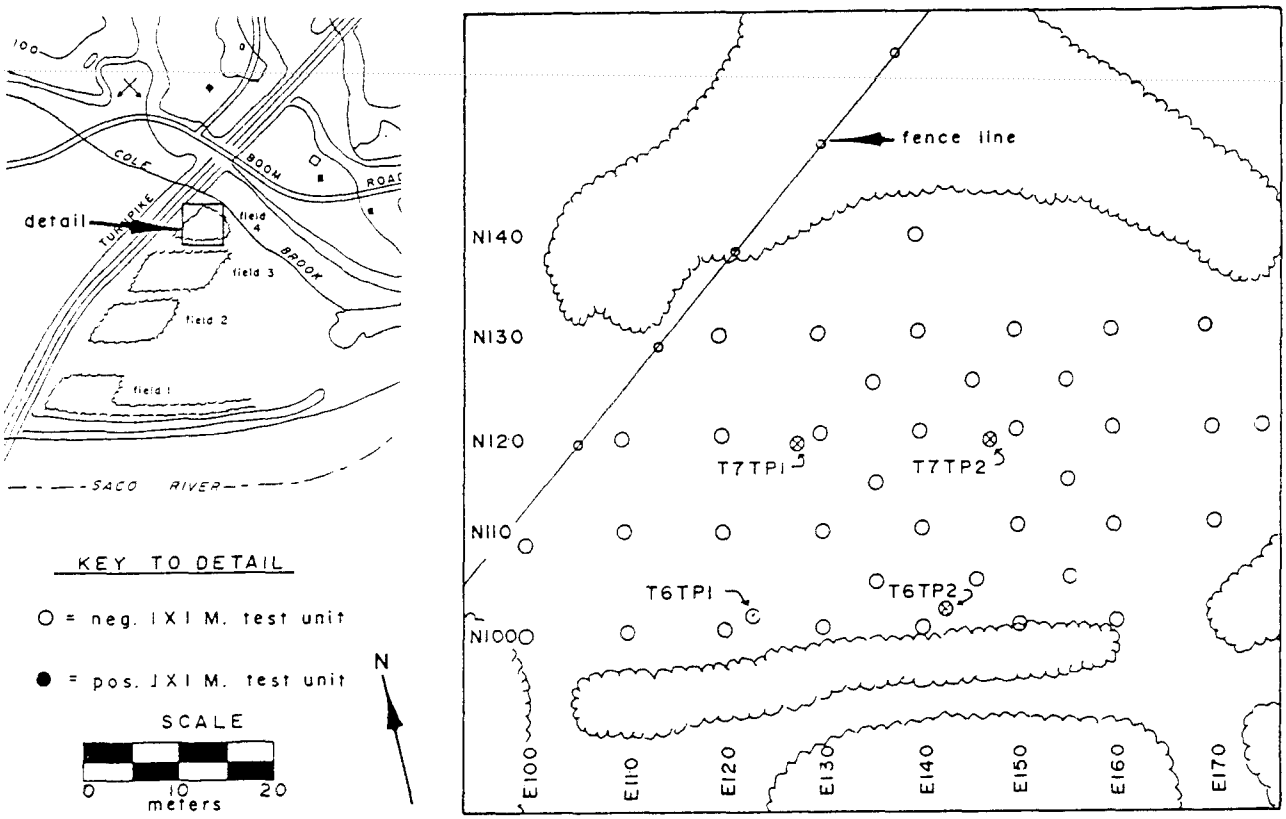


Figure 7. Map of Phase II testpit locations at site 8.15.

silty fine sands with strata of medium and coarse sands at lower levels. The difference between the two sets of transects was the depth at which water was reached. In field 2 water was reached in T2 at an average depth of 94 cm , while in T3 it was encountered at an average depth of 134 cm. In field 3, water stopped excavations in T4 at an average depth of 51 cm , but in T5 excavations were not halted at all due to water where it was only encountered in one testpit at 150 cm. The four testpits excavated in field 4 (Figure 7) all revealed a 30 cm plowzone, but they differed from testpits in the other fields in that the soil below the plowzone tended to be somewhat siltier. Again, the testpits in T6 along the southern margin of the field hit water at an average depth of 105 cm compared to a depth of 135 cm in T7.

Prehistoric artifacts were encountered in T6 in field 4. This light scatter of artifacts is designated site 8.15. All artifacts were recovered from the plowzone or the A/B horizon interface. A blocky gray felsite flake or shatter fragment was found in T6 TP1 (catalogue #8.15:2), possibly a small piece from a larger felsite core. A felsite blade-flake (greater than twice as long as wide), a small felsite retouch flake (#8.15:3), and a possible flake in the form of quartz shatter (#8.15:21) came from T6 testpit2.

Phase II excavation of site 8.15 consisted of a grid of 1x1 m squares spaced at 10 meter intervals (Figure 7), resulting in a total excavation of 38 square meters. We suspected that the site was shallowly buried (above the A/B horizon interface at about 35 cm), and therefore determined that the first 10 testpits or so would be dug to water or a maximum depth of 150 cm. Then, if we were satisfied that the site was shallowly buried, the remaining testpits would be excavated to the vertical limits of the site. Thus, 12

testpits were excavated to a depth which averaged 116 cm, while the rest only extended into the top of the B soil horizon (about 50 cm).

A few prehistoric artifacts were found shallowly buried, but nothing was diagnostic. In N100 E120 was found a small, probable retouch flake with previous dorsal flake scars (catalogue #8.15: 141), a by-product of stone tool manufacture made of gray quartzite or a felsite with very small phenocrysts. From N130 E150 came four small retouch flakes (#8.15:122). Three were dark gray felsite with small phenocrysts, and one was gray quartzite without phenocrysts. A white quartz flake was found in N110E110 (#8.15:22). There were also eight possible flakes consisting of quartz shatter, a material and form often hard to prove of cultural origin. Only two undeniable fire-cracked rock pieces were recovered, as were two small pieces of calcined bone. All of this material was recovered from the plowzone. No features were detected surviving below the plowzone, despite careful trowel excavation of the Ap/B interface over 38 m^2.

The raw materials at the site (one or two kinds of grey [probable] volcanic, plus white quartz) argue for an Early or Middle Archaic age. If we assume that the site was located on an active river bank at the time of occupation (admittedly a tenuous assumption) and the current riverbank alluvium is at least 7000 years old, then an Early Archaic age is probable. The site must have been a small activity area with a limited archaeological assemblage. It has since been spread around by plowing and is not considered significant.

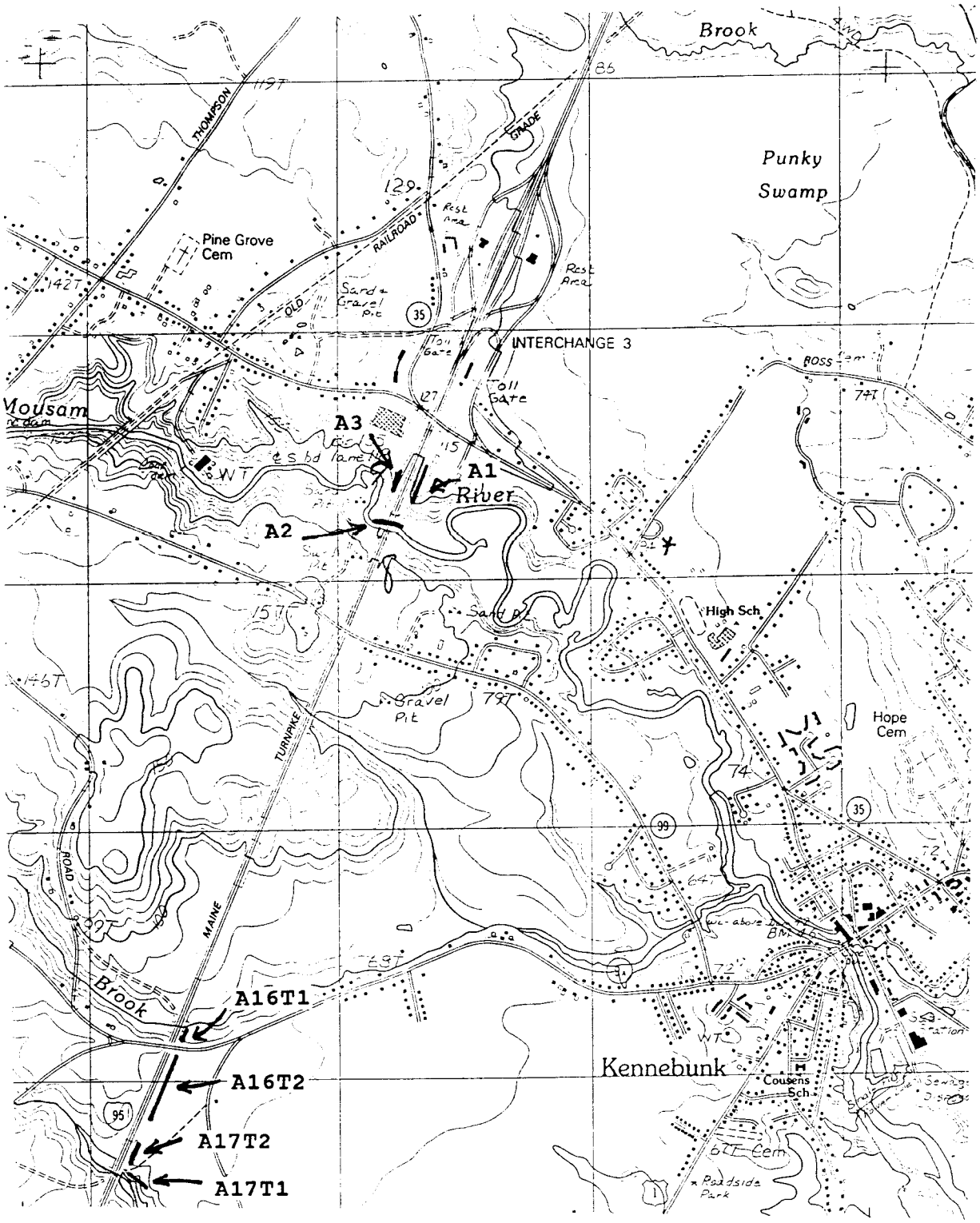
Site 4.8 and Discovery of Site 4.9

Testing of the north bank of the Mousam river (Figure 8, Area A2), in part underneath the Turnpike Mousam River bridge, recovered a few quartz flakes. Examination of test pit stratigraphy confirmed that the material in the ground had been disturbed and redeposited perhaps due to upriver erosion and alluvial transportation. The site number 4.8 was assigned. During Phase II testing several more square meters were excavated in the area of testpits 3 and 5 on the lowest floodplain terrace. Also, several additional meters were excavated in Area 2, Transect 3 along an apparently ancient river terrace which now lies 3 meters above the Mousam River. It was hoped that a relationship between T2 and T3 could be determined in order to enhance our environmental understanding of the Mousam River valley and perhaps address our theory on site stratigraphy and possible redeposition of materials. The terrain is generally flat and open with present vegetation of grasses, weeds and low bushes. Before highway construction and land clearing some 30 years ago, the original vegetation most likely would have resembled the hemlock and pine forest which surrounds the area today. Soil profiles indicate that the area has been an often flooded silty delta of relatively rapid build-up and change.

