

RESULTS

Site Description

Cathlapotle is located on the Carty Unit of Ridgefield National Wildlife Refuge, in Clark County, Washington (Section 11, Township 4N, Range 1W). It sits on an abandoned levee on the east side of Lake River approximately 1.3 km upstream from the river's confluence with the Columbia River. This landform, known as Brush Ridge, runs parallel to Lake River on one side and Long Meadow on the other. Brush Ridge is actually comprised of three parallel ridges with swales between. The site is located on the easternmost ridge, adjacent to Long Meadow. We call this Site Ridge. The site covers an area of 17,500 sq. meters (ca. 4 acres, 250 meters long and 70 meters wide).

Situated on the Columbia River floodplain in the Wapato Valley bottomlands, the site surface ranges from as low as 4.4 meters ASL to upwards of 7.4 meters ASL. The U.S. Army Corps of Engineers estimates that prior to modern dam construction, the average annual flood crest would have been 16 feet (4.9 meters) ASL. If this estimate is accurate, then much of the Wapato Valley, but not Cathlapotle, would have been subject to annual flooding (Hamilton 1993). The Wapato Valley floodplain averages 3.3 meters ASL. Consequently, the surrounding area of the site was and is frequently flooded (Abramowitz 1980). The flooding of February 1996 provided us with a "living geology" experiment in flooding at Cathlapotle. This "100-year flood" covered the site with seven to nine feet of water. The surface of the site was little affected beyond the deposition of less than 2-3 centimeters of alluvium, and so minor erosion. The flood caused a large number of trees to fall however. Whether this flood is at all analogous to pre-dam floods is an open question.

The Lewis River, Gee Creek, and Lake River enter the Columbia River in approximately the same place. The confluence of the four waterways creates a dynamic fluvial context in the site vicinity. For example, based on their comparison of maps from the 1853 survey to current USGS maps, Parchman and Hickey have determined that Fowler Point, downstream from the site, has been eroding. They also note that the Lewis

River channel appears to be moving north relative to the Cathlapotle Site (Parchman and Hickey 1993). Additionally, Lake River appears to be migrating westward, away from the site.

The Columbia River floodplain is characterized by a mosaic of microenvironments created by a variety of alluvial topographic features. The upland zone, as defined here, is the Wapato Valley slope, which intersects the floodplain 1.8 km to the east. The gentle valley slope has a westward exposure. It is characterized by gently rolling hills and plains that are covered with open farmland and intermixed with stands of conifers and deciduous trees.

On the Columbia River floodplain, between the valley slope and Site Ridge, lies a series of elevated landforms consisting of generally north-south levees, and an area of relatively high basalt outcrops. The elevated landforms are dense with oak and brush and are well drained. The basalt outcrops are concentrated in an area to the east and northeast of the site some as near as 100 meters. These basalt outcrops are the highest landforms in the area. The highest of these is 27 m ASL in what is called the Middle Lands just north of Gee Creek. Most of the outcrops near the site and south of Gee Creek are no higher than 9 m ASL.

Interspersed between the elevated landforms (levees and outcrops) are low lying meadows, wetlands and lakes. One large set of major wetlands are located between the basalt outcrops. Other wetlands are found to the south and southeast in broader, grassy lowlands between floodplain levees. Carty Lake is one of the largest, located 2.3 km south of the site. Farther south are Campbell Lake and Vancouver Lake.

Bachelor Island, just across Lake River, is also comprised of alluvial features but has no basalt outcrops. The island is characterized by a series of levees interspersed with long lakes, wetlands, and low meadows.

The Brush Ridge landform has been disturbed by Euro-American homesteading, logging, and the quarrying of basalt from a nearby deposit (Hamilton 1993). We would not be surprised to find the logging of the Brush

Ridge landform represented in the archaeological record. The site has also been subject to artifact collection by James Carty and possibly others. The 1993 excavation crew found a 1/4" mesh screen near Auger 93-16.

Given the limited nature of development on the Carty unit, it may be that the immediate vicinity of the site has much the same appearance today as it did in 1806. Currently, the Brush Ridge landform is covered by a mature stand of black cottonwood (*Populus trichocarpa*), and a dense understory of willow (*Salix* spp.), bracken fern (*Pteridium aquilinum*), blackberry (*Rubus* spp.), elderberry (*Sambucus* sp.), and stinging nettle (*Urtica dioica*). Rodents are present and disrupt the archaeological context, and mosquitos are regarded as disruptive by field workers. Given that most travelers could see Cathlapotle as they passed by on the Columbia, it is unlikely the site itself was heavily forested at the time of occupation.

The valley and the surrounding foothills possessed high habitat diversity at the time of contact. The riparian forest which was noted in the vicinity of the village by Clark (Moulton, 1990) would probably have consisted of black cottonwood (*Populus trichocarpa*), willow (*Salix* sp.), Oregon ash (*Fraxinus latifolia*), and a tangled understory (Hamilton 1990). In addition, Long Meadow, adjacent to the site, is thought to be a naturally occurring clearing and was probably a low grassland habitat. However, as Hamilton (1990) notes, Euro-American alteration of such areas throughout the Wapato Valley makes their precontact composition conjectural.

The reported campsite of the Lewis and Clark expedition (probably around 45CL4), upstream from the village site in a grassy low-lying area, was located near a pond (probably Carty Lake) from which the natives harvested wapato (Moulton 1990). In addition to these areas, the occupants of the village would have had access to nearby prairies, oak arbors, coniferous forests, and the resources of streams such as Gee Creek, and the Lewis, Lake, and Columbia Rivers (Abramowitz 1980).

Native inhabitants of the village utilized a variety of land, water, and airborne fauna. Abramowitz identified mammals including Rodentia and Lagomorpha,

as well as blacktail deer (*Odocoileus hemionus columbianus*), white tail deer (*Odocoileus virginianus leucurus*), and elk (*Cervus canadensis*). Predators and scavengers included black bear (*Euarctos americanus*), red fox (*Vulpus fulva*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), wolf (*Canis lupus*), and mountain lion (*Felis concolor*). Anadromous fish were plentiful in the region, particularly chinook salmon (*Oncorhynchus tshawytscha*). White sturgeon (*Acipenser transmontanus*), longfin smelt (*Spirinchus thaleichthys*), and eulachon (*Thaleichthys pacificus*) were also locally available (Abramowitz 1980). Both Lewis and Clark mention the presence of sea otter (*Enhydra lutris*) pelts at the village (Moulton, 1990).

Topography and Horizontal Zonation

As described elsewhere, the site has a number of topographic features that provide a basis for defining horizontal zones that can be independently sampled. The horizontal zones we have defined for the site include: 1) the rear berm, 2) house depressions, 3) front debris fields, 4) midden accumulations between house depressions, and 5) beach front. The 1994 testing showed that the surface topography generally reflects subsurface deposits that are the result of particular site formation processes. These zones are discussed in turn.

Rear Berm

The rear berm is a linear feature that extends in a north-south direction between Long Meadow and the eastern most row of house depressions. The berm is probably a natural flood levy accentuated by house depressions excavated on its west side. It is the highest topographic feature on the site at an average height of 6.6 MASL. It extends beyond the northern and southern boundaries of the site, but is most pronounced in the site area. The top is relatively narrow. Most of the berm has a gentle east slope to the meadow. House depressions cut into its western side.

Large House Depressions

The most visible features at 45CL1 are the surface depressions representing the locations of several large houses. The depressions are aligned with their long axis parallel with the present course of Lake River.

They form two rows, each with three major depressions. The relationship between the positions of the house depressions and the layout of the town at any one time remains to be demonstrated. In other words, we do not yet know whether the depressions represent houses occupied contemporaneously.

We do have reason to believe that the three western depressions were abandoned before the eastern row. The depressions are numbered sequentially from north to south, and east to west; thus, Depression 1 is the most northerly and easterly, Depression 6 the more southerly and westerly (Figure 9).

The depressions are the result of the semi-subterranean construction of the original houses, the presence of cellars, and the accumulation of debris and midden around the sides of the standing buildings. The midden accumulations delineate the locations of walls and corners. In some places, the midden actually obscures walls and corners, providing useful information on temporal relationships.

The term “berm” as it is used here refers to the ridges at front and back of the depressions created by the dumping of excavated house fill and garbage, and by the accumulation of flood sediments. These berms are usually most marked on the eastern side of the structures.

Depression 1

Depression 1 is the largest of the six, being approximately 63 meters long and 10 meters wide. In places, it is more than a meter deep to the surface of the present fill. This depression is subdivided into subdepressions by low (ca. 10-20 cm) ridges at right angles to its long axis. These subdepressions are lettered A-D from north to south. There are at least three such ridges. Their positions are clear on the map (Figure 9).

We surmise, based on ethnohistoric evidence, that these ridges represent the position of walls separating compartments within the larger dwelling. Depression 1 also has subdepressions deeper (A and D) than the rest of the feature at both ends. This “barbell” shape is duplicated in Depression 2. The south end of this structure was the focus of the 1994 and 1995 excavations, while in 1996 we explored compartments B and C in

addition to D. Depression 1 has also been extensively augered.

Depression 1 is separated from Depression 2 by a high lateral mound of midden (midden Lobe A) and other debris. To the west of Depression 1 is a broad flat debris field sloping into the swale.

Subdepression D generally conforms to the model of the interior layout of a Chinookan plankhouse developed in the course of excavations at 35CO5 (Ames et al. 1992). At the center of the house was a platform supporting at least three central hearths aligned north-south, flanked by corridor pits; we often refer to these rows of corridor pits as “cellars.” The central platform also carried evidence of the central posts or timbers supporting the house’s ridgepole. The corridor pits appear to have been located entirely beneath the sleeping platforms, in contrast to the Meier structure where they were below the floor in front of these platforms (that is, between the bench and the central platform). It does not appear that this house had storage extending below the floor, which was probably earthen. There is evidence only for one hearth box (associated with hearth Feature 478, excavated in subdepression C in 1996), while at Meier most if not all hearths had containing boxes. (Ames et al. 1992). Nevertheless, the Depression 1 hearths are extensive and well defined. Generally, hearths in Depression 1 appear to have been built on an earthen the floor without containment boxes.

The trenching, augering, and excavations indicate that the fill within the storage pits is between 1 and 2 meters deep. In the center of the house it is perhaps 50 cm. deep.

Since it is clear that we are dealing with a structure in Depression 1, that structure is referred to here as House 1. This house is dated by 12 radiocarbon dates (specimen numbers 12,000 through 19,000; see the discussion *Radiocarbon Dating* in this section and Table 5) collected from the deposits within and adjacent to the depression in 1994. The oldest date associated with the depression is TX 8286, which is calibrated to 427-366 BC. We believe it actually dates formation of the low ridge on which the western wall of the house was built. TX 8296 (AD 1213-1307) dates what appears to be a red cedar post associated with a complex struc-

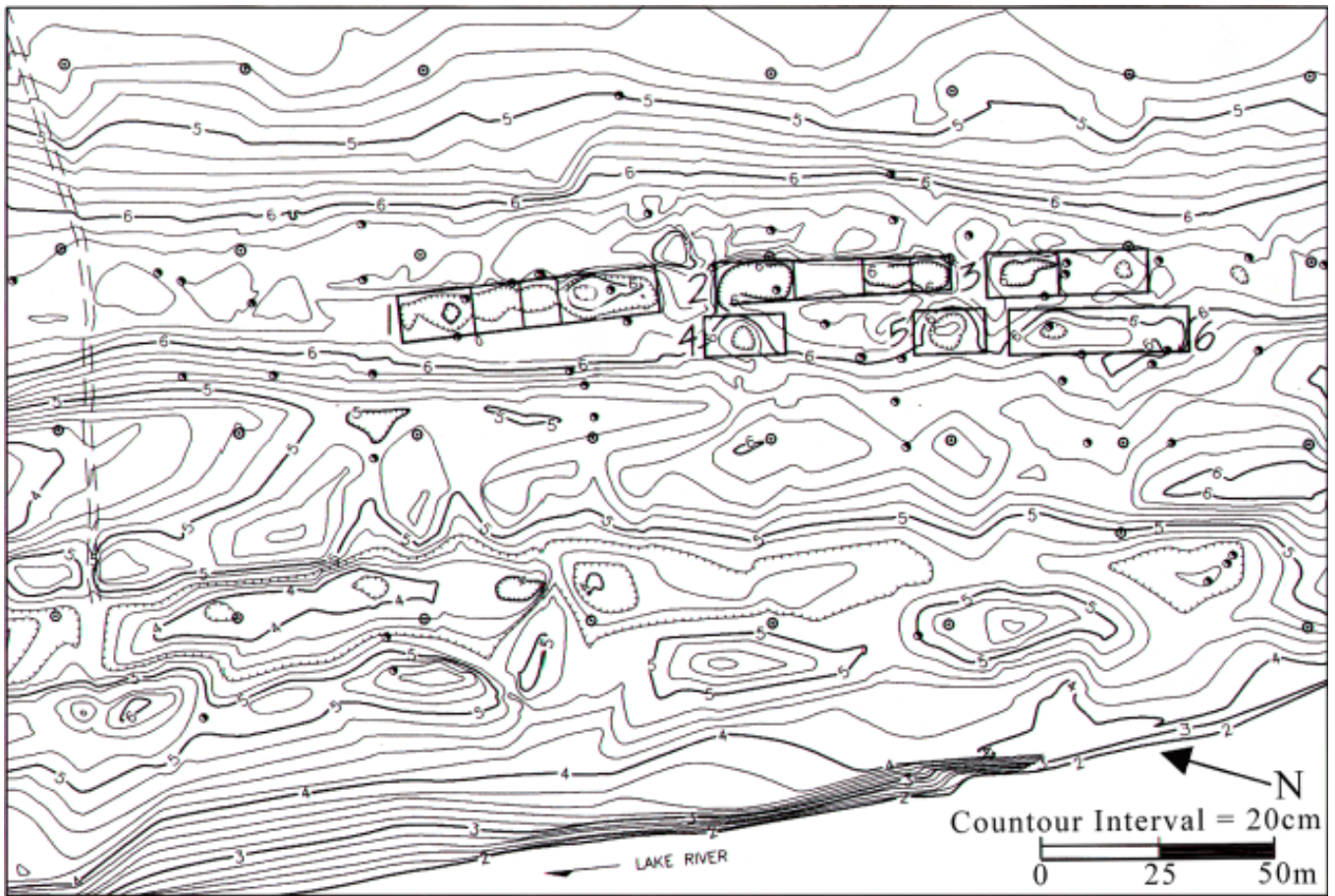


FIGURE 9.
TOPOGRAPHIC MAP FEATURING DEPRESSIONS 1-6

tural feature. It may be old wood, so we regard it with caution. TX 8283 (AD 1433-1489) is perhaps a better lower limiting date on the house in subdepression D. It is based on charcoal from Feature 88, an extensive charcoal stain beneath the major structural features on the central platform.