The entire site 4.8 appears to be a redeposited mixture of prehistoric and historic material, often at the same depth. For example, three square meters were excavated during Phase II at the location of TP3. The following material was found at 55-80 cm below the surface: 3 pieces of worked, waterworn gray quartz; 4 flakes of quartz (one clear and three gray pieces); 2 small, chalky pieces of burned, unidentifiable bone (mammal) and 4 pieces of possible fire-cracked rock. Also, the following historic artifacts were found at 55-75 cm: 22 nails (wire and unidentified), glass, a modern threaded bolt and a small piece of green plastic (the kind one sees insulating phone wires). On the higher, 3 meter Aterrace@ at TP5, four square meters were excavated. Most of the material came from W33 N12 at a range of 75-125 cm depth and includes the following: 4 waterworn quartz worked core fragments of various colors and quality of material, eight quartz flakes, two fire-cracked rocks, and two tree branchs. Historic artifacts were found in association with the prehistoric material. Site 4.9, or a now-destroyed portion of it, may have been the ultimate origin of the material in the lower, redeposited site 4.8.

Site 4.9 was discovered by testpit excavation and the discovery of fire-cracked rock and flakes on a remnant of a high, sandy bluff overlooking the Mousam river and the Turnpike (Figure 8, Area A3).

Figure 8. The Mousam River and test areas 1, 2, and 3, resulting in the discovery of sites 4.8 and 4.9 in the center of the map. Note: negative testpit transects of test area 1 in the southwest corner of the map.



The site sits atop a high, flat, sandy remnant plateau which has mostly been destroyed by highway construction. Remnant size has been estimated at roughly 20 m (south to north) by 10 m (east to west). This hemlock and pine wooded area overlooks the Mousam River at approximately 20 m above the present river level. A large part of the reason for testing the area was the site's high potential as outlined in our sampling strategy; specifically, access to a substantial river, well-drained soils, little slope and proximity to a break in slope. Phase I testing recovered flakes, a piece of possible ground slate, and an edge-ground whetstone (see Figure 11), implying an Archaic (specifically Laurentian Archaic) age. Because of its age and possible integrity, albeit remnant size, we proceeded with Phase II testing, reported in the next section.

SITE 4.09: AN ARCHAIC PERIOD SITE ON THE MOUSAM RIVER

Excavations at site 4.9 recovered evidence of a campsite which was probably occupied during the Archaic period (sometime between 9000 and 4000 years ago). The site had been disturbed by plowing during the 19th Century and by the landscape modification associated with the original construction of the Maine Turnpike. No artifacts or features (e.g. fire hearths, pits, etc.) were found in an undisturbed context. The intensive testing of the site in May and June 1989 recovered close to 100% of the prehistoric cultural material at this small site. The site is not significant and no further work is necessary in the Maine Turnpike expansion impact area around site 4.09.

Environmental Setting

Site 4.09 is located on a high (110 feet amsl, about 40m elevation) bluff which overlooks the Mousam River to the west and south about 5 km west of the river's outlet into the Gulf of Maine. The soils of the site vicinity are Adams loamy sands. These are deep, well drained soils formed in glaciofluvial materials. These materials were probably deposited during the retreat phase of the Presumpscot Transgression between roughly 12,500 and 11,500 years B. P. (Smith 1985:35-36).

Site Excavation Plan

On May 15th, 1989 formal excavations were begun at the site with a Maine Historic Preservation Commission crew led by Mark Hedden under the general direction of Arthur Spiess. After clearing brush, a grid was laid out following the baseline set up in 1988 and excavation was begun. The site occupies a narrow remnant surface of a much larger bluff that had been partially removed by the original construction of the Maine Turnpike (Figure 9, compare Figure 8). The high bluff formerly extended eastward, parallel to the course of the Mousam River. Earth removal on the east side overlooking the Turnpike left a narrow "peninsula" 20 meters long, with a steep 20 meter drop on the south and west sides down to the Mousam River. At this location the river bends sharply to the southwest before resuming its meandering course southeasterly. The remnant "peninsula" narrows to a point about two meters across at its southern tip. At its northern end the "peninsula" is about 8 meters wide, merging into the original bluff extending westward parallel to the Mousam River.

Vegetation cover at the time of excavation consisted of an overstory of oak, beech, pine and other conifers and maple trees. Oak is dominant among the deciduous trees and largest in overall size of all trees noted. The understory included young trees with a ground cover of lady-slippers, starflowers (wintergreen) and some grasses. A metric grid (Figure 10) was established along the original Phase I baseline and a series of 2x2m squares was laid out with the southwest corners designated as the horizontal datum points. Initial excavation began with trowels by natural soil levels with all backdirt screened through 1/4 inch mesh wire cloth. Artifacts located in situ were exactly provenienced. Objects recovered in the screen were provenienced by quarter-quad (50x50 cm) and soil level. The excavation strategy was to establish the limits of the site by excavating a checkerboard pattern of squares down towards the southern tip. The process began

Figure 9. Approximate landforms in the vicinity of site 4.9 are shown on this USGS 15' topographic Kennebunk map, edition 1898. Compare the exact landform shape and river course with the recent map reproduced in Figure 8, which indicates considerable inaccuracy in the 1898 map.

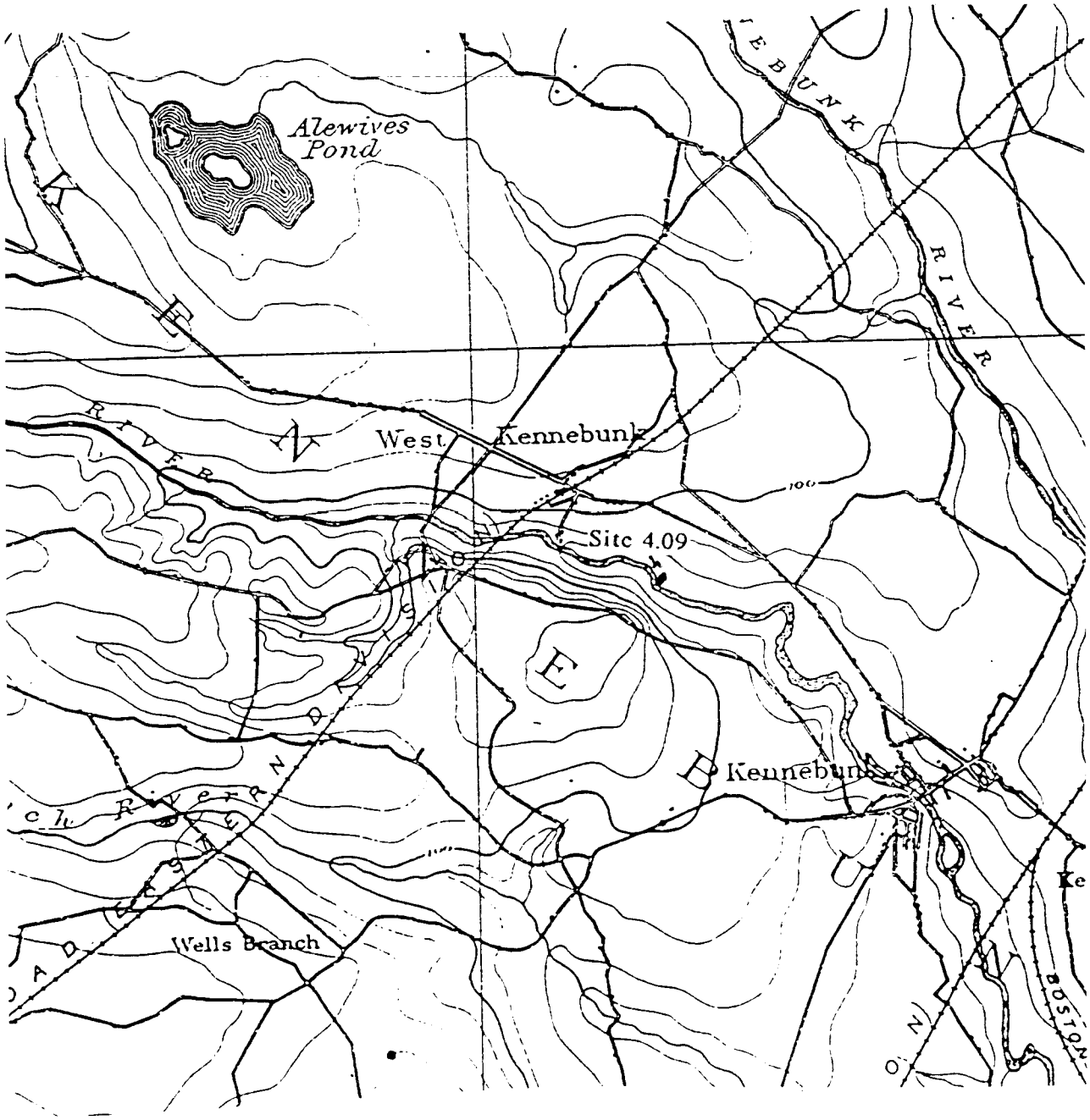


Figure 10. Plan of site 4.9 showing the area excavated and artifact and fire-cracked rock concentrations.

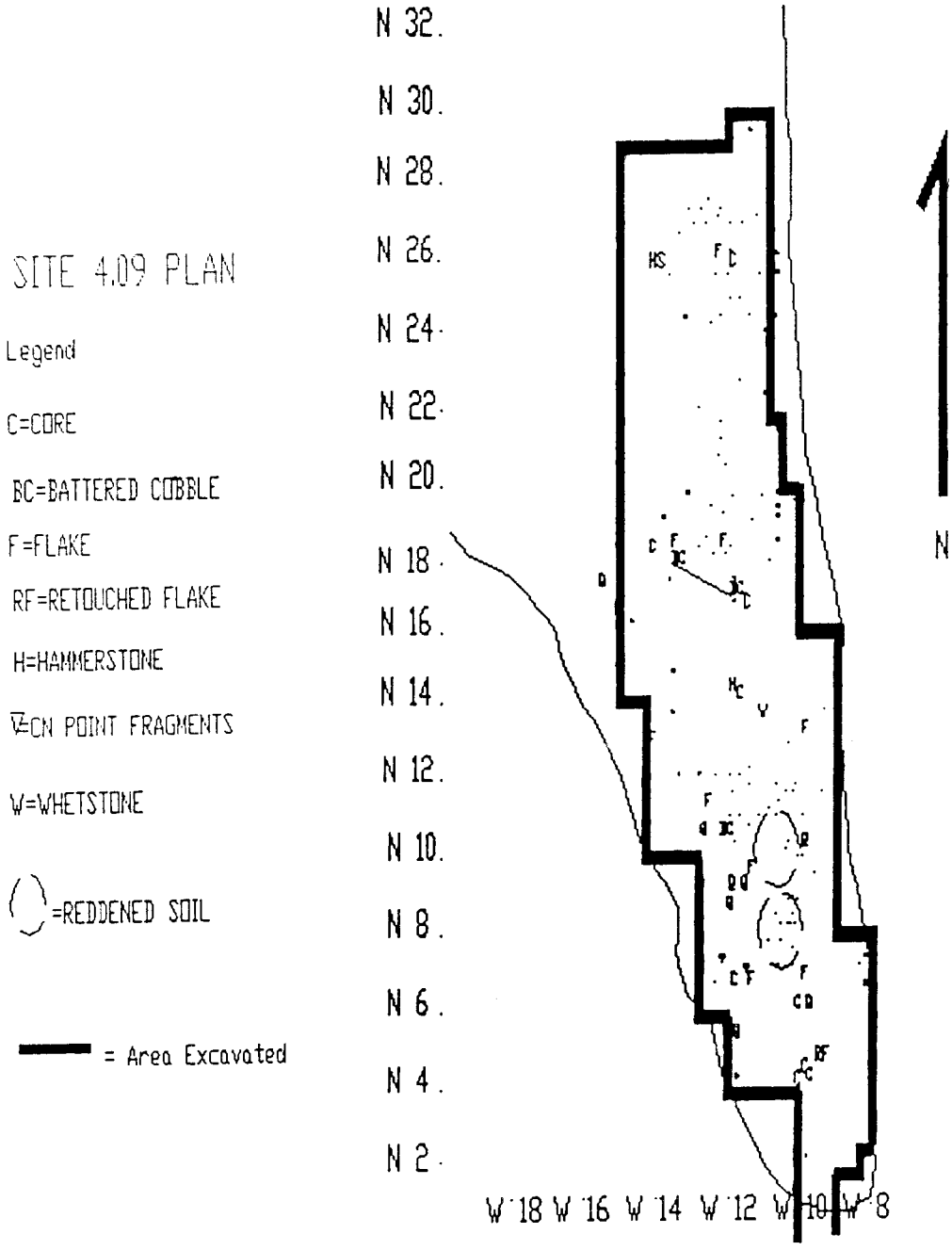


Figure 11. Corner-notched point and whetstone from site 4.9.

with a 2x2m square which incorporated the initial 1988 testpit discoveries at the site (N14 W11).

Early in the excavation a corner-notched point base (Figure 11) was recovered in square N6 W12 (SW quad) near a small concentration of fire-cracked rock (in the NE and NW quadrants of the same square). Even though excavation proceeded by careful troweling, no feature outline (fire-hearth or pit) could be discerned. Slight reddening of the soil was noted in the soil beneath the fire-cracked rock concentration. If a hearth feature had existed here, various soil chemical and biological processes had removed visible evidence. No charcoal was recovered. Excavation continued in adjacent squares. In squares N4 W10 and N6 W10 a scatter of fire-cracked rock and large quartz cores was recovered. These squares lay on the edge of the steep slope down to the Turnpike. The site apparently had extended eastward to the area on the bluff that was removed during the original Turnpike construction.

We noted a heavy admixture of historic items including bricks, earthenware and glazed ceramic fragments, coal, and rusty iron in the A and the B (upper) soil horizons at the site. This distribution suggested that the bluff edge, probably the edge of a field during the 19th Century, served as a convenient dumping ground. The evidence of this behavior pattern is still visible on the edge of many New England fields.

The most northerly concentration of prehistoric items that we found was located in a plowzone at N26 W14, and included a hammerstone and fire-cracked rock. Surface soils from N10 W12 northward showed the homogeneity associated with shallow plowing. The relatively shallow depth of the furrows (to 24cm below surface) indicates that the plow used was horse drawn, rather than a modern tractor-drawn plow. The size of one oak growing out of the furrows was 16 inches diameter at breast height. It was clear that while the field had been open and heavily utilized during the 19th Century, active farming of the field was abandoned before the mid-20th century.

After having defined the limits of the site, we completed the excavation of all intervening areas,

digging around and under the roots of several large standing oak trees in the process. Three well defined reddened soil areas were located, recorded and carefully excavated. Charcoal that was found in two proved to be partially burned tree roots, probably dating to the initial clearing of the field. The third was a deep plow furrow that had been cut while turning the team. The reddened soil might have indicated a prehistoric feature but the plowing had disturbed it beyond definition.

Soils and Stratigraphy

On the undisturbed edges of the terrace, the first level of soil (A) under the forest duff (O) is a dark brown silty loam with a high clay content, high enough to enable a lump of soil to retain its shape when squeezed. Clayey deposits were concentrated on the terrace edges immediately below the duff, but occasional deposits were found at deeper levels in the underlying orange sandy B zone. The clayey soil is interpreted as an E (elluviated) soil horizon development. Deeper occurrences in the form of small lumps were probably redeposited from the surface as a result of treefalls or other disturbances. On the remainder of the excavated terrace area, plowing had thoroughly mixed the upper strata of soils with the underlying sand.

On the unplowed sections of the terrace the forest duff (O) was a dark brown silty loam (A) which ranges from 3 to 7cm in thickness. This brown loam rests on a finer clayey silty sand (E), light olive grey in color, ranging from 4 to 8cm in thickness. The upper part of B (B1) consists of a medium reddish brown medium to coarse sand. B1 grades within 4 to 8 cm into B2, a light yellow medium/ coarse to pebbly sand ranging from 15 to 20 cm in thickness. The underlying (1)C horizon is light buff coarse sand with many pebbles. Excavations generally ended in the culturally sterile C1 level (25 to 40 plus cm below the surface) but one testpit at N10 W12 established a 2C stratum 10 cm deeper, marked by coarse/medium sand with few pebbles. Thus, the surficial deposits at the site appear as a complex interaction of depositional layers of different grain-size, with development of a typical forest podsol imposed on the uppermost layers.

Over 80% of all cultural material, historic or prehistoric, was recovered from the A horizon or the plowzone (Ap). In both plowed and unplowed areas of the terrace, the mixture of historic and prehistoric material is complete with some fragments of coal, glass, brick, quartz shatter and a flake penetrating into the A/B soil interface. The lack of any definable prehistoric features, despite the moderate abundance of fire-cracked rock, suggests the prehistoric remains were located near the surface just under the forest duff. Forest clearing, plowing and earth-moving in connection with Turnpike construction, as well as normal soil processes including frost and biological action, have all disturbed the upper strata to some degree.

Artifact and Fire-cracked Rock Distribution

Thirty-two (32) lithic items recovered during the excavations were utilized as tools or were a byproduct of tool manufacture (cores and debitage). Only two of these, a corner notched point and whetstone, represent finished diagnostic tools. The remainder are non-diagnostic cores, hammerstones, flakes or quartz shatter. All lithic tools have been grouped in Table 1 within one of three areas of the site (A, B, C). The relative density of all lithics, including fire-cracked rock, was considered in defining these areas. The intention here is to distinguish, despite the absence of clearly defined features, variations in the lithic distribution and density that may indicate differences in activities across the site.

Area A includes the southern tip of the "peninsula" northward to N10 inclusive. While no hearth or pit features were defined in the site, Area A has two disturbed areas of slightly reddened soil associated with fire-cracked rock and other prehistoric lithics. These are plotted on the site plan (Figure 10) at N6 W12 and N8 W12. Artifacts from Area A include the corner-notched point, a large wedge, a probable shaft-smoother (convex utilized flake), a hammerstone, four cores, a retouched flake, a utilized flake, three other flakes, three pieces of quartz shatter and a small cobble with a battered end.

Area B ranges from N12 to N18 inclusive. The number, quality and range of lithic tools is more limited than in Area A. Artifacts from Area B consist of the whetstone recovered in 1988 (Figure 11), a core, a battered cobble and a broken cobble with a utilized edge. Four flakes, one piece of quartz shatter and a cobble broken in two constitute the remaining lithics aside from fire-cracked rock. Area C comprises N22 to N28 inclusive. A number of large fire-cracked rocks were found in this area, but lithic tools were limited to a large hammerstone and a core. In addition, there is a large flake with cortex in the form of a long narrow spall.

The distribution pattern suggests activities involving repair of hunting related implements (point, shaft-smoother, utilized flake) and/or wood-working (large wedge, hammerstone) in Area A. In Area B, lithic material appears to have been broken in the process of manufacturing tools or searching for good tool source material (core, flakes, quartz shatter), utilizing broken but otherwise unmodified rock (broken cobble with utilized edge) or sharpening edged tool (of slate or bone?) by grinding. The large felsite hammerstone in Area C has the heft and weight of a small maul (734g). This piece could have been used in wood-working, a food related activity such as cracking nuts, or the tool manufacturing activity suggested by the other two modified lithics recovered in the area (core and flake).

Lithic Artifact Descriptions

The corner notched point from site 4.09 was made on what is possibly a Lake County, New Hampshire rhyolite (Charles Bolian, personal communication, 1989). The base is straight, thinned by retouch flaking and slightly ground. The corner notches leave acute angles with the line of the base and the shoulders. The point is asymmetric, with a shallow but complete regular convex curve from shoulder to tip on one edge. On the other edge, the distal 2/3 of the point has been extensively retouched. On this irregular edge, retouching is evident from shoulder to a medial break that separated the base from the tip; therefore, the fracture possibly occurred during the process of retouching the point. The two fragments were found about a meter apart and within one meter of the western edge of the bluff. The distal fragment was lost in the field, and consequently was not available for photography. On one day, a two-car accident, with injuries, occurred on the Turnpike immediately below the site, and members of our crew responded immediately. Needless to say, there was come confusion in the generally orderly process of archaeological record keeping.