Feature 88 was separated from the overlying features by a sterile stratum of silty fine sand. However, Feature 88 also has substantial postmolds in this area, suggesting it might represent an earlier house. The rest of the samples were collected primarily from the debris field or yard deposits west of the depression. These span the sixteenth and seventeenth centuries AD. Glass trade beads in the upper deposits firmly indicate that occupation extended well into the contact period.

Depression 2

This structure is some 50 meters long and at least 12 meters wide. It is topographically the most visible of the depressions, characterized by the steepest walls. It too is barbell shaped, with a marked subdepression at either end. The southern subdepression may actually be two features rather than one (Figure 9).

Depression 2 is separated from Depression 4, which is immediately in front of it on its northwest corner, by a low berm. The berm is so low that it was first thought to be an entrance. It is possible that Depression 2 and 4 were in some fashion connected, though there is no evidence for that beyond the topography. Depression 2 is separated from Depression 5, which is immediately in front of its southwest corner, by a steep berm.

Depression 2 and Depression 3, to the south, are separated by a high mound of debris and midden that extends almost to the swale. Depression 2 was tested by a single 1x4 meter unit (N106-107/W77-81) placed to determine the location of its eastern wall.

This depression has seen only limited testing and augering. There are no radiocarbon dates. The deposits from the single test unit, which approached two meters in depth, yielded few trade goods. A wall trench was exposed in this unit as expected.

In 1995, excavation unit N75-77/W76-78 exposed an end wall of a structure two meters below current

ground surface (Figure 10). The position of the unit suggests that this deeply buried structure is below the eastern berm of Depression 2, and is probably ancestral to it. No radiocarbon dates have been run at this writing. The wall is buried beneath the eastern (and highest) portion of midden Lobe B, and thus predates the midden lobe as well as Houses 2 and 3.

Depression 3

Depression 3 is separated from Depression 6, immediately to its west, by a high, narrow berm. Depression 3 has been augered but not otherwise tested. The augers indicate that the depression may be quite deep. We suspect the depression may be one of the earliest at the site, and that it was filled with midden deposits associated with Depression 2. This depression is heavily vegetated.

Depression 4

Depression 4 is a generally circular depression. It appears to have been partially buried by the large debris field in front of Depression 2. Its northern wall was exposed in unit N136-138/W94-96 beneath a meter of cultural deposit. Its southern extent is unknown, and is probably buried beneath a debris field. Its western boundary is a very low berm at the edge of the swale. Depression 4 has been tested through placement of ten units. We did not locate its southern wall in 1995. The 1995 units were placed to test down through the center of the house and to locate central hearths and interior architectural features. The house appears to contain several superimposed earthen floors. Dramatic and numerous structural features were encountered in 1996, indicating multiple occupations or, at least, multiple refurbishment of this structure. East-west trending interior walls were also indicated by post and plank features in 1996. A limited number of storage pits were exposed, but they do not appear to be as extensive as in the House 1 "cellars." Note that the structure at 35MU57 (Ellis and Fagan 1994) has no subfloor storage features.

Three radiocarbon dates (TX 8271, 8272 and 8273) recovered from unit N136-138/W94-96 provide upper limiting dates for this house spanning the period from AD 1458 to 1690 (Table 5). These dates occur in deposits that are either high in the house fill or

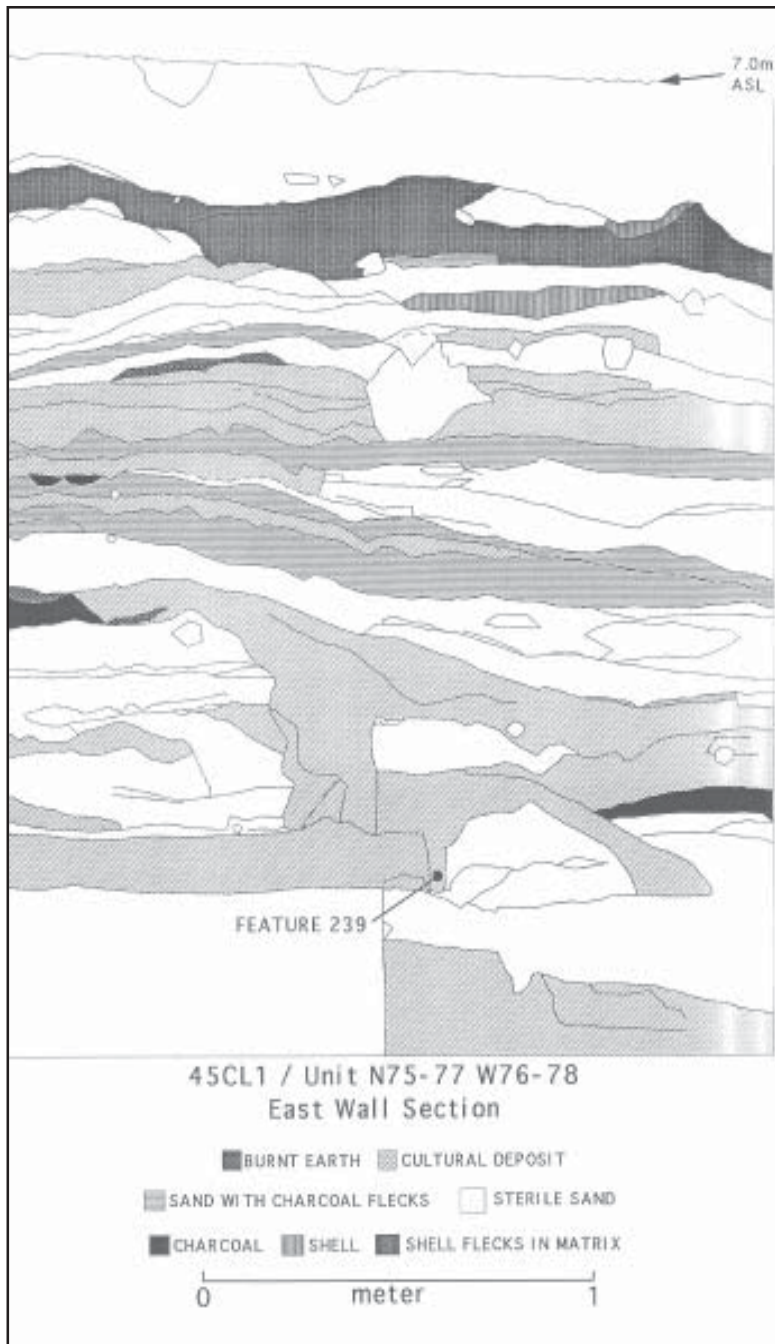


FIGURE 10.
 UNIT N75-77/W76-78 WITH WALL TRENCH BURIED ca.2m BENEATH MODERN SURFACE.
 (MAIN TRENCH IS LEFT OF FEATURE 239 MARKED ON THIS PROFILE.)

stratigraphically superior to the wall itself. They are generally contemporaneous with the Feature 88 date from Depression 1. However, these are upper limiting dates for this structure, probably dating the final episode of infilling and burial of the north end of the depression. The structure, identified as House 4, could have been abandoned some time earlier.

Depression 5

Depression 5 is also generally circular. It is at the southern end of the same debris field associated with Depression 2. It is likely that at least its northern end is buried beneath that debris field. Its southern edge is marked by the terminus of the large debris mound that separates Depressions 3 and 4. This mound also separates Depressions 5 and 6. It is possible that Depression 5 and 6 represent the same structure that has been partially buried beneath the mound. However, the northern edge of that debris mound does conform to the general configuration of the depression. It is possible that this depression represents a pithouse rather than a plankhouse. Location of a corner will establish the nature of the structure. The depression has not been tested or augered.

Depression 6

Depression 6 is approximately 45 meters long but may originally have been longer. Its northern end has quite likely been buried beneath the debris mound that separates it from Depression 5. A glance at the map will show that the microtopography at the north end of this depression is quite different than that of most of the other structures. Where elsewhere it appears the debris deposits accumulated around standing walls, here the midden slopes gently into the depression, partially filling it. This debris mound is clearly associated with Depression 2, suggesting that its last occupation post-dates the abandonment of Depression 6.

Depression 6 is separated from Depression 3 by a steep berm, and from the swale on the site's western edge by a very low berm, similar to the western berms in Depressions 4 and 5. The profile for the N52 trench suggests that Depression 6 was originally excavated into this berm. The wall trench for the house's west wall is clearly intrusive through the upper deposits whose slope suggests they originated at the top of the

berm on the west side of Depression 3.

The structure may be dated by three radiocarbon dates recovered from 1992 augers in its western berm. These dates are TX 7742, 7744 and 7745. Their calibrated age ranges span a period from AD 910 to 1410. TX 7742 and 7745 were recovered from the same auger in good stratigraphic order at depths between 195 and 212 cm below the present surface.

Other Structural Features

As described in the section on plankmolds, postmolds, and "wall trenches" below (p.46), walls were encountered in N179-181/W101-103, west of and running parallel to Depression 1. There is no evidence of a depression associated with these walls. There was also no stratigraphic evidence of a structure to the east of the wall. It may represent an outbuilding or a structure that has no excavated portion. Heavy postholes and plank molds were also encountered in Unit N107-109/W98-100, between Depressions 4 and 5. Since it is quite likely that the southern end of Depression 4 is buried beneath that debris field, it is possible that other structures are buried within or beneath the debris field. As mentioned above, a 2-meter length of wall trench was exposed 2 meters below the surface in unit N75-77/W76-78. Just north of the wall, pit fill was also exposed. It seems clear that a deeply buried structure lies slightly south and east of Depression 2. This buried structure is identified as House 7. The exposure of this house confirms the fact that visible depressions are not requisite for the presence of additional structures at 45CL1.

Midden Accumulations

Linear berms surround the large depressions and define some of the subdepressions. The prominence of these mounds varies throughout the site and are absent in some places. They range in height from .25 to 1 meter and in width from 3 to upwards of 10 meters. The largest berms define the long house depressions described above. There are two major lobes. Lobe A extends between Depressions 1 and 2 and covers (and partially fills in) the northern portion of Depression 4. This depression is probably excavated into the lobe, but its northern wall is also buried beneath the lobe. Lobe B extends between Depressions 2 and 3 and 5

and 6. Its relationship to the latter two depressions is not known. As mentioned above, a portion of this lobe covers a structure beneath and slightly to the east of Depression 2.

Front Debris Fields

The front debris fields are located to the west of the house depressions. They are the westernmost surface features on the site proper. The zone is defined by a broad, gentle, west facing slope extending approximately 20 meters from the house depressions. There are two broad fields visible on the site surface. These are associated with Depression 1 and Depression 2. A small debris field is also associated with the northern end of Depression 3. No debris fields are visible on the surface south of the N56 line and nor west of the western row of depressions (Depressions 4, 5, 6). However, their presence has not been discounted pending further subsurface testing. Auger tests south of the N56 line show no evidence of debris fields. It is possible that many of these deposits have been eroded away or buried. In support, the southern section of the site is generally lower where the abandoned channel cuts close to the house depressions than the northern portion.

The potential extent of the debris field west of House 1 is hinted at by the typical debris field encountered during 1996 excavation of a unit 1-3 meters north of the 1994 trench. Debris was found in abundance here (see *Excavations 1996* in Cathlapotle Project History for details) in what is probably not a localized occurrence. Rather, this unit appeared to sample a widespread "sheet" of living refuse fanning out westward of House 1 and dipping towards the swale and the ancient beach front.

Beachfront

At present, the Lake River beach is 70-80 meters west of the site. The current hypothesis is that Lake River has migrated away from the site during the last 150-200 years. A long swale extending beyond the full length of the site in both directions may represent the old Lake River channel. Thus, the beach probably extended along the western side of the site. The debris fields extended to and possibly into the water that once flowed through this channel. During the site's occupation, the swale may have acted as a protected inlet

(opening to the north) rather than a flowing water channel. The transformation from a flowing channel to an inlet may have occurred prior to or during occupation. The hypothesized northeastward movement of houses may be related to this process. As alluded to earlier, the alluvial chronology is extremely complex on the valley floor and has not been well defined.

Site Stratigraphy

The testing thus far completed at Cathlapotle is insufficient to conclusively address the stratigraphy at the site. Accurately describing the depositional history of a large, deeply stratified site is a problem which has been examined in detail elsewhere (Flannery, 1976). Given the apparent long-term occupation of Site Ridge, and the probable presence of numerous superimposed floods, house remains, and continual maintenance and reconstruction of the dwellings, several more seasons of excavation at the level of the 1994 testing are imperative to understand the site. It would be presumptuous at this point to attempt to analyze the stratigraphy in detail, as our conclusions would undoubtedly be overambitious, and require potentially confusing amendment at a later time. A graduate student from the Geology Department at Portland State University, under the direction of Dr. Scott Burns, was a part of the 1996 field project; data collected then may be used as the basis of an MA thesis. We are considering the placement of a geological test trench in a noncultural area of the site to establish some baseline data. Such a test would be conducted in consultation with palaeoenvironmental specialists.

What is clear at this point is that there are two major stratigraphic units at the site: the basal alluvial deposits which formed Site Ridge alongside the Lake River channel, and the cultural deposits which overlie them containing numerous crossbedded flood deposits. These deposits are discussed below as they pertain to certain areas of the site.

Beachfront

From Unit N107-109/W98-100, we can clearly see that the beach between the town and the river was a dynamic environment, and there are localized deposits of cultural material within these sediments. At least one large, shallow pit feature in these sediments (dis-

covered at approximately 4 meters below the modern surface) was likely an acorn leaching pit, similar to those observed on the beach front of the Sunken Village Site (35MU1). The depositional history of this particular unit is complex, and given the limited exposure involved, the record in the unit is not sufficient to draw conclusions about other locations at the site.

The continuation of the N159-160/W79-107 trench westward will begin to clarify the relationship of the channel to the partially-examined house and adjacent cultural deposits in that area, but it is likely that more trenching will be required along the river channel to ultimately resolve the relationship between the settlement and Lake River. The problematic nature of making assumptions of relationships between what was observed in N107-109/W98-100, and what was observed in units of the long trench is aptly illustrated by the discovery of an unanticipated house (in unit N136-138/W94-96) between these units.

House Depressions

The stratigraphy of the house visible in N159-160/W79-107 is typical of Wapato Valley plankhouse profiles, and indicates that the final house occupied at that locale is essentially intact beneath the modern A-horizon (Figure 10). The presence of at least one earlier house is indicated by Feature 88, a stratum containing organic material and cultural features, separated from the upper cultural component of the house, and visible from the eastern extent of the trench through the house and down the west slope into unexcavated levels. The hypothesis of multiple house construction at this location is also supported by the relationship of the radiocarbon dates recovered from within the house depression to those in the debris fields to the west of the house, and from the unit in the eastern berm of the house depression (See *Radiocarbon Dating* in this section and Table 5).

Front Debris Fields

The debris fields along the west slope of Site Ridge appear to have been deposited both as a result of cultural activity along the river bank and dumping due to household maintenance. These deposits are often interbedded within each other, as well as within flood sand deposits, and may contain features created by *in*

situ cultural activities such as pits, ovens, and small post and plankmolds. The west end of the N159-160/W79-107 profile shows that the fields accumulated with a westward migration, toward the waterfront. The density of cultural material is comparable to that found within the house units, and the diversity of artifacts, particularly trade goods, has thus far been greater. These deposits contain substantial amounts of charcoal, debitage, faunal material, and fire-cracked rock, in addition to artifacts. There is no indication that these deposits have been disturbed by anything other than subsequent cultural or flood activity, and the radiocarbon dates from this area of the trench, with the exception of TX 8286, do not indicate any appreciable chronological breaks (Table 5).

At this point, differentiating between these debris fields and midden deposits is rendered problematic by inadequate levels of excavation. As can be seen, the initial assumption from 1993 was that the N107-109/W98-100 unit was in a midden area, but there are some indications that what may be considered midden in the upper 70 centimeters could be overlaying the remnants of a buried house. The unit N75-77/W76-78, on the eastern berm of Site Ridge, appears to be a midden area thus far as well, but the locale may not always have been used as a dump. Until more units have been excavated and the stratigraphic sequence of the site has been clarified, the utility of the term midden is somewhat suspect. It is often used to denote the presence of shell deposits in Northwest Coast archaeology, but as can be seen in the two units mentioned above, the shell deposits at 45CL1 are not vertically massive, and are adequately described as debris fields (Figure 12).

The debris fields probably had other structures built on them. Various isolated postmolds have been observed in debris field contexts. These may be associated with houses or smaller “yard” structures such as drying racks or sheds. Additionally, the debris fields evidently cap some older house depressions. This is most obviously illustrated by unit N136-138/W94-96, which contains an east-west trending wall trench that is undoubtedly the north wall of a buried house. To the south of this unit is the exposed house depression that is approximately one half the size of most house depressions at the site. The conclusion is that the northern half of the house has been buried by debris fields.

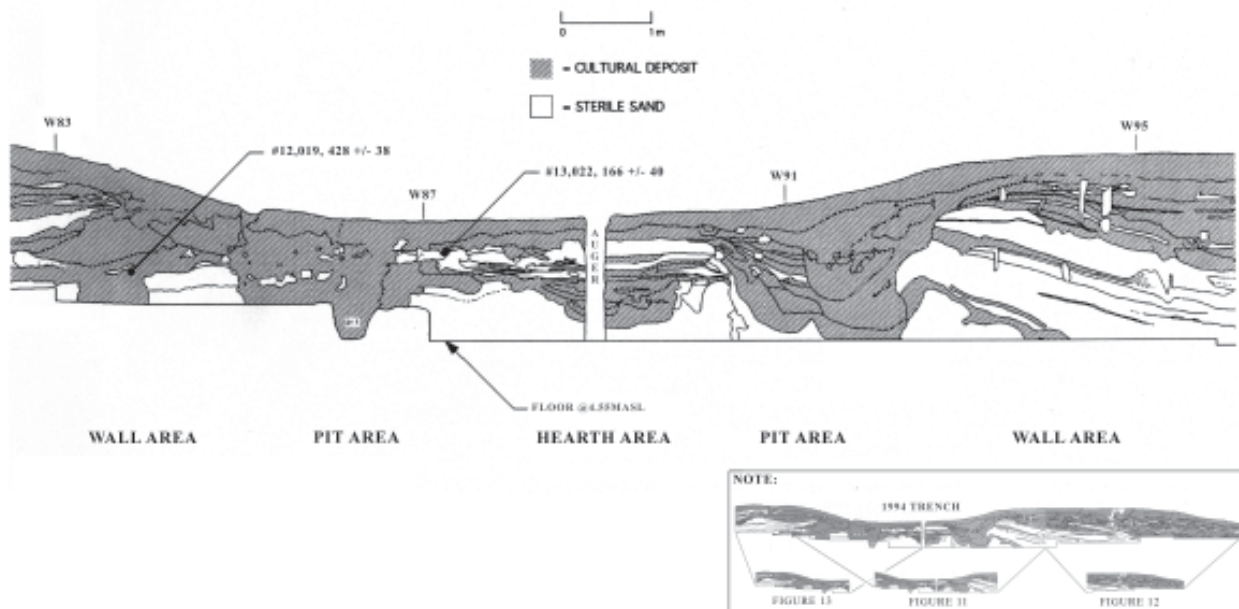


FIGURE 11.
N159-160/W79-107 SOUTH PROFILE MIDSECTION.

Another wall trench in unit N179-181/W101-103 may be associated with a buried house depression or, more likely, the wall of a smaller type of house (or other structure) that did not have a depression.

The south profile of trench N52/W99-105 clearly shows the wall trench representing the west wall of a structure in Depression 6. At the extreme western and bottom corner of the trench, the deposits dip abruptly downward. We hypothesize that these sediments may represent a fossil stream bank. The general dip of these deposits follows a slope from the western berm of Depression 3, leading us to believe Depression 6 was excavated into those sediments.

Midden Accumulations

Very little testing has been done to identify the formation processes of the berms surrounding the large house depressions. Test units N106-107/W77-81 and N159-160/W79-83 cut into the rear berm of the site. At these locations, neither the surface topography nor the subsurface deposits exhibit any indication of midden accumulation. However, the slight mounding of sand strata is suggestive of dumping episodes (from house construction) interbedded with flood deposits.

There exist at least two possible explanations for the formation of the berms. First, when each house was constructed, excavated soil was probably dumped around the circumference of the foundation. Second, waste may have been frequently dumped around the houses. The only significant exposure of these deposits is unit N75-77/W76-78. The unit is located on a surface mound on the east end of a large berm that extends between Depression 2 and Depression 3. This berm is one of the largest at the site. The unit excavated in this berm has dark midden deposits with a high density of cultural material that is reminiscent of fill found in storage pits inside the Meier Site house (Ames et al. 1992). This suggests that the berm was formed by dumping pit fill, possibly associated with repeated episodes of house building and remodeling.

Thus, the surrounding berms between houses may be midden accumulations composed of old interior house deposits excavated from the depressions for new or reconstructed houses. Alternatively, but not necessarily excluding the former hypothesis, these midden deposits may represent periodic garbage dumping around the house not related to house construction. Additional testing is necessary to substantiate these claims. The composition of the berms bounding long houses is ex-

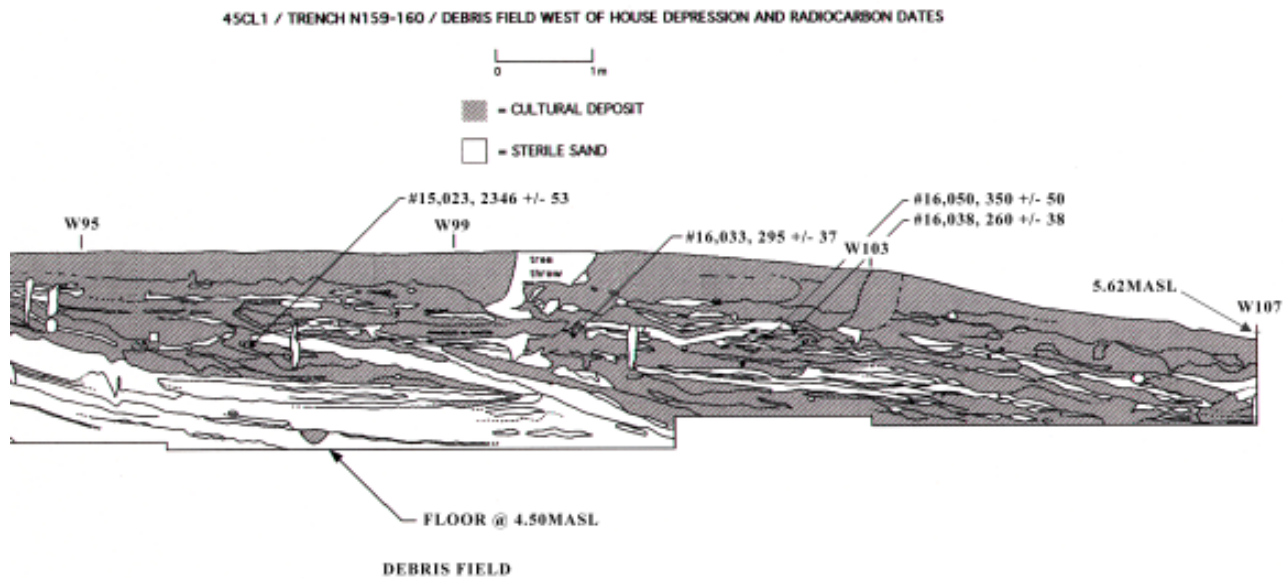


FIGURE 12.
N159-160/W79-107 WEST DEBRIS FIELD.

pected to be different than the smaller berms defining subdivisions. Trenching of one of these berms in 1995 did reveal a wall feature.

Rear Berm

The rear berm of Site Ridge is undoubtedly the most intact remnant of the landform as it existed prior to occupation. This can be seen in the N159-160/W79-107 profile (Figure 11, 12, 13), as well as the auger record from that area of the site. The stratigraphy in this area consists of the modern A-horizon, overlaying massive alluvial deposits, which are disturbed by discrete pockets of cultural material. The three units placed on the eastern portion of Site Ridge (N56-58/W70-72, N159-161/W70-72, and N183-185/W78-80) were relatively unproductive, and excavation of these units was suspended so that the crew could be more usefully employed elsewhere on the site.

The test units on the rear berm yielded a low density of cultural material. The sediments are primarily intact alluvial sands, probably deposited in massive dumping episodes. Two of the units on the berm (N56-58/W70-72, N159-161/W70-72) contained a light density of various cultural items but no features. Unit

N183-185/W78-80 had a relatively high density of large animal bone, but also had no identifiable features. Similarly, the eastern end of trench N159-160/W79-107, which extends a short distance into the berm, revealed a low density of material. However, a number of small oven features were encountered relatively deep within these deposits. The relationship between the various oven features and the adjacent house deposits has yet to be determined.

The excavations thus far conducted on Site Ridge have been concentrated just north of center of the Site, and little is known of the stratigraphy at the northern or southern extents of the site other than what was observed during augering. Augers at the north and south extremes of the site indicate a largely uninterrupted sequence of alluvial deposits, and are probably representative of the original Site Ridge landform.