The whetstone (Figure 11) is an elongated pebble of metasedimentary rock, with a fine-sand grit size, that has been minimally modified. The rock itself has been frost or heat fractured, and many small (frost?) spalls have removed much of the original surface of the artifact. As preserved, the piece is about 10 cm long, although its original length may have approached 12 cm. The pebble was an elongate oval in cross section 92.5 by 1.5 cm). Wear facets, in the form of extremely smooth surfaces which slightly flatten the natural curvature of the pebble, are evident on a portion of one of the narrow edges and one of the flat faces. Although slightly smaller, the whetstone from site 4.9 is similar in general form, wear patterns, and grit particle size to a whetstone recovered from a dated feature (5950±230 B.P., Beta 8926) on the Pleasant River in Brownville, Maine (Spiess et al 1984). Similar artifacts appear in various complexes of the Moorehead Burial Tradition (Robinson 1996), although site 4.9 is clearly a habitation site.

The remaining lithic tools are described in Table 2 below. The assemblage is dominated by utilized-edge cobbles, cores, large utilized flakes, hammerstones, and flakes and shatter derived from the heavy stone implements.

Four small fragments of calcined bone were recovered in the Area A (N6 to N10). One additional fragment came from the border between Area A and Area B (N12W10). While no identifications could be made to the species level, all appeared to be mammal bone.

Table 2. An attribute summary of lithic tools or by products of tool manufacture from site 4.9, including a brief description, material, location and measurements.

Cat#	Description Material	Location Stratum	Length (mm)	Width (mm)	Th (mm)	Weight (g)
		Area A-Southern End of Site				
33	Base of corner-Lake notched biface.County largely unifacially worked. Rhyolite.	N6W12 "A" SWqNWqq	30.8	23.1	7.6	5.4
no#	Point tip to #33 biface.	N6W14 "A" NEqSEqq	ca47.0	ca19.0	-	-
33 &tip	Length when joined		54.0	23.1	-	-
252	Utilized or retouched flake. Brownish striped rhyolite	N4W10 "B"	34.2	25.8	8.4	7.4
255a	Large wedge, Hornblende thick battered base narrows to thin working slightly concave bit(?)	N4W10 A" SEq SWqq	87.1	49.1	30.8	147.5
255b	Battered core Rhyolite with large phenocrysts	N4W10 "A" SEq SWqq	53.0	49.8	40.3	149.8
41	Thinning flake grey blue quartzite	N6W12 "A" NWq NEqq	16.4	12.0	1.9	0.4
92	Quartz Grey white shatter quartz	N8W12 "A" NESW	35.0	31.8	18.1	17.7
78	Quartz shatter Grey white w/cortex quartz	N8W12 "A" NWSE	17.3	12.0	11.2	3.1
37	Shaft-smoother made on slab with ground concave notch. Quartzite	N6W12 "A" NWNE	66.9	62.6	28.2	131.9
83	Core fragment Blue grey w/ cortex felsite	N8W12 "A" NENW	26.7	21.9	11.4	6.3
38	Cortex flake Blue grey felsite?	N6W12 "A" NESE	22.0	15.6	7.5	2.5
211	Utilized Blue grey flake felsite?	N6W10 "A" SWSW	62.0	30.4	22.3	25.5
238	Core w/long flake removal scars. Quartzite.	N4W10 "A" SWNE	75.7	36.0	35.9	104.1
216	Flake. Felsite	N6W10 "A" NWNW	18.0	16.4	7.3	1.4
210	Hammerstone. Quartz. clear- to reddish-white	N6W10 "A" SWSW	58.8	48.0	34.9	89.7
182	Core fragment Quartz.clear w/ cortex to rose	N10W10 "A" SWSW	33.0	21.3	19.5	17.3
152	Quartz shatter White quartz	N10W13 "A" SESW	22.0	20.4	19.4	3.9
156	Small cobble Quartzite w/ one end chipped	N10W13 "A" NENW	44.4	33.8	12.8	25.2
		AREA B:N12 to N18				
302	Cortex spall Grey green flake quartzite	N12W10 "A" NWSE	34.2	7.9	7.5	2.0

Table 2 continued.

Cat#	Description Material	Location Stratum	Length (mm)	Width (mm)	Th (mm)	Weight (g)
276	Thinning flake Slate	N12W14 "A/B" NWNW	9.3	8.6	2.3	0.3
19	Core w/ long Blue grey spall scars quartzite	N14W12 "A" SWSE	31.6	17.6	17.4	14.2
16	Whetstone Sandstone	N14W11 "A/B"	103.6	24.5	15.6	49.3
27	Battered Granite Cobble	N14W12 "A" SWSW	70.6	43.0	42.5	195.2
149	Cobble fragment Quartzite joins #11	N16W12 "A" NWNW	63.2	42.0	19.4	55.7
11	Cobble fragment Quartzite joins #149	N18W14 "A" SENE	56.7	46.7	20.0	55.7
315	Cobble w/ Quartzite utilized edge	N18W14 "A" SWNW	54.4	36.4	19.7	41.6
332	Cobble spall Quartzite	N18W14 "A" SENE	30.8	27.0	10.3	9.9
239	Cobble spall Blue grey felsite or quartzite	N18W12 "A" NWSW	33.8	15.4	15.0	6.9
151	Cobble w/ Coarse spall removal rhyolite	N16W12 "A" NENE	55.9	37.2	24.1	49.0
354	Quartz shatter Rose and white quartz	N18W16 "A" SESW	44.5	23.7	13.4	18.0
		Area C:N22 - N28				
296	Long spall from Blue grey battered cobble quartzite	N26W12 "A" NWNW	71.4	30.0	18.2	44.0
316	Hammerstone Blue grey quartzite	N26W14 "A" NWNW	122.4	71.3	55.5	734.0
286	Battered core Blue grey quartzite	N26W12 "A" SWNE	97.5	65.9	40.7	213.4

Discussion

The closest analogue to the corner notched point from 4.09 that we can find in the Northeast is the Vosburg corner-notched point (Funk 1976:Pl.19 #4; Pl.14 #10) of the Laurentian tradition. Corner-notched points appear at other times in the New England prehistoric sequence, notably the John's Bridge Early Archaic point (Thomas and Robinson 1980), and Late Ceramic corner-notched points. Various attributes of the John's Bridge point, especially length versus width, and the general character of the accompanying flake and uniface assemblage (Thomas and Robinson 1980:57-102) strongly argue that site 4.9 is not Early Archaic. The absence of ceramic sherds on the site, the asymmetry of the point, the whetstone, and range of raw material and associated heavy tool assemblage argue against a Ceramic period placement for the site.

The Vosburg point is one of several point types found together in the Vosburg Complex in eastern New York (Funk 1976:239-246). The other point types found with Vosburg points in well stratified contexts in eastern New York include Brewerton Eared-Notched, Brewerton Eared Triangle, Brewerton Side-Notched, and Beekman Triangle. Associated radiocarbon dates range from 4700 B.P. to 4200 B.P. In eastern New York, the Vosburg complex remains poorly defined. The following types of tools have been found associated: trianguloid knives, simple end scrapers, side scrapers, drills, pebble hammerstones, hammer-anvil stones, pestles, utilized flake knives, and whetstones

(Funk 1976:243-4).

The Brewerton point styles that dominate Vosburg Complex sites in New York have been found mixed with other diagnostic Late Archaic points in the Nelson Island site, coastal New Hampshire (Robinson 1985). Brewerton points have been found also at the Hunter Farm, Topsham, Maine, where they are mixed with small stemmed points, and are possibly associated with radiocarbon dates of 4700 and 4200 B.P. (Spiess, unpublished data). The relationship of the Vosburg Complex, or assemblages in Maine containing Vosburg and/or Brewerton points, to the concept of the "Laurentian Archaic" and Small Stemmed Point (or Sylvan Lake Complex) (Ritchie 1965) is unclear. The Laurentian Archaic usually contains ground slate, while little ground slate has been reported for Vosburg complex sites.

Excavations at Site 4.09 have yielded information on what appears to be a small shallow campsite occupied during the Laurentian Late Archaic (ca. 6000-5000 years BP). While evidence of hearths or other features was apparent, the distribution pattern of lithics artifacts indicates two distinct activity areas: Area A with a living or domestic focus and Area C, an area set away from the bank that may have served some other function. Stone tools found in Area A (point, large wedge, shaft smoother, whetstone, utilized flake) appear to have been used in wood-working, possibly in the manufacture or repair of hunting implements. About half of the associated fire-cracked rock shows a high degree of thermal stress that suggests use in cooking by stone-boiling. Area C, centered about 12 meters north of Area A, is marked by a scatter of fire-cracked rock with an overall fracture pattern that suggests moderate thermal stress.. Only two lithic tools (a hammerstone and core) were associated. Area B, between A and C, yielded the whetstone, a number of flakes, and deliberately broken cobbles that point to tool manufacture.

There is no seasonality data from the site. No fishbone was present. While oak trees are present now and nut trees were probably present during the Late Archaic period, grinding implements that might have been used to prepare large quantities of nuts were not found. The nature of the lithic inventory, and the presence of a few pieces of calcined mammal bone suggest that the site may have served as a hunting camp.

CONCLUSIONS

Archaeological testing along the Maine Turnpike found prehistoric sites more-or-less where they were expected: adjacent to the larger waterways. There were no surprises in terms of site location, nor we did not encounter any Paleoindian sites on well-drained sandy soils, although they exist in the area. The age of the sites and components we located was a bit of a surprise: seemingly all Archaic in age. If Turnpike expansion proceeds *as it was planned* about 1990, then only site 5.12b on the Saco River wetland area may require more work.

REFERENCES

Baker, Emerson W., Jr.
1988 Historical Overview of the Maine Turnpike Right of Way. Appendix A in Spiess, Cranmer, Monahan and Baker, *An Archaeological Phase I Survey of the Maine Turnpike Widening Project in Southern Maine*. Report prepared for the Maine Turnpike Authority, and report on file, Maine Historic Preservation Commission.