Features

The features identified at 45CL1 are consistent with those found at other Wapato Valley plankhouses (Figures 14-37). Feature preservation at the site is excellent and allows recording of large architectural features (such as post and plank molds of both the stain

45CL1 / TRENCH N159-160 / BERM EAST OF HOUSE DEPRESSION

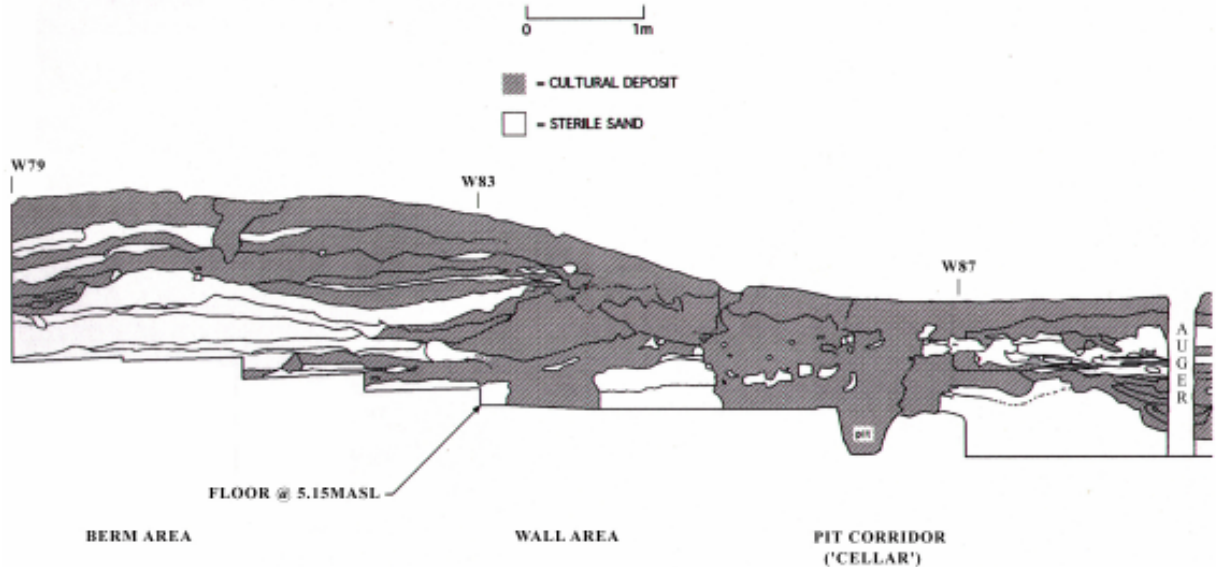


FIGURE 13.
N159-160/W79-107 BERM EAST OF HOUSE DEPRESSION.

and backfilled varieties), hearths and hearth dumps, cobble ovens, storage pits (both within house depressions and outside them), and wall trenches. Cache features have also been identified, including several core or flake caches, a metapodial chisel cache, discreet concentrations of raw cobble and pumice pebble material within larger pits, and lenses of freshwater shell. We describe some of these features in more detail below.

Plankmolds, Postmolds and 'Wall Trenches'

The plank- and postmolds identified at 45CL1 are ubiquitously distributed. They are characterized by organic stains caused by the weather and decaying red cedar posts and planks, and by the backfilling of post and plank holes left during reconstruction episodes. The larger planks and posts located tend to be within the central trench units through the house depression. These were the central load-bearing poles that supported the roof.

The eastern wall of House 1 was exposed in 1994 and its southern wall in 1995. An interior wall was exposed in 1994. This wall was located in the north slope of subdepression 1 and probably represented the di-

vider between compartments C and D. A further (though less well-defined) interior wall was found in 1996, between compartments B and C. Finally, in 1996 a large west wall feature was exposed in House 1. East walls were exposed in Depressions 2 and 6 in 1994. A west wall was exposed in Depression 6 in 1995. As noted above, the north wall of House 4 was exposed in 1994 and its west wall was dramatically exposed in 1996 (see *1996 Excavations* in this section). Perpendicular to this wall trench were exposed other wall features probably indicating interior partitions of this house.

We use the term "wall trench" to conveniently describe complexes of related features which we feel are all indicative of a single wall; each feature, however is assigned a separate feature number. Some wall trenches were constructed as continuous trenches, while others are the result of overlapping, multiple uses of the same area for wall supports.

Large structural features have been encountered outside the depressions. One notable example is Feature 1, located in N107-109/W98-100. This feature is visible in the unit's east profile (Figure 15). It consists of the remains of at least two backfilled post holes, ap-

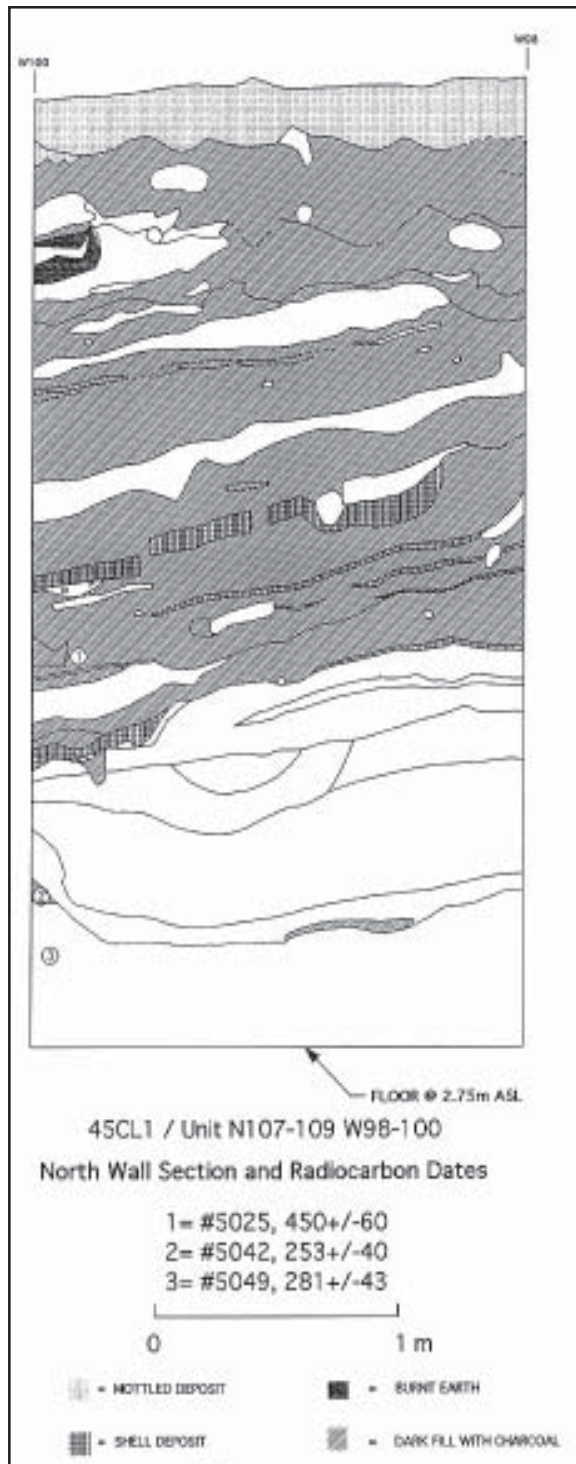


FIGURE 14.
 N107-109/W98-100 NORTH PROFILE.

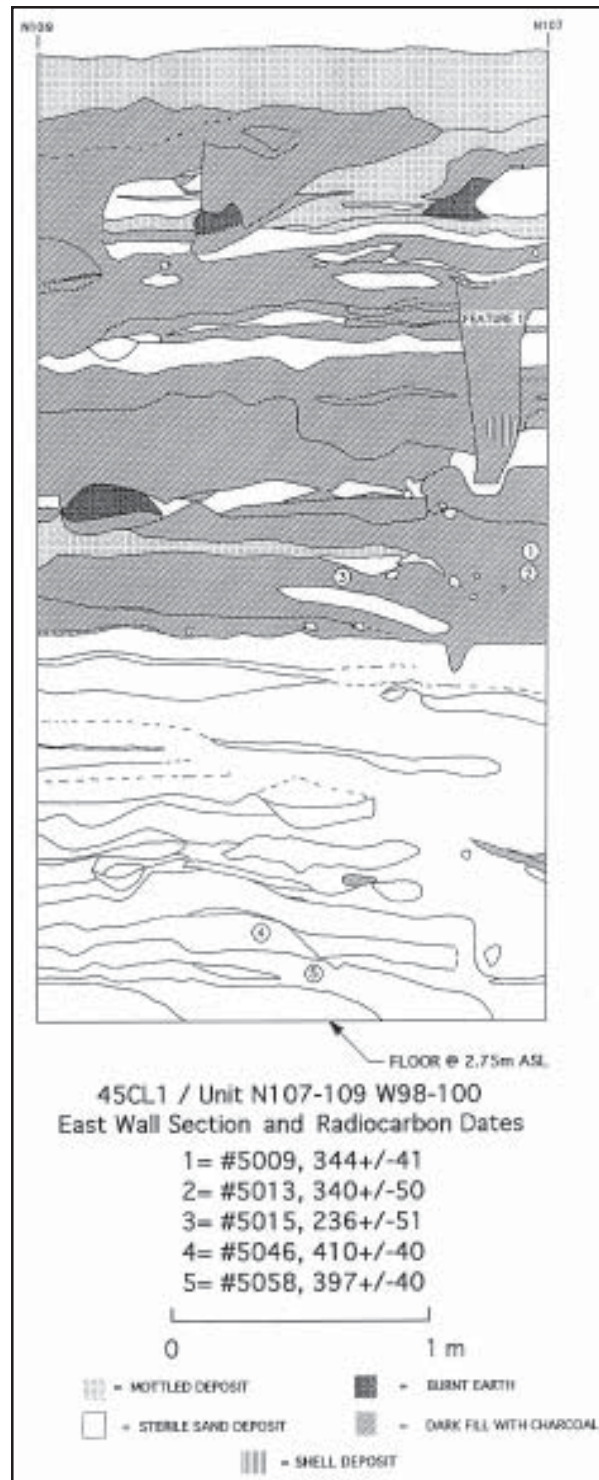


FIGURE 15.
N107-109/W98-100 EAST PROFILE SHOWING FEATURE 1.

proximately 27 cm across. There is obvious evidence that the initial placement of this post bore a considerable amount of weight in that it displaced its basal strata downward 10 centimeters. This post is not certainly identified with a house, but one of our hypotheses is that there are the remains of a buried house in this unit.

Smaller plank and post features are found distributed both within houses and in areas of activity around the houses. At times, these features are associated with others, such as Feature 48, a small post placed into Feature 11, a cobble oven.

Planks and posts are sometimes found in association with an obvious wall trench feature, such as Features 87a-g, in N44-45/W89-93, Feature 166 in Unit N136-138/W94-96, or Feature 96, in N164-168/W 88-89. However, not all of the house walls are so clearly defined. The west wall of the house through which the N159-160 trench was placed was not as easily discernible as the east wall. Several groups of post and plank features, in Units N159-160/W91-95, and N59-160/W95-99, were possible candidates for the wall. It is likely that the house was rebuilt several times, and all were related to one or another wall. The riverine orientation of the town would have caused this area to be more affected by cultural disturbances, thus obscuring the wall trench. Finally, flooding episodes may have played a greater role in obscuring the riverward side of the house.

Again, it should be noted that not all of the wall trenches were associated with house depressions. Both units N136-138/W94-96 (Feature 166) and N79-181/W101-103 (Feature 126) contained wall trenches that were in no way indicated by surface topography (Figure 15).

Hearths and Hearth Dumps

Hearth features were exposed in central units in the house depressions. Unit N159-160/W87-91 revealed hearth remnants which were in fact detected earlier by auger (Feature 19). Unit N161-164/W88-89 included a hearth complex which was not excavated in 1994 due to time constraints (Feature 64). The hearth material in W87-91 was previously detected by Auger 92-30. These features were identifiable by the dominant amounts of orange-colored ash, grey ash, fire-

cracked rock, and the high charcoal content within these ashy sediments. Given the limited exposure of the 1x4 meter units and the time constraints involved, neither of these hearths were fully defined.

In 1995, two large hearth complexes in subdepression D of Depression 1 were exposed. One of these, in the south wall of unit N151-153/W86-88, consisted of five superimposed hearth bowls filled with fine grained pyroclastic material. There was no associated evidence of a hearth box, however. The other was an intact bowl of ash, charcoal, and fine pyroclastic materials about six meters north of the first. This feature also lacked evidence of a hearth box. These features conformed to many of the details of hearths exposed at the Meier site and other sites in the area. First a clay bowl some 50 cm. in diameter was built, and then lined with either clean beach sand or sand-sized pyroclastics. The fire was then built. Ash and other materials accumulated in the bowl until either a new bowl was built atop the accumulated ash or the whole was thrown out and replaced.

In 1996, two more hearths were excavated in House 1 (see *Excavations 1996*). This brings the total of hearths excavated in House 1 to five. One of these, Feature 478, was sand-lined, had several distinct layers, and also appeared to have had a hearth box, the first such found at Cathlapotle. A less-developed hearth was found some meters north of this hearth.

A central hearth was exposed in Depression 4. This feature lacked the clarity of those in Depression 1, and appears to have been built directly on the ground, while those in Depression 1 were built in hearth bowls.

What we refer to as “hearth dumps” are ash deposits roughly 15-35 cm across and 5-10 cm deep. These features of orange ash and charcoal have been found primarily in Units N159-160/W95-99, and N159-160/W99-103 (Features 12 and 16, among others). Note that these units are in the debris field west of House 1. These deposits showed little or no evidence of basin construction, nor any indication of reuse. Little fire-cracked rock was associated with these features. Calcined bone fragments were often present. An alternative hypothesis was that they are the remains of ephemeral fires, but their appearance and location are more indicative of refuse disposal.