Cranmer, Leon, and Arthur Spiess
1991 *Maine Turnpike Wetlands Creation Archaeological Survey Report*. Report prepared for the Maine Turnpike Authority, and report on file, Maine Historic Preservation Commission.

Funk, Robert L.
1976 *Recent Contributions to Hudson Valley Prehistory*. Memoir 22, New York State Museum, Albany.

Ritchie, William W.
1965 *The Archaeology of New York State*. Natural History Press, New York.

Robinson, Brian
1985 *The Nelson Island and Seabrook Marsh Sites*. Occasional Publications in Northeastern Anthropology No 9:I. Franklin Pearce College, Rindge, New Hampshire.

Smith, G.W.
1985 Chronology of Late Wisconsin deglaciation of coastal Maine. In: *Late Pleistocene History of Northeastern New England and Adjacent Quebec*. Ed:Borns, Harold W. et al. Special Paper #157, The Geological Society of America, Boulder, Colorado.

Sidell, Nancy Asch
1991 Plant Remains from the Kennebunk River Field and Saco River Field (Table form). Appendix E in *Maine Turnpike Wetlands Creation Archaeological Survey Report* by Leon Cranmer and Arthur Spiess. Report prepared for the Maine Turnpike Authority, and report on file, Maine Historic Preservation Commission.

Spiess, Arthur, Leon Cranmer, and Mark Hedden
1990 *Maine Turnpike Widening Archaeological Phase II Study*. Report prepared for the Maine Turnpike Authority, and report on file, Maine Historic Preservation Commission.

Spiess, Arthur, Leon Cranmer, Christopher Monahan, and Emerson W. Baker, Jr.
1988 *An Archaeological Phase I Survey of the Maine Turnpike Widening Project in Southern Maine*. Report prepared for the Maine Turnpike Authority, and report on file, Maine Historic Preservation Commission.

Thomas, Peter, and Brian S. Robinson
1980 *The John's Bridge Site: Vt-Fr-69: An Early Archaic period site in northwestern Vermont*. Dept. of Anthropology, University of Vermont, Report 28.

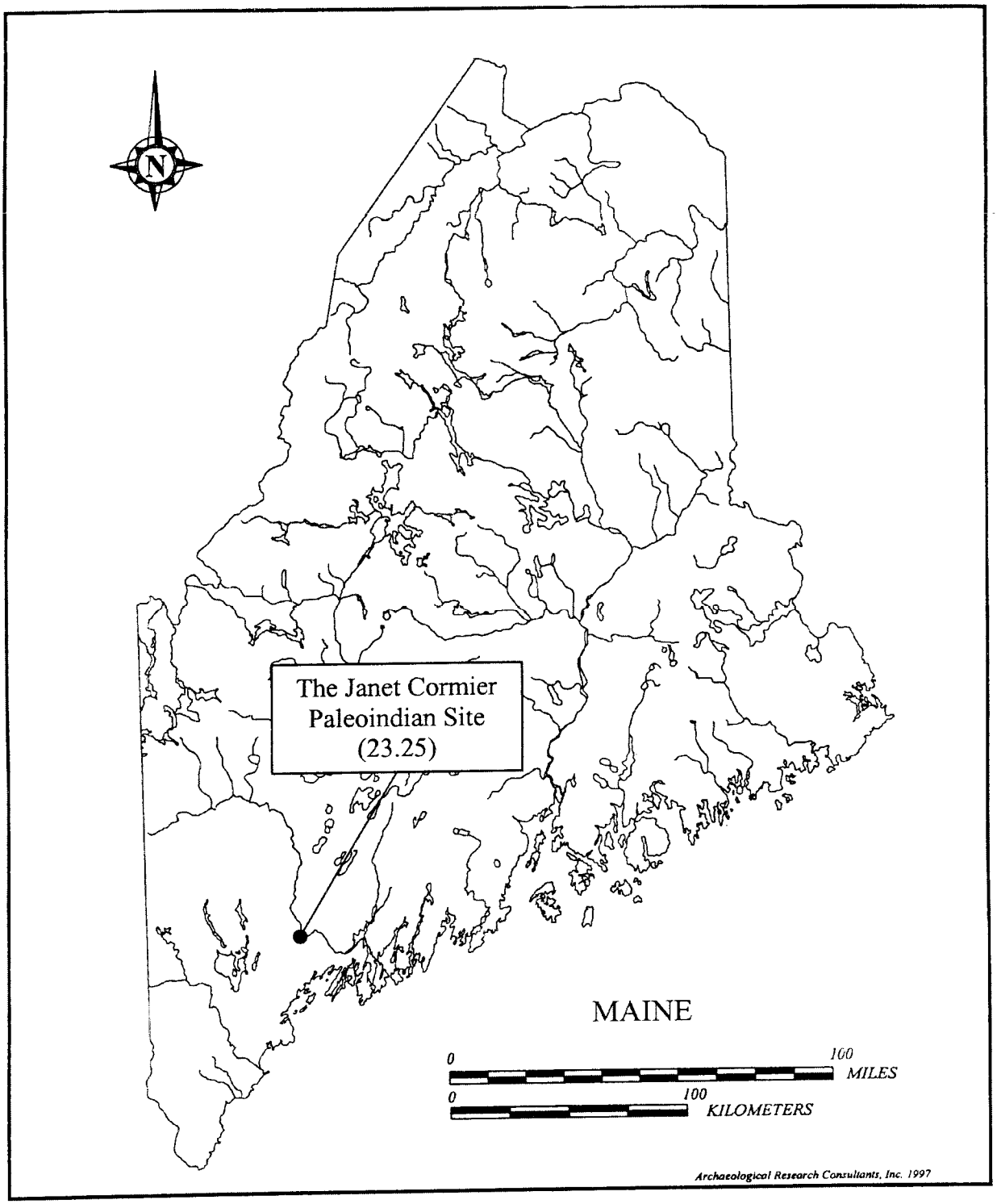


Figure 1. Location of the Janet Cormier site (23.25) in southwestern Maine.

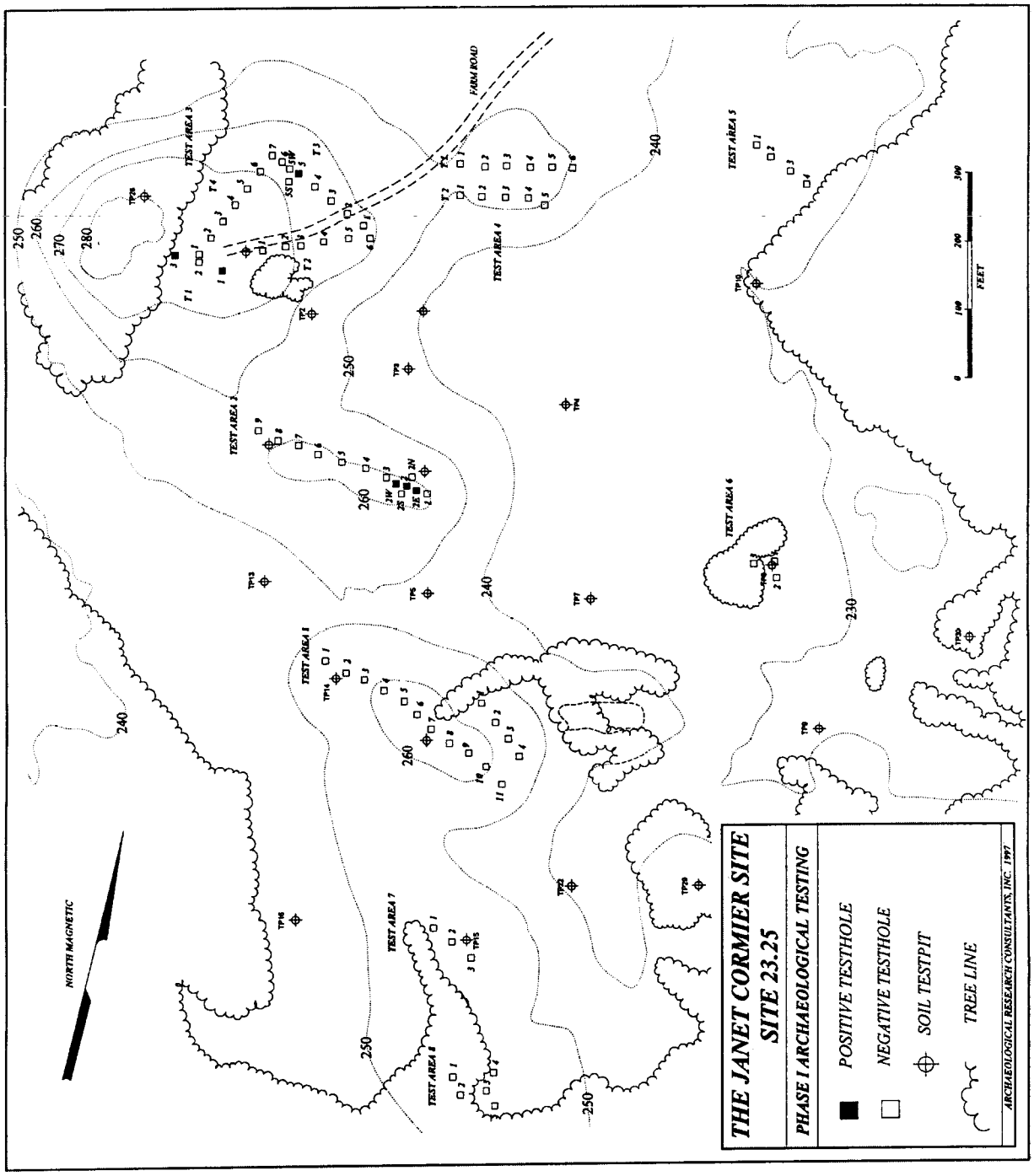


Figure 2. Overview of the project area showing archaeological Phase I testing areas.

Testhole excavation proceeded within the grid framework at 5 m intervals until the boundary of each locus was delineated based on the absence of cultural materials or by natural circumstances such as exposed bedrock or large scale disturbance. Test units in each locus were placed at various intervals within the grid system depending on which testholes produced the greatest amount of cultural materials.

Excavation proceeded by 10 cm levels below surface within natural soil horizons using a combination of shovel skimming and hand troweling. Troweling by hand was performed when two or more artifacts were found after screening sediments. Shoveled sediment was screened through 1/4" (6.4 mm) mesh while troweled sediment was screened through 1/8" (3.1 mm) mesh. All testholes and test units were excavated to a minimum depth of 50 cm bs. Artifacts recovered in the plowzone were not distinguished by arbitrary levels but rather as one unit.

Soil descriptions and stratigraphy were noted for each arbitrary level excavated in the test units and wall profiles were recorded for each test unit and testhole excavated. Soil samples were taken from all presumed cultural features for later processing in the laboratory and charcoal was collected for radiocarbon dating. Excavation areas were documented using photographs and video.

RESULTS OF THE ARCHAEOLOGICAL INVESTIGATIONS

Archaeological testing at the Janet Cormier site produced an abundance of prehistoric artifacts from all three loci. Locus 2 is the largest and most productive of the three loci, followed by Locus 3, and finally Locus 1. A total of 31.0 m^2 was excavated at the site resulting in the recovery of 848 stone artifacts, 130 historic artifacts, and 61 fragments of bone and shell. The prehistoric artifacts include bifaces, unifaces, and debitage, some of which is modified either intentionally or through utilization. Debitage constitutes the majority of stone artifacts (n=832, 98.11%), followed by unifaces (n=9, 1.06%), bifaces (n=4, 0.47%), and modified debitage (n=3, 0.35%). In addition, one small fragment of partially oxidized hematite was found in Locus 2.

Artifacts diagnostic of the Paleoindian period, and more specifically the Fluted Point tradition, include a fluted point fragment and two channel flake fragments. Artifacts recognizable of the general Paleoindian period include one piece esquille, one triangular endscraper, and several gravers/ perforators. No diagnostic artifacts of other prehistoric cultural time periods were found at the site.

The stone artifacts are manufactured from three general types of lithic materials, two of which are most likely exotic in origin. The most abundant lithic material is a very weathered rhyolite or felsic tuff that is variably patinated to a yellow ochre color. This material comprises 83.5% (n=708) of the artifacts. Artifacts made from it appear to be confined to loci 2 and 3. Macroscopic inspection of the rock shows strong similarities with materials recovered from the Michaud site (Spiess and Wilson 1987) and the Nicholas site (Wilson et al. 1995). The source for it is likely the Mt. Jasper area located in Berlin, New Hampshire (Wilson et al. 1995).

The second type of material consists of cryptocrystalline cherts with a variable waxy to earthy luster. The cherts comprise 16.0% (n=136) of the artifacts and were found in all three loci. They are composed of a variety of colors that often form swirls and/or bands within the material. The most common color observed is maroon although many specimens also contain cream and dark green colors. Materials similar to these cherts have been described from several Paleoindian sites in the region including the Michaud site (Spiess and Wilson 1987), the Hedden site (Spiess and Mosher 1994), and the Nicholas site (Wilson et al. 1995), and their most likely source is in the Munsungun/Chase Lakes region located more than 250 km to the north of the Janet Cormier site. A few cryptocrystalline chert specimens were a homogeneous blue-gray in color and it is unclear whether they are related to the aforementioned cherts.

The last lithic material type is a dark black-gray aphanitic volcanic that is most likely mafic in composition. Only a minor amount of this material

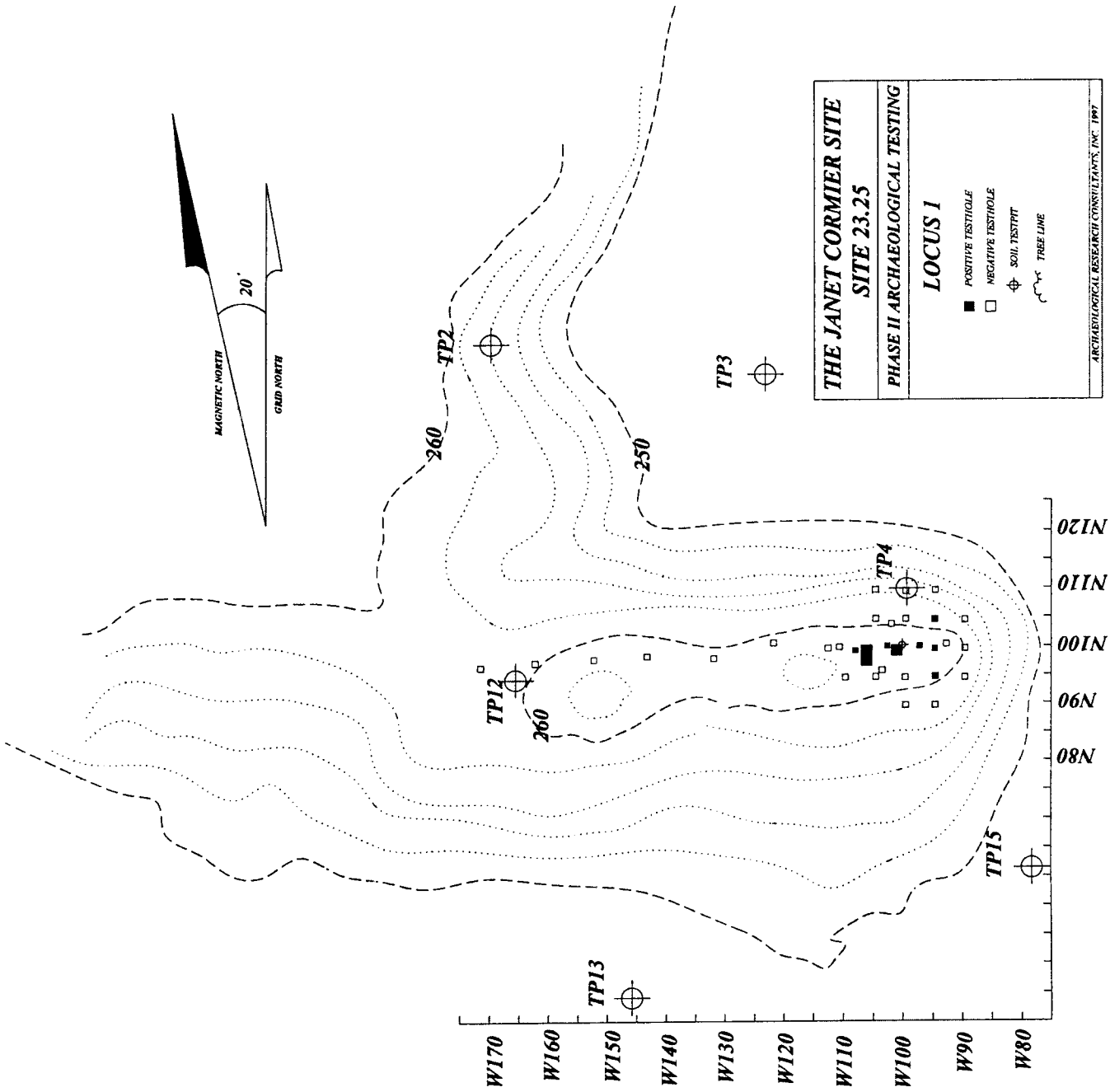


Figure 3. Location of archaeological testing within locus 1 at the Janet Cormier site (23.25).

is 1,400 m^2, encompassing approximately a quarter of the entire knoll. Twenty-nine testholes and all four test units excavated in locus 2 contained prehistoric artifacts totaling 11.25 m^2 or 56.0% of the sampled area. Over three quarters of the prehistoric artifacts (n=576, 79.6%), were recovered from the B_s soil horizon. The remainder of the artifacts were found in the plowzone, (n=122, 16.8%) or near the interface of the plowzone and B_s soil horizons (n=26, 3.6%). While these numbers might suggest much of the site is largely intact below the plowzone, they are more representative of one large concentration of artifacts that was situated in the B_s soil horizon below a thin plowzone. Outside of this concentrated area, 29.0% (n=20) of the lithic artifacts were recovered in the B_s soil horizon and/or at the interface and 71.0% (n=49) were found in the plowzone. The maximum depth at which artifacts were found is 70 cm bs.

The largest concentration of cultural remains in Locus 2 occurred in a 4 m^2 block excavation formed by test units N95/96 W110 and N95/96 W109. Excavations in this area produced 655 artifacts including 70.0% (n=7) of all the formed tools recovered from the locus. Five of the formed tools were contained in a 1.0 m x 0.50 m area formed by the NE and SE quadrants of test units N95W110 and N96W110, respectively. Nearly all of the artifacts from the 4 m^2 block are manufactured from rhyolite/felsic tuff with the exception of two pieces of debitage composed of a mafic volcanic and one piece of debitage composed of chert. The majority of the artifacts (n=582, 88.8%) were recovered in the B_s soil horizon or near the interface between approximately 15-40 cm bs

The remaining prehistoric artifacts from Locus 2 were relatively evenly distributed throughout the testing area with a few areas suggesting possible concentrations. These areas contained greater than 5 artifacts and were located in the vicinity of grid coordinates N75W95, N100W85, N100W110, and N80W110.

Two bifaces, six unifaces, two pieces of modified debitage, and 714 pieces of debitage were recovered from Locus 2. Bifaces are artifacts with extensive flaking observed on both faces while unifaces exhibit extensive flaking on one face. This flaking typically serves to thin and/or shape the artifact into a desired form. Modified debitage is classified on the basis of flaking, typically as small retouch, or crushing along one or more edges of the artifact which does not shape the overall form of the artifact. Debitage consists of artifacts with no observable flaking along the edge.

The bifaces (23.25.072 and .116) are both fragments with non-diagnostic forms manufactured from rhyolite and/or felsic tuff. Biface .072 (Figure 4) was recovered from the NE quadrant of test unit N95W110 at 20 cm bs in the B_s soil horizon. It is produced from a broad, thin flake. Fairly large flake scars (>5.0 mm) are observed on both sides of the biface and appear randomly arranged. One side of the biface has a straight, thin edge while the other side exhibits a concavity with fairly steep retouch suggesting the biface may have been reused as a scraping tool. Biface .116 (Figure 4) is a distal fragment uncovered approximately 50 cm away from biface .072 in the SE quadrant of test unit N96W110 at 13 cm bs near the plowzone interface with the B_s soil horizon. The distal fragment is relatively small measuring 1.91 cm in width at the broken end and 2.20 cm in length. The blade edges of the biface are straight in outline and slightly asymmetrical. Cross section is plano-convex. These characteristics coupled with a slightly lipped break suggest the biface may have broken during the later stages of production.