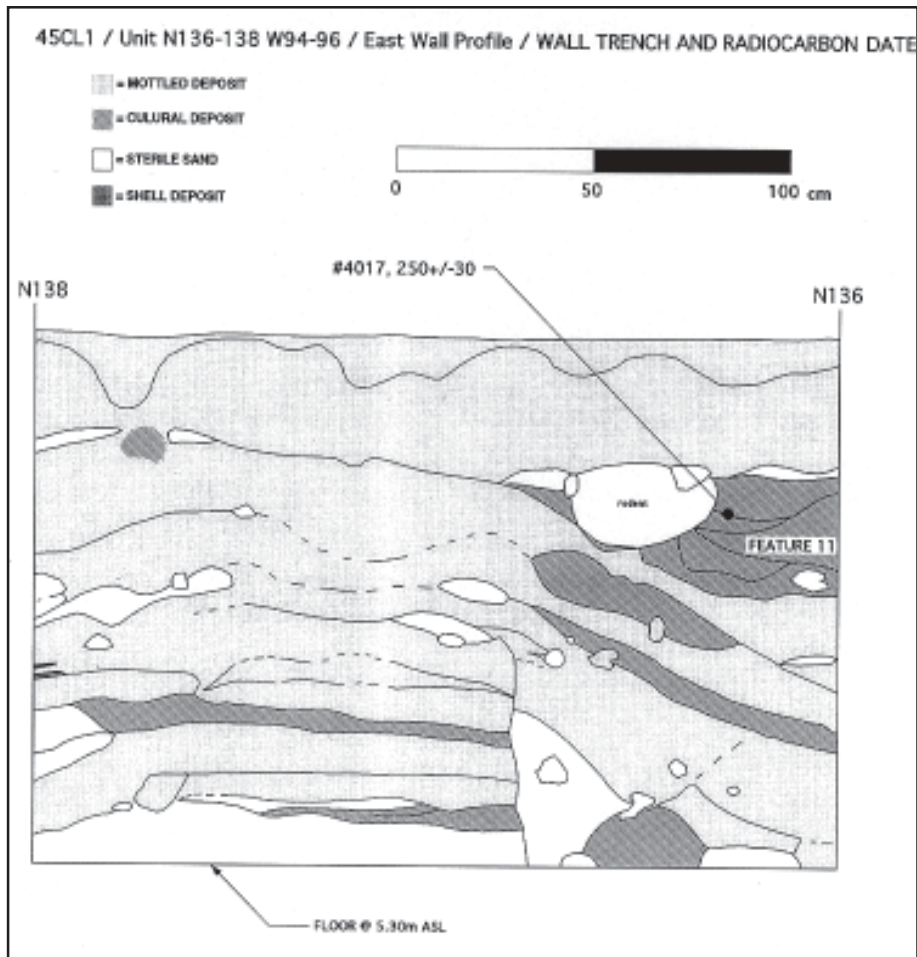


FIGURE 16.
UNIT N136-138/W94-96 EAST PROFILE SHOWING BURIED WALL TRENCH.



FIGURE 17.
HEARTH FEATURE 478 SOUTH PROFILE, UNIT N174-176/W88-90, HOUSE 1

Rock Ovens

Small rock ovens are ubiquitous in units excavated in the midden lobes and front debris fields. These features are generally small, ca. 1 meter or less in diameter, containing a pile of charcoal stained cobbles and fire-cracked rock. This pile is circular, and usually only one or two cobbles thick. There is sometimes a sheet of cobbles extending away from the oven. This sheet is always charcoal-rich, and one cobble thick. Three features discovered at 45CL1 during the 1994 season fall into this category. These features are dense concentrations of fire-cracked rock and charcoal. Unlike hearths, where ash is the principle component, these rock ovens contained only a minor amount of ash material. Two of the features, Feature 80 in Unit N179-181/W101-103, and Feature 11 in N136-138/W94-96 were each more than a meter across.

It is interesting to note that both of these features were located above and in close proximity to buried wall trenches (Features 166 and 126 respectively) (Figures 16 and 17). The third rock oven, Feature 54 in Unit N168-172/W88-89, contained fire-cracked rock, charcoal, and charred bulb remains. Features 52 and 77, in close proximity to this feature, both produced camas

bulbs. Feature 54 was much smaller than the other two, at approximately 50 cm across, and was located just 14 cm below the modern surface. Material from this oven (TX 8292) was dated 9 ± 41 BP, which we find troublesome, but it may indicate that the oven represents cultural activity that postdates the occupation of Cathlapotle.

Pits

Numerous pits were discovered during the 1994, 1995 and 1996 excavations. Pits varied between 10 cm and approximately 1 meter in diameter, and most are round or ovoid in plan view. Most were located within the house depression units, but this was not exclusively true. The N159-160 trench through the house depression detected the presence of pit corridors between the central hearth complex and structural supports, and the walls of the structure. This is a common architectural design in Northwest Coast plankhouses (Ames, et al 1992). Pits at 45CL1 contained dark “reworked pit fill” characteristic of Wapato Valley pit fill (Ames, et al, 1992), as well as artifacts, caches of material, and faunal material.



FIGURE 18.
POST FEATURE DURING EXCAVATION, UNIT N180-182/W90-92.

The majority of the pit corridor complex on the west side of the depression was excavated in 1993 as part of that summer's testing program, and was not at that time assigned feature numbers. However, Features 72 and 73 were remnants of these features which extended into Unit N159-160/W87-91. The rim of this pit appeared to have been lined with wood or some other flora, as there was a discrete charcoal strip bounding the pit. This phenomenon was also discovered in Unit N164-168/W88-89, Feature 65. The eastern pit complex included Features 135, 167, 173, 174, 187, 188, and 190. Feature 190 contained in excess of thirty cobbles or cobble fragments, cobble tools, and groundstone artifacts, as well as one anthropomorphically incised piece of pumice. It may have been related to the cobble feature detected in the 1992 auger (92-28) noted above, which would have been quite close to the south profile of the trench.

In 1995, a complex of storage pits along the east wall of Depression 1 was exposed. These contained a startling array of artifacts, including at least one knife or dagger blade, other iron blades, an argillite bead and a large cache of groundstone, including a slate disc about 50 cm. in diameter. Such groundstone caches were also encountered at the Meier Site.

As noted previously, the position of these storage pits contrasts with those at the Meier Site. There the storage pits were beneath the floor and did not extend beneath the sleeping platform. At Cathlapotle they appear to have been entirely beneath the platform and extended to the house wall. We have often encountered the rim of a pit very close and just below a wall trench.

One pit which merits discussion due to its typicality is Feature 143 located at 2.9 meters ASL in Unit N107-109/W98-100. Approximately 75 cm across, it was excavated into beach sand deposits and contained pitfill and artifacts. Charcoal from this feature was dated at 397 ± 40 BP. It may have been an expedient storage pit excavated into shoreline sands during a period of river level fluctuation.

In 1996, pits were again exposed in locations different from those at Meier, but in situations that can now be predicted at Cathlapotle with some accuracy.

Cache Features

Six cache features were excavated at 45CL1 during the 1994 season and numerous others were exposed



FIGURE 19.

FEATURE 1 UNIT N 107-109/W 98-100 LARGE POSTMOLD CROSSCUTTING ALLUVIAL SAND.

by the 1995 and 1996 excavations. Of the 1994 caches, five were composed of lithic material, and one was composed of faunal material. Cache features were differentiated from pitfill and simple material dispersion by identifying directly adjacent groupings of like or similar materials. Another probable cache, in Unit N159-160/W83-87, was detected in Feature 135, but not given a separate designation. It consisted of pumice pebbles approximately 3-5 centimeters across.

Three of the lithic caches were found in unit N106-107/W77-81. This unit was situated to examine the east berm and slope of a suspected house depression, and confirmed the presence of a plankhouse in the depression. All three cache features (Features 5, 98, and 104) consisted of cryptocrystalline silicate (CCS) cores and associated flakes. Feature 104 also included hammerstones in association with CCS material, which was visible crushed into the use-edge of one of the hammerstones.

The other two lithic caches (Feature 111 in Unit N136-138/W 94-96 and Feature 185 in Unit N164-168/W88-89) were not cores. Feature 111 was a cluster of CCS flakes and Feature 185 was a cluster of CCS core fragments and microdebitage that had slumped into a

small postmold (Feature 184).

The faunal cache (Feature 113 in Unit N159-160/W79-83) was located within the eastern extreme of the house in depression D of depression 1. It consisted of three metapodials placed side by side. Two of them were shaped into chisels at one end, while the third was girdled in preparation for creation of a chisel.

As described above, a groundstone cache was exposed in Unit N160-162/W88-90 in 1995 (Feature 190). This cache included the chipped basalt disc, a sandstone club, net weights and other items.

Shell Lenses

The remains of fresh water shell were found quite often at the site. Some of these deposits consisted of a few pieces, usually mixed in with other faunal material. Such isolated instances were noted in level records, but not featured. Other deposits were substantial, vertically and horizontally, and these were featured. Feature 53, in N 75-77/W 76-78 was a deposit which excavation revealed to stretch across approximately three quadrants of the unit. It contained a fifty-fifty mix of shell and dark soil. This unit had been placed



FIGURE 20. PORTION OF SOUTH PROFILE N159-160/W79-107 TRENCH SHOWING STRATIFIED CULTURAL AND ALLUVIAL DEPOSITS.



FIGURE 21.
FEATURES 78 AND 105 PLANK FEATURES IN N168-172/W88-89.

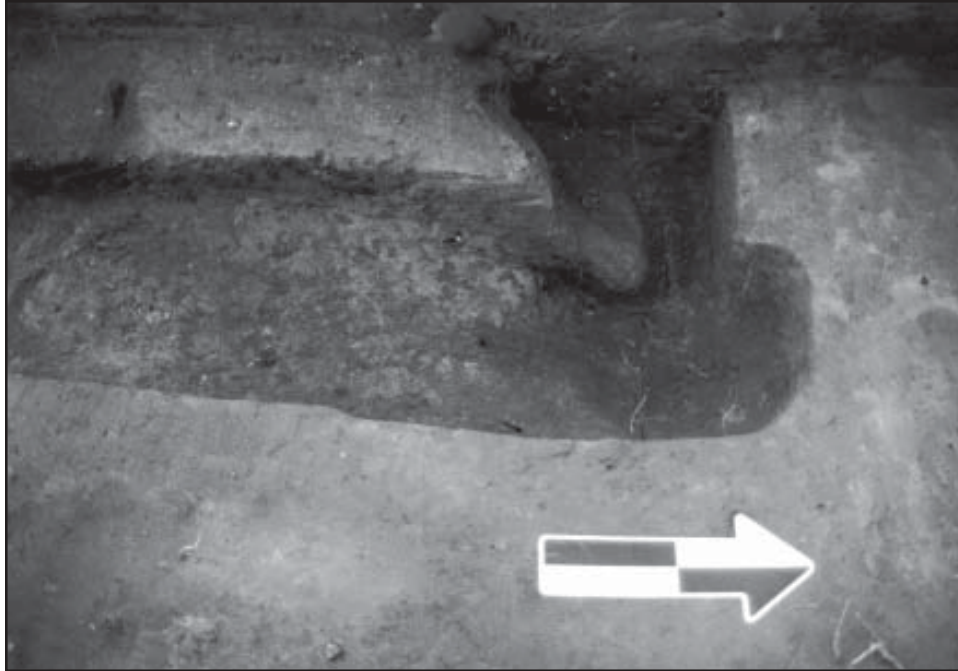


FIGURE 22. DETAIL OF FEATURE 105, SHOWING THAT IT WAS CONSTRUCTED OF LARGE, VERTICAL TIMBERS.

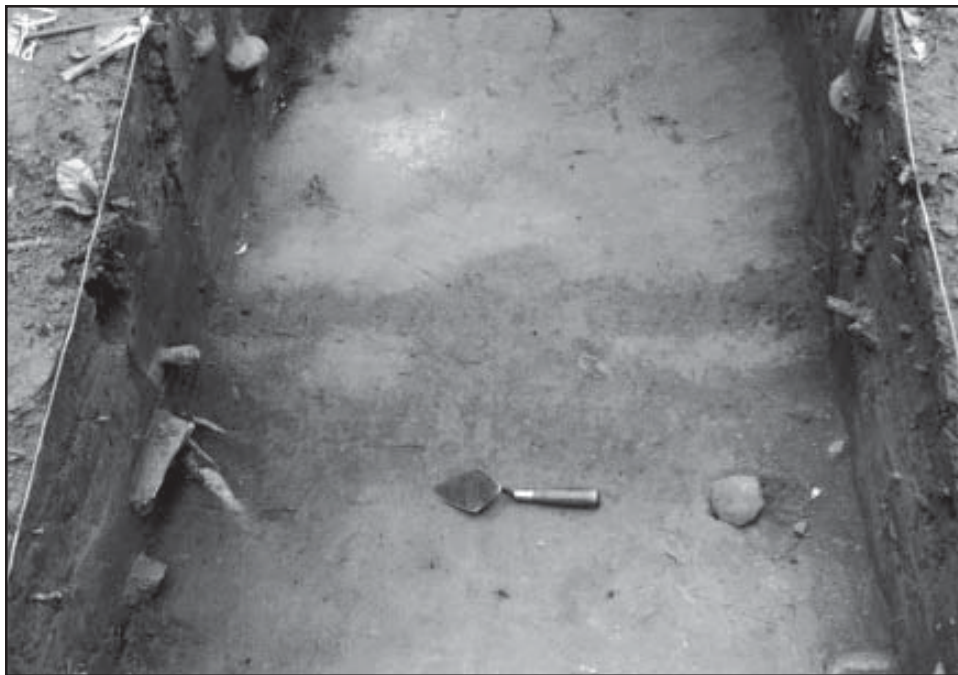


FIGURE 23. PLAN VIEW OF PLANK AND POST FEATURES ON THE EAST SIDE OF HOUSE 1 IN UNIT N159-160/W79-107.