The unifaces (23.25.020, .070/.079, .071, .098, .112, and .118) are all manufactured from rhyolite and/or felsic tuff and are variously formed. Two of the unifaces (.071 and .098) are probable endscraper fragments. Uniface .071 is a proximal fragment with a clean, transverse break that has a very thin lip along one edge. The uniface was recovered from the NE quadrant of test unit N95W110 at 20 cm bs in the B_s soil horizon. It exhibits expanding lateral sides that are steeply retouched on the dorsal surface. The proximal end of the uniface appears to have been snapped and does not show any modification nor evidence of a platform or bulb of percussion. With

the exception of retouch, the dorsal surface is absent of any flake scar arrises suggesting it may have been struck from a prepared blank or core. The ventral surface of the uniface is unmodified. Uniface .098 is a distal fragment recovered from a testhole at grid coordinate N95W115. The uniface was uncovered between 10-20 cm bs in the plowzone. It exhibits shallow angle retouch on the dorsal surface of the distal end that forms a very uniform convex shape. The ventral surface is unmodified and the dorsal surface exhibits minor flake scar arrises. Two unifaces (.071/.079 and .112) fit the description of gravers/perforators based on the presence of isolated tips or spurs. Uniface .071/.079 is formed on a broad, thin (3.8 mm) flake refit from two fragments uncovered in the NE and SW quadrants of test unit N95W110 at 20 cm and 25 cm bs, respectively (Figure 4). The uniface exhibits retouch along all edges of the dorsal surface with irregular retouch on the ventral surface. The retouch forms concavities on three sides of the uniface isolating several tips or spurs. One edge appears to have been retouched after the uniface broke thus forming two different tools. The extent of retouch on the uniface suggests it may have been multi-functional, serving as a graver/perforator as well as a scraping or cutting tool. Uniface .112 is produced from a flake broken at the distal end. It was uncovered in the NE quadrant of test unit N96W110 at 16 cm bs in the B_s soil horizon. The uniface is steeply retouched on the dorsal surface of one lateral side. The retouch forms a small spur. In addition, two sharp tips are present on each side of the broken distal end, one of which is partially formed by retouch on the ventral surface of the broken edge. The other tip is not retouched but appears polished and blunted under examination with a hand lens.

The remaining unifaces (.020 and .118) are irregularly formed on thick (≥9 mm) flake fragments. Uniface .118 was uncovered from the SE quadrant of test unit N96W110 at 16 cm bs in the B_s soil horizon. The uniface exhibits steep retouch all along the dorsal surface of one edge. This retouch is adjacent to a small portion of edge that is bifacially worked into a convex shape. Uniface .020 was recovered from a testhole at grid coordinate N80W85 between 0-20 cm bs in the plowzone. The uniface exhibits a small area of steep retouch that forms a convex shape on the presumed dorsal surface of the distal end. The steepness and shape of the retouch closely resembles those of endscrapers suggesting the uniface may be unfinished or was utilized for a similar function.

The modified debitage is composed of rhyolite and/or felsic tuff (23.25.080) as well as a lustrous bluish-gray chert (23.25.132). Specimen .080 is a small flake fragment with retouch along the dorsal surface of one lateral side. The retouch occurs from the broken edge to the platform area. Specimen .132 is a wedge-shaped flake closely resembling artifacts described as piece esquilles (Figure 4). The specimen exhibits crushing on both the distal and proximal ends that can best be described as bipolar percussion. The most extensive crushing occurs on the thin distal end. Irregular flaking is observed on both the dorsal and ventral faces and roughly parallels the long axis in a manner similar to core or blade technology.

The debitage from locus 2 constitutes most of the artifacts and is composed primarily of rhyolite and/or felsic tuff (n=686, 96.0%), followed by chert (n=24, 3.4%) and mafic volcanics (n=4, 0.6%). The debitage is variable in shape and size and most likely represents several phases of reduction. At least two pieces of debitage are diagnostic of specific technologies. One piece is a channel flake manufactured from a maroon colored chert. The flake was recovered from a testhole at grid coordinate N90W95 between 0-10 cm bs in the plowzone. Broken on the distal and proximal ends, the flake measures 1.67 cm in length and 1.28 cm in width. The other piece is likely a small blade fragment recovered from a testhole at grid coordinate N75W100 between 0-26 cm bs in the plowzone. Manufactured from a bluish-gray chert, the flake is prismatic in cross section with three flakes removed parallel to each other on the long axis. The flake is broken on the distal and proximal ends and measures 1.26 cm in length and 0.89 cm in width.

In addition to the prehistoric artifacts, numerous

Figure 4. Selected lithic artifacts from the Janet Cormier site (23.25). Row 1: artifacts nos. 182, 205, .116, .072, and .246. Row 2: artifacts nos. .204, .219, .212, .070/.079, and .132.

historic materials and bone were also recovered from the locus. The historic artifacts consist predominately of brick, glass, ceramic, nails, and coal, as well as a few pieces of plastic and farm animal ear tags. The bone consists of burned and unburned fragments, some of which could be identified as belonging to birds. All of the bone was excavated from the plowzone and is presumed to be of historic origin.

The large area from which artifacts were recovered in Locus 2 and the diversity of artifact types suggests the locus was the primary focus area for which activity occurred at the site. Activities ranging from bifacial and unifacial production are present suggesting processing of resources was an integral part of the activities.

In addition to the diverse artifact types, the locus also contains the greatest diversity of materials. Although preferential selection of materials for specific types of tool production is not evident from the Phase II testing, a distinction is apparent in the distribution of material types. Materials composed of chert primarily occur in the eastern portion of the locus (80% east of gridline W95) while materials composed of rhyolite and/or felsic tuff occur in the western portion of the locus (99% west of gridline W95). This spatial patterning is believed related to human activity rather than to sampling anomaly.

Locus 3

The last and second largest locus, Locus 3, also produced a diverse array of artifact forms. It is located on the northern edge of the same knoll described for Locus 2 (Figure 5). The locus is downslope from Locus 2, but still offers views of lowlands to the north and east. Bedrock is not exposed in the area of locus 3 but does occur in testholes immediately west of the locus.

The Phase I archaeological survey uncovered prehistoric materials from one shovel testhole, near the contact of the plowzone and B_s soil horizons. The artifacts consisted of a sidescraper fragment composed of chert, two chert flakes, and one volcanic flake. The sidescraper (23.25.256) is formed on a relatively large, thin flake that is broken at the distal and proximal ends. One lateral side is slightly concave and displays steep retouch on the dorsal surface that extends approximately 3.0 mm from the edge. On the opposite lateral side, utilization is indicated on the ventral surface in the form of very small (< 0.5 mm), irregular retouch along the edge.

Subsequent excavations at the locus have resulted in the recovery of 102 prehistoric artifacts. Although relatively small, the assemblage is similarly as diverse as Locus 2 with artifacts that include bifaces, unifaces, modified debitage, and debitage. However, in contrast to Locus 2, the overwhelming majority of artifacts are composed of chert (n=89, 87.2%) followed by rhyolite and/or felsic tuff (n=12, 11.8%), and mafic volcanic (n=1, 1.0%).

A total of 10.25 m^2 was excavated at locus 3 in the form of 29 testholes and 3 test units. These excavations indicate the size of Locus 3 is 400 m^2 and largely confined to the northeastern edge of the knoll (Figure 5). All three test units and six of the 29 testholes contained prehistoric artifacts, totaling 4.5 m^2 or 44% of all the area sampled. Over half of the prehistoric artifacts (n=58, 56.9%) were recovered from within the B_s soil horizon while less than a quarter (n=22, 21.6%) were found in the Ap soil horizon. The remaining prehistoric artifacts (n=22, 21.6%) were recovered from within an area of the B_s soil horizon identified as feature 1. Similar to locus 2, these percentages reflect a concentration rather than actual spatial distribution across the site. Outside of the concentrated area, only 10% (n=1) of the artifacts were found in the B_s soil horizon while 90% (n=9) were located in the plowzone. The maximum depth at which artifacts were found is 40 cm bs.

The majority of prehistoric artifacts were concentrated in a 1 m x 2 m block formed by test units N130W65 and N131W65. This area contained 90.2% (n=92) of the prehistoric artifacts recovered. The lithic composition of the artifacts in this area mimics that of the entire locus with 88.0% (n=81) manufactured from chert, 11.0% (n=10) from rhyolite and/or felsic tuff, and 1.0% (n=1) from a mafic volcanic. However, the area only produced

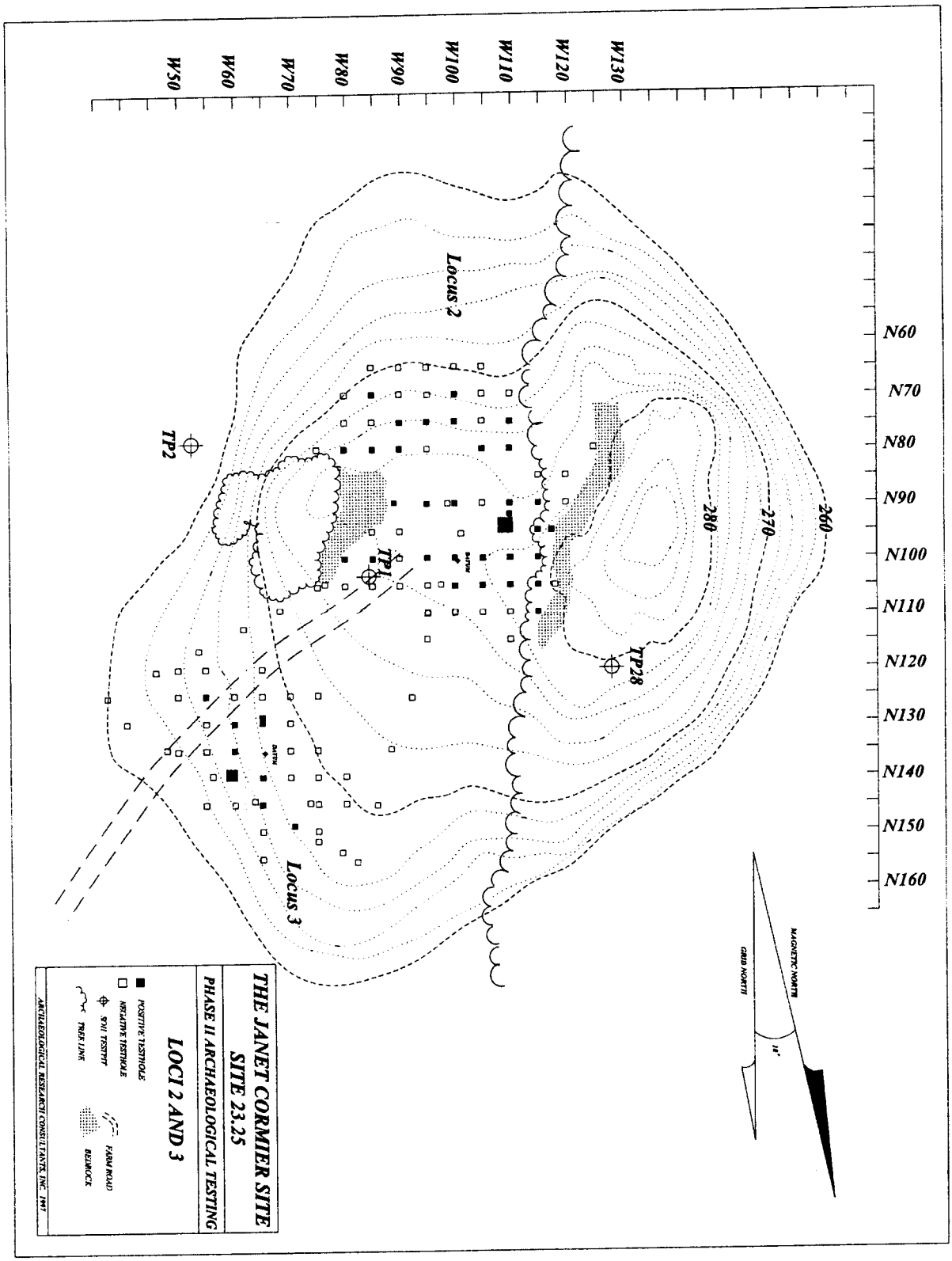


Figure 5. Location of archaeological testing within Loci 2 and 3 at the Janet Cormier site (23.25).

to the dorsal surface. With the exception of the proximal end, this retouch is generally small and does not alter the shape of the flake to any great extent. On the proximal end, steep retouch in the form of long, thin parallel flakes occurs, and most likely represents an area utilized for scraping activities. Retouch along the distal end isolates two spurs or tips that may have functioned as gravers/ perforators.

Uniface .219 was uncovered in a testhole located at grid coordinate N145W65 between 10-20 cm bs in the plowzone. The uniface is manufactured on a broad, thin flake that is broken on the distal and proximal ends. Both lateral sides are convex in outline and show extensive retouch on the dorsal surface, much of which occurs as fine retouch overlapping larger retouch flake scars suggesting the tool may have been repeatedly utilized and resharpened. Toward the distal end, a sharp tip is formed by the broken and lateral edges. The presence of minor retouch on the ventral surface of the tips suggests the uniface may also have served as a graver/perforator.

The modified debitage (23.25.169) is manufactured from a maroon and cream colored chert with minor amounts of dark green. The specimen consists of a thin, lateral fragment with continuous fine retouch along the feathered portion of the distal end. On the lateral edge, irregular flake scars of various size are observed on both the ventral and dorsal surface and may represent either utilization or post depositional damage. Similar flaking occurs on the broken lateral edge near the distal end.

The debitage is all relatively small averaging less than 2.0 cm. A total of 96 pieces of debitage was recovered composed predominately of chert (n=85, 88.5 %), followed by rhyolite/felsic tuff (n=10, 10.4%), and mafic volcanic (n=1, 1.0%).

Excavations in Locus 3 suggests the area most likely represents a small but concentrated area of human activity. Similar to Locus 2, both unifacial and bifacial production are evident from the assemblage suggesting processing of resources was a central part of the activity. Biface production may have included the making of fluted projectile points but with the absence of diagnostic preforms and channel flakes this remains only speculative. The presence of a fluted point fragment does suggest the locus was at least inhabited during the Fluted Point tradition, ca. 11,500-10,200 years ago (Spiess 1990).

The materials from Locus 3 are dominated by chert which only forms unifacial tools. The occurrence of two bifaces manufactured on rhyolite/ felsic tuff with a limited amount of debitage of the same material may suggest biface production was restricted, perhaps to specific phases of reduction in this locus.

CONCLUSIONS

The preliminary archaeological investigations at the Janet Cormier site document a significant archaeological site that offers potential for broadening our understanding of the earliest peoples to inhabit the region. On a regional scale, the site closely resembles other Paleoindian sites in several respects.

First, the location of the site on sandy soils overlooking low-lying areas reiterates a theme proposed for Paleoindian settlement in Maine (Spiess and Wilson 1987, Spiess et al. 1995). This theme suggests an intentional selection of site location on elevated surfaces overlooking some form of water body (e.g., bog, wetland, lake, river, stream, etc.) and which is composed of sandy soils (Spiess et al. 1995:47). Spiess and Wilson (1987:131) provide several possible hypotheses for this site location preference including plant resources, attractiveness for camping, and differences in vegetation related to the surrounding landscape.

Second, the artifact types are consistent with assemblages found throughout the region which are attributable to the Fluted Point tradition (ca 11,500 to 10,200 B.P.) of the Paleoindian period. This includes both unifacially and bifacially formed tools. Unifacial tools among Paleoindian period assemblages are categorized into several different types and although the limited number of unifaces from the Janet Cormier site does not allow a comprehensive comparison, they show considerable

similarity with unifacial forms described as sidescrapers, endscrapers, and gravers/perforators described from the Michaud site (Spiess and Wilson 1987) and the Hedden site (Spiess and Mosher 1994), as well as unifaces described as "cutters" from the Vail site (Gramly 1982). The bifacial tools from the Janet Cormier site are lacking in comparable morphological attributes but on the basis of one fragmented projectile point exhibiting flute scars and the presence of channel flakes, it can be assumed biface production at the Janet Cormier site was similar to sites of the Fluted Point tradition sites described above.

Finally, the distribution of artifacts across the site area occurs in concentrated areas (e.g., loci). These concentrated areas or loci have been recognized not only on a regional, but continental scale and have variably been interpreted as representing family units, kill sites, or specialized activity areas. In the New England-Maritimes region, these loci are generally characterized as small discrete areas consisting of a variable number of waste flakes and formed tools. The number of loci identified among Paleoindian period sites in the New England-Maritimes region varies considerably with the Bull Brook site in Massachusetts having the largest number with 42 (Byers 1954). In contrast, the Whipple and Neponset sites only contained three loci (taken from Spiess and Wilson 1987:133). The closest Paleoindian site, the Michaud site, contained eight loci (Spiess and Wilson 1987).

Although only three loci were formally identified at the Janet Cormier site, the potential for many more is clearly evident in the distribution of artifacts and types of materials. Both Locus 2 and Locus 3 contained materials over a 1,400 m^2 and 400 m^2 area, respectively. In comparison, the size of the loci at the Michaud site ranged between 96 m^2 (concentrationI and VI) and 36 m^2 (concentration III). Given the proximity of the Michaud site as well as the similarity in artifact types and materials, it is conceivable the distribution of artifacts may be analogous between the two sites. Thus, several more loci are probably present within the boundaries of both Locus 2 and 3. This notion is in part supported by the patterning of lithic materials in Locus 2.

Last, additional fieldwork is planned at the Janet Cormier site. Investigations will concentrate on better understanding the geological context for the archaeological deposit, identifying more loci and understanding the human behavior that produced them, and locating a cultural feature with charcoal to produce a reliable radiocarbon age for the site.

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REFERENCES CITED

Bloom, A.L.
1963 Late Pleistocene Fluctuation of Sea Level and Postglacial Crustal Rebound in Coastal Maine. American Journal of Science 261:862-879.

Byers, D.S.
1954 Bull Brook: A Fluted Point Site in Ipswich, Massachusetts. American Antiquity 19:343-351.

Gramly, R.M.
1982 The Vail Site: A Palaeo-Indian Encampment in Maine. Bulletin of the Buffalo Museum of Natural Sciences, Vol. 30, Buffalo, New York.

Hughes, T.J., H.W. Borns, Jr., J.L. Fastook, M.R. Hyland, J.S. Kite, and T.V. Lowell
1985 Models of Glacial Reconstruction and Deglaciation Applied to Maritime Canada and New England. In Late Pleistocene History of Northeastern New England and Adjacent Quebec, edited by H.W. Borns, Jr., P. LaSalle, and W.B. Thompson. Geological Society of America Special Paper no. 197.

Kelley, J.T., S.M. Dickson, D.F. Belknap, and R. Stuckenrath, Jr.
1992 Sea Level Change and Late Quaternary Sediment Accumulation on the Southern Maine Continental Shelf. SEPM Special Pub. #48.

Moore, E., and R. Will
1997 Archaeological Investigations at the Janet Cormier Site (23.25), Poland, Maine. Report on file with the Maine Historic Preservation Commission, Augusta.

Smith, G.W.
1985 Chronology of Late Wisconsinan Deglaciation of Coastal Maine. In Late Pleistocene History of Northeastern New England and Adjacent Quebec, edited by H.W. Borns, Jr., P. LaSalle, and W.B. Thompson. Geological Society of America Special Paper no. 197.

Spiess, A.
1990 Maine's Unwritten Past: State Plan for Prehistoric Archaeology (Draft Two, July). Report on file with the Maine Historic Preservation Commission, Augusta.

Spiess, A., and J. Mosher
1994 Hedden: A Paleoindian Site on the Kennebunk Plains. The Maine Archaeological Society Bulletin 34(2):25-54

Spiess, A, and D. B. Wilson
1987 Michaud: A Paleoindian Site in the New England-Maritimes Region. Occasional Publications in Maine Archaeology Number 6. The Maine Historic Preservation Commission and The Maine Archaeological Society, Inc., Augusta

Spiess, A., J. Mosher, K. Callum, and N.A. Sidell
1995 Fire on the Plains: Paleo-environmental Data from the Hedden Paleoindian Site. The Maine Archaeological Society Bulletin 35(1):13-52.

Stuiver, M. and H.W. Borns, Jr.
1975 Late Quaternary Marine Invasion in Maine: Its Chronology and Associated Crustal Movement. Geological Society of America Bulletin 86:99-104.

Will, R.T., E. Moore, and J. Clark
1997 Excavations and Endscrapers at the Chan Site (177.2). The Maine Archaeological Society Bulletin 37(2):1-24.

Wilson, D., R. Will, and J. Cormier
1995 The Nicholas Site: A Late Paleoindian Campsite in Southern Oxford County, Maine. Report on file with the Maine Historic Preservation Commission, Augusta.