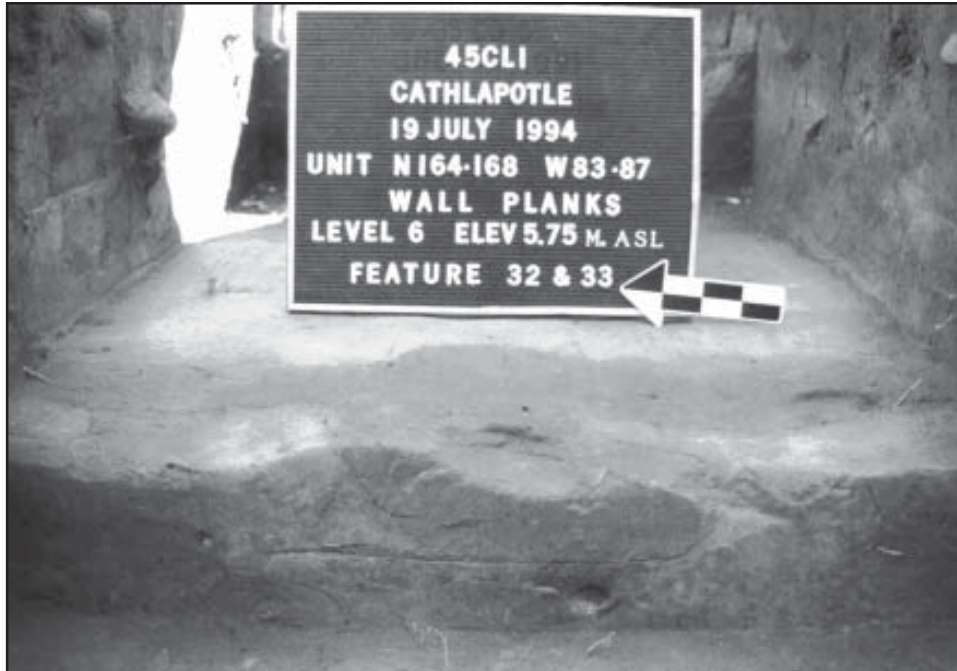


FIGURE 24.
CROSS-SECTION OF PLANK AND POST FEATURES SHOWN IN FIGURE 23.



FIGURE 25. PLANKMOLD REPRESENTING CENTRAL RIDGEPOST SUPPORT TIMBER
IN N159-160/W79-107, DEPRESSION 1.



FIGURE 26.

FEATURE 75 POSTMOLDS IN ASSOCIATION WITH FEATURE 71 AFTER FURTHER EXCAVATION.



FIGURE 27. WALL FEATURE ASSOCIATED WITH THE NORTH END OF DEPRESSION 4.
DARK LINE IS WALL; DARK FILL IS PIT FILL.



FIGURE 28.
WALL FEATURE ASSOCIATED WITH DEPRESSION 4 IN EAST PROFILE.



FIGURE 29. WALL FEATURE ASSOCIATED WITH DEPRESSION 6.
PIT AT TOP MAY NOT BE ASSOCIATED WITH THE STRUCTURE.



FIGURE 30.
WALL FEATURE ASSOCIATED WITH THE EAST SIDE OF DEPRESSION 2.

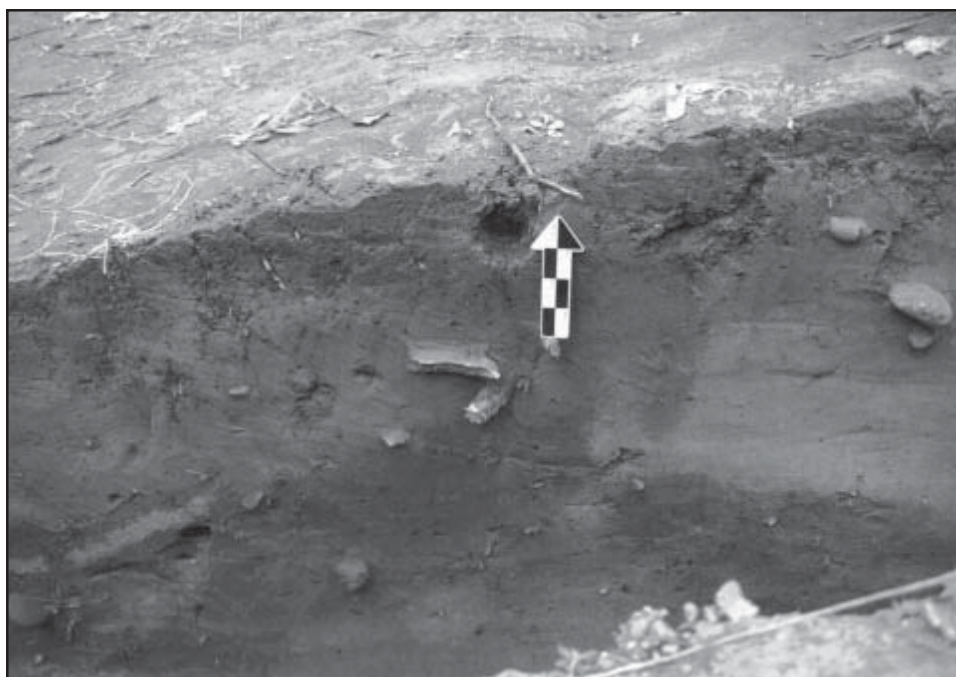


FIGURE 31.
PLANK MOLD ON THE EAST SIDE OF DEPRESSION 1 IN NORTH PROFILE.

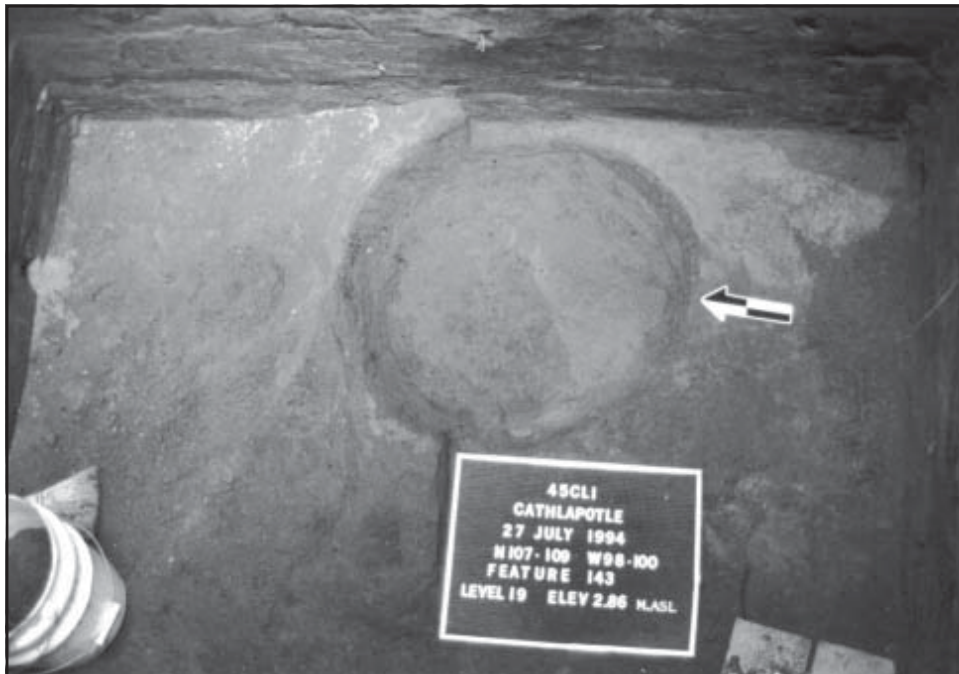


FIGURE 32.
PIT EXPOSED IN BEACH SANDS, 2.86MASL, UNIT N107-109/W98-100.

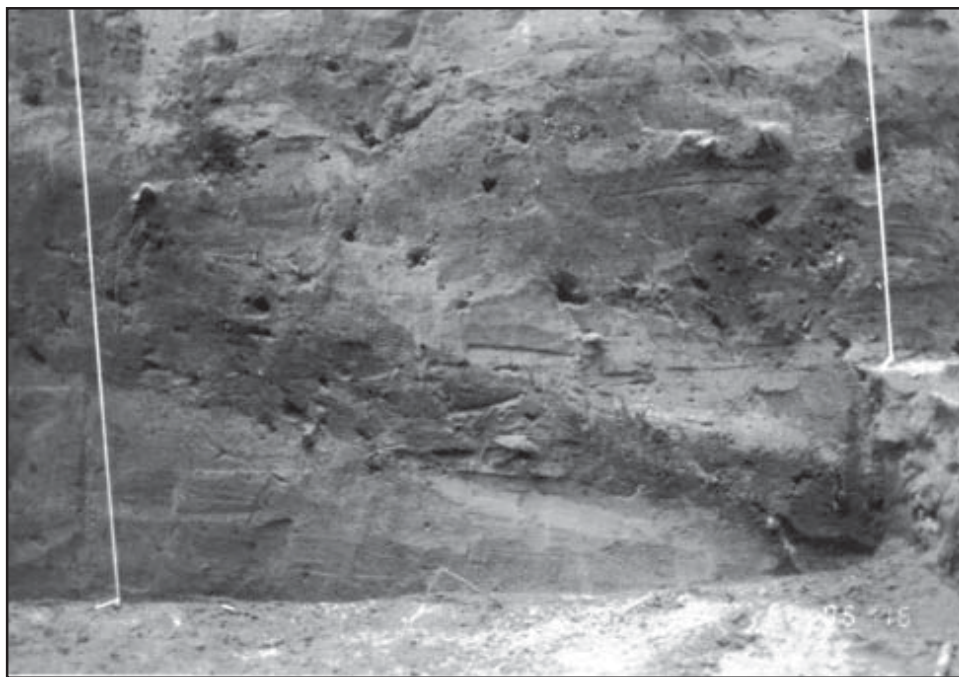


FIGURE 33. CONTACT BETWEEN CULTURAL (TOP) AND ALLUVIAL DEPOSITS IN
WESTERN EXTENT OF N159-160/W79-107.



FIGURE 34.
MIDDEN, SHELL AND STERILE DEPOSITS IN UNIT N75-77/W76-78 SOUTH OF DEPRESSION 2.



FIGURE 35. PIT FEATURE 490 DURING EXCAVATION, UNIT N157-159/W90-92.
NOTE THAT PIT CUTS INTO STERILE SAND MATRIX.



FIGURE 36.
SECTION VIEW OF SAND-LINED HEARTH FEATURE 478, UNIT N174-176/W88-90, HOUSE 1.



FIGURE 37. SECTION VIEW OF SAND-LINED HEARTH, UNIT N180-182/W90-92.
NOTE LESSER DEVELOPMENT OF THIS HEARTH COMPARED TO THAT IN FIGURE 34.

at the location because of the amount of shell discovered in Auger 93-15. Feature 153, in N159-160/W103-107, was a dense shell deposit which extended some 20 centimeters into the unit from the south profile. It appears to represent the dumping of material along the beach. Several lenses of shell were also discovered in Unit N107-109/W98-100 during 1993 testing at that unit, but were not assigned feature numbers. These are visible in the north profile of that unit (Figure 14).

In 1995, extensive shell lenses were exposed in the N52 trench. These lenses were close to the bottom of the trench, and were discontinuous across the profile.

Radiocarbon Dating

Twenty-nine radiocarbon dates have been returned on charcoal samples from 45CL1 (Table 5 and Figure 38). The samples sent for dating were chosen in an attempt to identify the horizontal and vertical chronology of the site. Four of the dated specimens were from the 1992 auger testing. The other twenty-five were from the 1994 excavations. All dates were submitted to the University of Texas radiocarbon laboratory, and are corrected for C13. The reported dates were calibrated to the solar calendar using version 3.1 of the University of Washington, Quaternary Research Laboratory's radiocarbon calibration program (Stuiver and Reimer 1993). Results are reported in the table for the highest probability age for one or two standard deviations.

Probabilities range from as low as .44 to as high as 1. In all discussions, however, the single standard calibrated age range is used. While it would be appropriate in some cases, no dates have been averaged. The suite of dates spans a period from ca. 427 BC to the modern age (Table 5). The earliest date (TX 8286) comes from charcoal recovered from what appears to be a levee feature cut by the construction of house 1. The date may be problematic, but there are presently no grounds to reject it.

One sample (TX8284) returned a date 781 years into the future. We cannot explain this, but we can certainly discard the date. A second sample (TX 8292) provided a date of 9 ± 41 BP. This too we find unlikely. The rest of the suite appears coherent and so probably represents the true age span of the sample cultural occupation.

Four dates (TX 7742, 7745, 7744, and 8293) fall into a time span between ca. AD 910 and AD 1410, with the latter three dating ranging from AD 1180 to 1410. The first three of these samples were recovered during the augering program from the south end of the site. Two (TX 7742 and 7744) were recovered in stratigraphic order from the same auger. The last of these dates, 8293, was recovered from a house feature excavated in 1994. We are suspicious that it may be a sample of "old wood." We believe the consistency of the other three, particularly the stratigraphic order of the two, indicates they are reliable dates, and may date the initial settlement of the site.

The dates also fail to indicate that there were any lengthy breaks in the occupational history of the site. Given the dynamic nature of the landform, as evidenced by the number of flood episodes visible in the profiles, it is clear that the site was considered a desirable place to live, as it was continually reoccupied following flood events.

There is evidence that the site is horizontally stratified. Three of the five earliest dates (TX 7742, TX 7745, and TX 7744) were recovered from auger holes placed at the south end of the site near the location of Unit N44-45/W89-93. This evidence is reinforced by the greater topographic irregularity, particularly with regard to the shape of the depressions and the clarity of the berms that surround them, at the south extent of Site Ridge.

The clearest evidence that the Lake River channel was a dynamic environment during occupation of the site is the series of dates from the deepest of the units, N107-109/W98-100. The stratigraphy of this unit clearly reveals multiple flood episodes as well as significant cultural activity, and the dates from the unit are indicative of a turbulent depositional history. The oldest date in the unit, TX 8277 (450 ± 60 BP) was recovered from cultural deposits between 4.20 and 4.0 meters ASL. The sediment from which this specimen was taken consisted of dark pit fill. Lenses of fresh-water shell, representing several depositional events, were located in adjacent strata. Approximately one meter beneath that sample, a charcoal and fire-cracked rock feature (Feature 100/TX 8278) which was observed in the profile produced a date of 253 ± 40 BP. The intervening strata were interbedded flood and/or

TABLE 5.
RADIOCARBON DATES FROM 45CL1.

Note: AG = Auger, BS = cm Below Surface, mASL = Meters Above Sea Level.

Specimen	North	East	m ASL	Level	Lab #	Date	Sigma	Calibrated	1-Sigma Date	Probability Age Range	
2016	179-181	101-103	5.70	8	TX8270	180	40		N/A	AD 1733-1790	0.45
4017	136-138	94-96	6.30-6.10	3-4	TX8271	250	30	AD 1657		AD 1643-1670	0.75
4041	136-138	94-96	5.90-5.81	7	TX8272	340	50	AD 1569		AD 1502-1604	0.82
4059	136-138	94-96	5.60-5.30	10-12	TX8273	240	40	AD 1660		AD 1642-1677	0.50
5009	107-109	98-100	4.50-4.38	12	TX8274	344	41	AD 1578		AD 1548-1606	0.50
5013	107-109	98-100	4.58-4.38	12	TX8275	340	50	AD 1569		AD 1502-1604	0.82
5015	107-109	98-100	4.34-4.31	13	TX8276	236	51	AD 1661		AD 1746-1806	0.43
5025	107-109	98-100	4.20-4.00	14	TX8277	450	60	AD 1444		AD 1411-1502	0.93
5042	107-109	98-100	3.35-3.20	17	TX8278	253	40	AD 1656		AD 1635-1676	0.60
5046	107-109	98-100	3.11-3.07	18	TX8279	410	40	AD 1462		AD 1441-1510	0.86
5049	107-109	98-100	3.20-3.00	18	TX8280	281	43	AD 1647		AD 1518-1577	0.50
5053	107-109	98-100	3.17	18	TX8281	434	60	AD 1448		AD 1424-1513	0.85
5058	107-109	98-100	3.00-2.90	19	TX8282	397	40	AD 1474		AD 1446-1514	0.76
12,019	159-160	83-87	-	9	TX8283	428	38	AD 1449		AD 1433-1489	0.97
13,006	159-160	87-91	5.60	3	TX8284	781	38	-		-	-
13,022	159-160	87-91	5.49	5	TX8285	166	40	-		AD 1721-1785	0.44
15,023	159-160	95-99	5.65	7	TX8286	2346	53	BC 396		BC 427-366	0.60
15,034	159-160	95-99	4.59	14	-	-	-	-		-	-
16,012	159-160	99-103	-	4	TX8288	356	37	AD 1596		AD 1561-1640	0.64
16,033	159-160	99-103	5.60-5.75	6	TX8289	295	37	AD 1643		AD 1519-1574	0.60
16,038	159-160	99-103	5.60-5.45	7	TX8290	260	38	AD 1654		AD 1643-1672	0.64
16,050	159-160	99-103	5.30-5.45	8	TX8294	350	50	AD 1591		AD 1522-1633	0.66
18,005	159-160	103-107	5.48	5	-	-	-	-		-	-
19,013	168-172	88-89	5.91	2	TX8292	9	41	-		-	-
19,020	168-172	88-89	5.88	3	TX8293	727	58	AD 1287		AD 1212-1307	0.87
45	AG 92-19	-	BS 203-212	-	TX7742	910	210	AD 1160		AD 930-1290	1.00
46	AG 92-17	-	BS 99-100	-	TX7744	740	140	AD 1270		AD 1180-1410	1.00
44	AG 92-19	-	BS 195-203	-	TX7745	720	150	AD 1270		AD 1170-1410	1.00
27	AG 92-12	-	BS 40-43	-	TX7743	200	60	AD 1670		AD 1650-1820	0.87

beach sands. This apparent inversion indicates that the channel of Lake River was advancing and receding dramatically, perhaps seasonally, while the site was occupied. Nevertheless, the nine dates from the unit are all within the range of dates recovered at the site, and seven of them have overlapping sigmas.

The 166±40 BP date recovered from N159-160/W87-91 (TX 8285) supports the hypothesis that the house depression bisected by this trench is from the historic era. The specimen comes from material associated with the central hearth complex of the house.

Another specimen (TX 8270) toward the north end of the site, taken from a fire-cracked rock and charcoal-packed oven feature (Feature 80) in Unit N179-181/W101-103, produced a similarly recent date of 180±40 BP. This unit also produced one of two wall trench features not associated with visible surface depres-

sions. The limited exposure produced by this 2x2 meter unit rendered problematic any assessment of the relationship between the dated feature and the structural feature.

A group of dates (TX 8288, TX 8289, TX 8290, and TX 8294) from Unit N159-160/W99-103 essentially overlap between 356±97 and 260±38 BP, and are probably debris left by habitation or reconstruction of a house adjacent to the west slope of Site Ridge.

Artifacts

The 1991-1995 artifact assemblage is large (n = 6591) and diverse (Figures 40-59). The field categories entered into the database are defined and briefly discussed below. These definitions are designed as field categories; they are not intended for detailed artifact analysis. Only those classes entered into the data base are

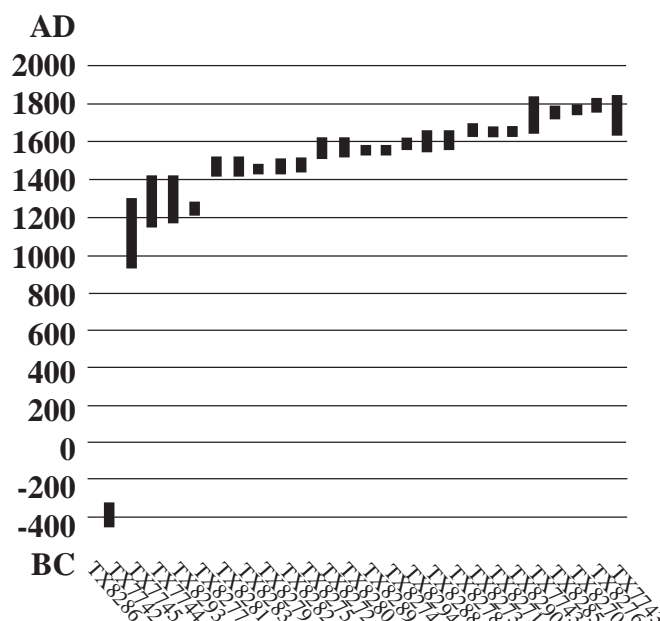


FIGURE 38.
RADIOCARBON DATE RANGES (ONE SIGMA) FOR 45CL1. DATES ARE CALIBRATED.

defined below, and we discuss only the 1991-1995 assemblage. The 1996 assemblage contributed a numerically- and proportionately-typical sample to the database. That is, the 1996 sample, still being examined and cataloged, does not appear to have been in any way unusual, and the 1991-1995 sample may be consulted as an adequate introduction to the general characteristics of the entire assemblage.

With regard to artifact typology, we expect assemblage diversity to increase with ongoing analysis and examinations. New classes will be added as necessary. The specific artifact classes are listed under general categories which represent gross morphofunctional types. While artifact counts change as analysis continues, the numbers here are useful for general comments. In the following discussion, the type percentages represent the proportion of each class in the 1991-1995 assemblage, not within each general category (Figure 39).

Chipped Lithic ($n = 3792$; 57%)

These are stone artifacts that are modified by flaking. Chipped lithics include fine-grained flaked stone artifacts and (generally larger) coarser-grained cobble tools. The morphofunctional classification used here is

based heavily on that devised by Hamilton (Hamilton 1984) for use at the Meier Site.

Biface ($n = 494$; 8%)

A biface is substantially flaked on both surfaces, but does not have a hafting element present. Most bifaces are projectile point midsections, tips, and preforms, although some have other functions, such as the “mule-ear” knives (see below).

Projectile Point ($n = 1088$; 18%)

These are bifaces with a hafting element present, although they are too small to reasonably be considered knives. Usewear analysis on a sample of these artifacts will help to identify nonprojectile tools in this category.

Knife ($n = 21$; .4%)

These are relatively large bifaces, usually chevron (“mule-ear”) or pentagonal in form. Some large, hafted bifaces are defined as knives because their form does not appear functional as a projectile (e.g., asymmetrical haft or blade shape created by repeated resharpening).

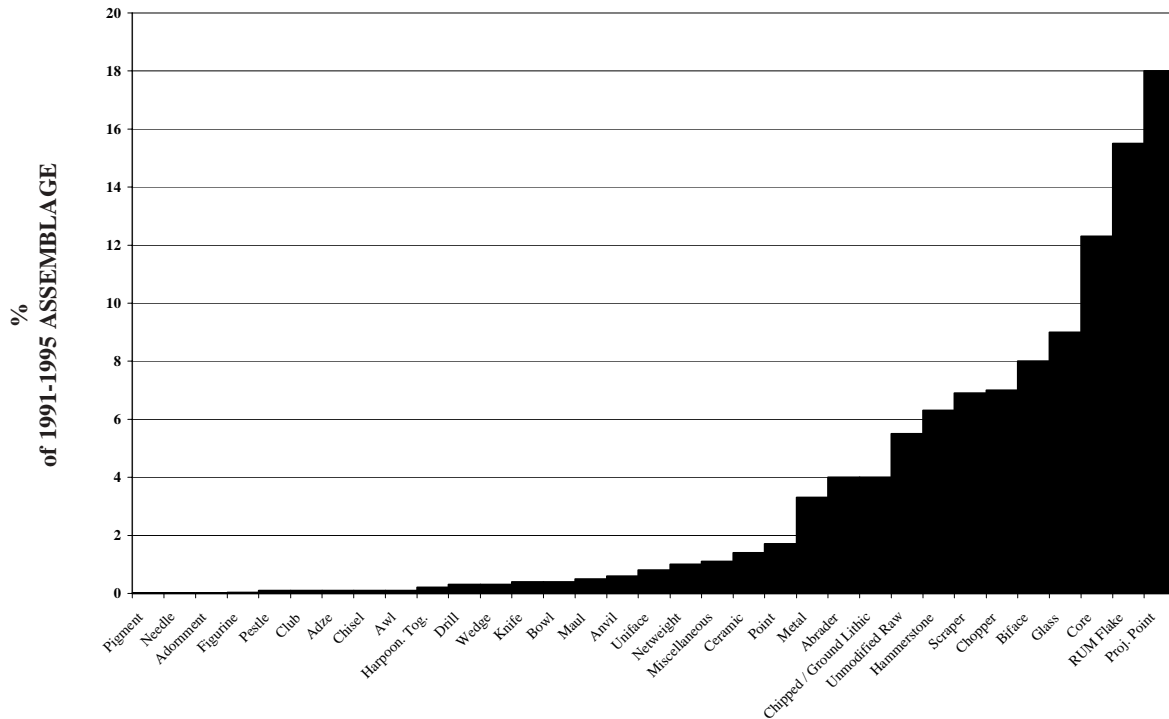


FIGURE 39.
PERCENT COMPOSITION OF 1991-1995 ARTIFACT ASSEMBLAGE.

Uniface (n = 46; .8%)

A uniface is a chipped lithic artifact substantially flaked on a single face. Some of these items may be finished implements, while others may be items deposited before manufacture completion. Use-wear analysis will be used to address this point.

Scraper (n = 418; 6.9%)

Scrapers are normally unifacial and always exhibit patterned retouch with a steep edge angle. This category is composed primarily of end scrapers and “thumb-nail” scrapers that were most likely hafted and were probably used for hide scraping.

Drill (n = 16; .3%)

These are artifacts with a long, narrow projection showing modification that was used for perforating. Lithic drills were probably used to perforate harder materials (such as bone, antler, and wood) than bone and antler perforation tools.

Retouched / Used / Modified Flake (n = 929; 15.5%)

“RUM” flakes exhibit minimal modification either from use or manufacture (e.g., used flakes, minimally worked

flake tools, and early stage preforms), but modification does exist, or is suspected. This general category is used for expedient classification in the field. Laboratory study, including usewear analysis, separates the members of this category into more meaningful categories, such as “scraper” or “shaver.”

Chopper (n = 34; .7%)

Flaked cobble with use wear (and therefore, not a core). Choppers are commonly made of basaltic rocks, whereas most smaller chipped lithics are made of some variety of cryptocrystalline silicate such as chert.

Core (n = 746; 12.3%)

These are lithic artifacts with flakes removed but exhibiting no shaping consistent with that of a functional tool or preform. These items also exhibit no obvious use-wear. Most of these cores are bipolar- and amorphous-percussion cores. The bipolar technique may have been heavily employed because of the relatively small size of raw cryptocrystalline silicate nodules in the area; such nodules are best opened with a bipolar blow.



FIGURE 40. SMALL, STEMMED PROJECTILE POINTS.

Ground Lithics (n = 781; 12%)

These are stone artifacts that are modified by grinding (smoothing showing abrasion or polish) or pecking (pock marks from shaping or use).

Abrader (n = 244; 4%)

An abrader is an abrasive stone that has grooves, facets, or ground surfaces indicating use for grinding, polishing, and sharpening other tools. These are primarily made of pumice cobbles and tabular sandstone slabs.

Anvil (n = 37; .6%):

Anvils are relatively large cobbles with use-wear, usually pock marks or pecking, in the center of at least one face. Most of these are for bipolar lithic flaking.

Hammerstone (n = 375; 6.3%)

A cobble with battering that shows use as a percussor. These include minimally pecked cobbles and heavily battered cobbles. Girdled cobbles are included when they show such wear on an end. Many of these (the pecked varieties) were used for freehand percussion and bipolar lithic flaking.

Maul (n = 28; .5%)

These are elongate cobbles with relatively flat working ends (in comparison to a pestle), often exhibiting pounding use-wear (pecking, crushing and flaking). “Nipple-top” mauls are included in this category.

Pestle (n = 5; .1%)

Elongate cobble with at least one rounded end exhibiting a grinding type of use-wear.

Bowl (n = 26; .4%)

Cobble or boulder with a ground basin (mortar). These include pumice bowls.

Figurine (n = 2; .03%)

Artifact shaped into an intended form with no apparent utilitarian function, and probably not dress adornment.

Club (n = 4; .1%)

Large, heavy, elongate stone or bone that could be swung with force. Some may be ceremonial, while others may be utilitarian fighting clubs. To complicate matters, some clubs were both ceremonial and utilitarian, cached and revered between episodes of real use.



FIGURE 41.
SMALL, SIDE-NOTCHED PROJECTILE POINTS.

Netweight ($n = 56$; 1%)

Cobble that is altered to facilitate attachment to a cord. Varieties include perforated, girdled, and notched. Girdled cobbles with battering on an end are classified as mauls.

Adze ($n = 4$; .1 %)

Tabular artifact with a bevelled bit that is usually ground and polished into shape. Also known as a celt. Adzes, often made of nephrite or some related stone, were used in woodworking. Adzes at the Meier Site were heavily resharpened, indicating their high value.

Pigment ($n=0$; 0%)

Soft colored stone with abraded facets. These are usually of red or yellow ochre. While some ochre may have been used as pigment, some may have been used in the treatment of hides, the on-site processing of which is strongly suggested by the presence of end-and thumbnail-scrappers.

Chipped and Ground Lithics ($n=271$; 4%)

These are stone artifacts modified by both techniques described above (flaked, pecked, and ground). The functional classes are common to those listed for ground lithic.

Faunal Artifacts ($n = 395$; 6%)

These are bone, antler, and shell artifacts that are tools, tool making detritus or decorative items. Any bone that exhibits intentional modification such as incising, striations, smoothing, or polishing is cataloged.

Cataloged faunal remains do not include bones fractured for marrow, bones with butcher marks, or bones gnawed by animals unless they also show intentional modifications. However, all antler is cataloged as faunal remains.

Many bone items classified as artifacts by students are ultimately de-artifacted, and likewise many faunal items are pulled from general faunal bags (and artifacted) when they are recognized by specialists as tools or other artifacts.

Chisel ($n = 5$; .1%)

A chisel is usually made from a section of long bone (e.g., cervid metapodial) and has a bevelled, slightly pointed bit. They were used in woodworking.

Wedge ($n = 20$; .3%)

A wedge is usually made from a section of antler shaft and has a bit that is bevelled in section view and slightly

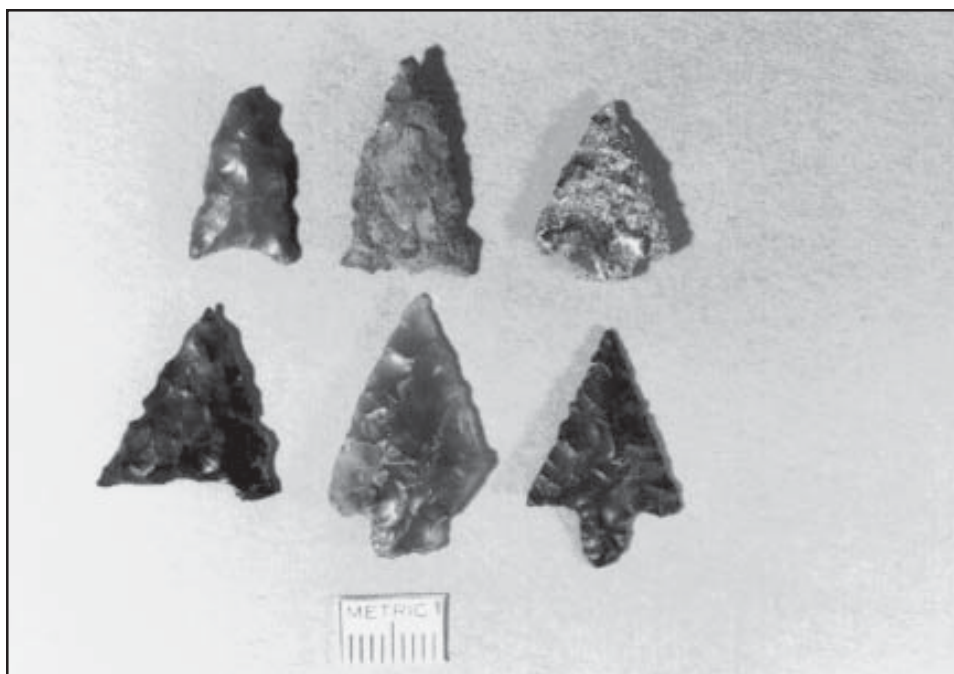


FIGURE 42.
SMALL STEMMED AND SIDE-NOTCHED PROJECTILE POINTS.

curved in plan view. Wedges would have been used for splitting cedar into planks as well as other tasks.

Needle (n = 1; 0%)

These are long, narrow, pointed artifacts made of bone, with an eye on the proximal end. Needles were probably used for drawing twine or cordage through pliable material.

Awl (n = 41; .1%)

Long, narrow, pointed artifact with no eyelet that usually broadens slightly at the proximal end. These were probably used for perforating.

Point (n = 104; 1.7%)

Cylindrical, pointed artifact that does not broaden at the proximal end. These include bipoints for composite harpoon points.

Harpoon Toggle (n = 10; .2%)

A barb for composite harpoon points. These are often transversely severed with a set of abutted grooves, one for inserting a point and the other for inserting a foreshaft. Two are paired and lashed on opposite sides of the point.

Worked Bone (n = unknown)

This is a temporary “catchall” category including all bone objects with evidence of having been worked (e.g., grooves, polish, striations, smoothed facets) that could not be placed in the above classes. Many are girdled metapodial ends (tool making detritus) and small fragments of tools.

Adornment (n = 1; 0%)

Artifact shaped into an intended form with no apparent utilitarian function, but with probable decorative intent.

Antler (n = unknown)

Another “catchall” category of antler objects that could not be identified as tools. All antler and antler fragments were cataloged. This category includes whole antlers as well as unmodified antler fragments.

Floral Remains (n = 6; 0%)

These are botanical items that appear to be shaped or modified. This category might include cordage, carved wood (e.g., pegs, handles, points) and various seed and nut beads. The floral artifacts have not been typed.

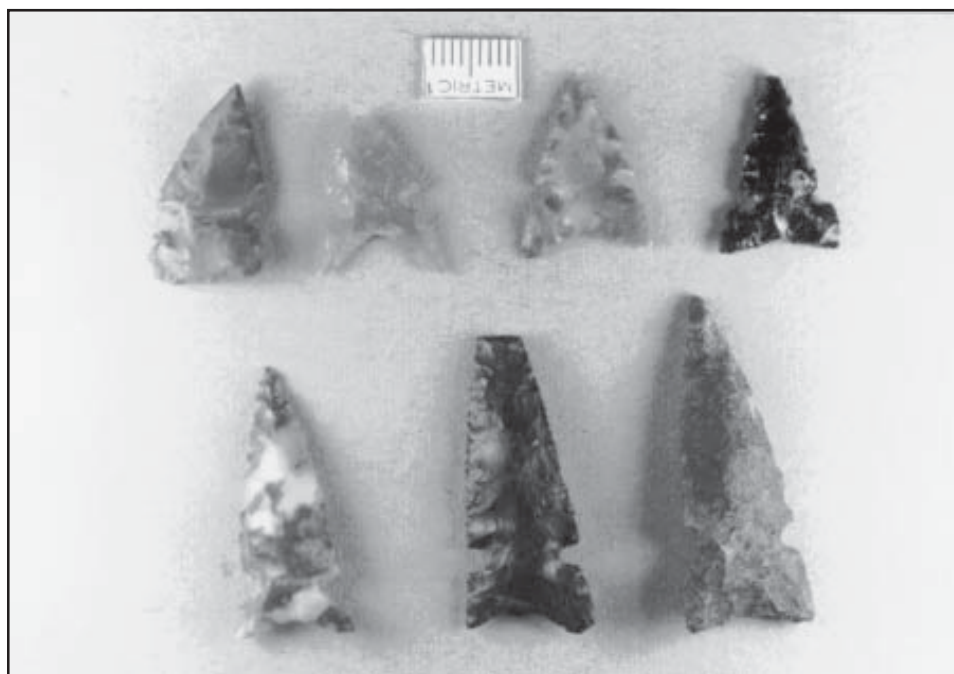


FIGURE 43.
SMALL AND LARGE SIDE-NOTCHED PROJECTILE POINTS.

Metal ($n = 215$; 3.3%)

All metal objects were cataloged. They include both utilitarian and decorative items. Metal objects are primarily iron and copper, but not exclusively. Twelve of these iron objects have been examined by X-ray, which enables analysis of the original shape within the corroded surface. Items identified with X-ray include a firearm barrel, a projectile point, a composite harpoon point, three knife blades, two square nails, two adze blades and a bead-sized tube (Heupel n.d.).

Most metal artifacts are copper. Common copper items include rolled beads, flat sheets, pendants, wire rings, and wire bracelets. More unusual metal objects include a brass phoenix button and uniform frog.

Ceramic ($n = 91$; 1.4%)

All ceramic items were cataloged. Ceramic items are limited to trade beads and a few pieces of porcelain, at least one of which is shaped into a scraper.

Glass ($n = 610$; 9.4% through 1995, >1000 total)

All glass items were cataloged. These are usually glass trade beads and some worked bottle fragments. A detailed description of the beads will be provided by Gretchen Kaehler in her MA thesis.

Unmodified Raw Material ($n = 356$; 5.5%)

These are stone items that are deemed adequate for making tools but have no apparent modification. Chunks of cryptocrystalline silicate, vesicular basalt, pumice, and river cobbles are among the stone raw materials cataloged.

Miscellaneous Artifacts ($n = 74$; 1.1%)

These are items that appear to be intentionally formed or of individual importance, but cannot be placed within the above categories, such as very recent .22-caliber and shotgun shells.

Artifact Summary Comments

Detailed analysis of most artifact classes has not been completed. The numbers will change as the data is refined and artifact analysis continues. Nevertheless, some general patterns can be discerned. Much of the discussion is admittedly impressionistic, based on field observations and past experience analyzing the Meier Site (35CO5) material, rather than systematic analysis. The Meier Site assemblage is used as the primary comparative sample for the following discussion because it is most familiar to these writers (and is from a similar context).



FIGURE 44.
PUMICE BEADS.

In general appearance, the artifact assemblage appears to be similar to that of the Meier Site (see Ames 1994, Hamilton 1994, Wolf 1994, Smith 1996, Davis 1998). More specifically, the artifact assemblages are similar in the following aspects: morphofunctional types, relative type frequency artifact within classes, artifact raw materials, and production strategies. A significant exception is the much higher frequency of historic items in the Cathlapotle assemblage.

A total of 6591 artifacts were catalogued between 1991 and 1995 (inclusive). Table 8 lists 5619 (85%) of these, which have been subclassed into morphofunctional types. This table is meant to give an impression of the count of various artifact types per excavation unit, but as it does not include the 1996 material its use should thus be limited.

Chipped stone artifacts are by far the most common, comprising 57% of the total assemblage. These are followed by chipped and ground lithic, ground lithic, and bone/antler (faunal remains), each of which comprise 8%-12% of the assemblage. Unmodified raw material is also a significantly large class, suggesting caching or stockpiling of stone. The majority of chipped lithics are projectile points (arrow points), retouched/

used/modified flakes, bifaces (primarily arrow point preforms), scrapers and cores. Other common lithic artifacts are hammerstones and abraders. All remaining morphofunctional classes contain less than 20 items each (1% of the assemblage). Figure 39 summarizes the percentage contribution of each main artifact class to the 1991-1995 assemblage (note that this figure does not include beads, n=1267, including 1996).

Lithic Assemblage

The lithic assemblage at Cathlapotle suggests an expedient production technology facilitated by stockpiling raw materials. The primary raw material for most lithic tools is alluvial cobbles. Caches of river cobbles have been found in the bench area of the house depressions (a feature inferred but not observed at the Meier Site). These cached alluvial cobbles of cryptocrystalline silicate, basalt, and quartzite were probably collected from various gravel sources throughout the Wapato Valley and possibly beyond, at gravel locations where canoe access made collection easiest (Hamilton 1994). These cobbles provided most of the raw material used for fine-grained chipped stone tools, chipped and groundstone cobble tools, and cooking stones. Fine-grained chipped stone technology appears to have been based on the expedient reduction of allu-



FIGURE 45.
ANTLER HANDLE.

vial cobbles using a combination of bipolar and percussion technologies to make flake blanks for a variety of curated (primarily end-scrapers and arrow points) and expedient flake tools.

Significantly, the pumice and sandstone abraders, probably used in bone/antler tool manufacture and maintenance, are essentially identical to those in the Meier site assemblage. A number of perforated pumice cobbles were also recovered. This artifact type was not found at the Meier Site. However, they were found in abundance at site 45CL43 on Bachelor Island just across Lake River from Cathlapotle (Steele 1980). These artifacts are referred to as pumice bangles (Steele 1980) but their function is apparently unknown.

Arrow points are the most common formed chipped stone artifacts. These are primarily small side-notched and stemmed varieties. With reference to Pettigrew's typology for the Lower Columbia River Region, the side-notched points are Type 12 and the stemmed points are primarily Types 7, 8, 9, and 10 (Pettigrew 1977). In contrast to the Meier Site where stemmed varieties are predominant, side-notched points are most common at Cathlapotle. This comparison may be premature, however, because our Cathlapotle sample is bi-

ased toward shallow deposits and deposits in the northern portion of the site. The projectile point types correlate with Multnomah Phase (AD 200 - 1835) as do all other tool types found (Table 6). Only one broad-necked point (Type 2) common to the Merrybell Phase (600 BC-AD 200) has been identified. No other tool types common to the Merrybell Phase, such as stemmed drills, flaked cylindrical bipoints, flaked crescents, peripherally-flaked pebbles, and atlatl weights have been identified.

Bone Tool Assemblage

Like the stone tool technology, the bone technology is comparable at Cathlapotle and Meier. Two obvious technological similarities are the manufacture of wedges and chisels. At both sites, elk antler was cached for wedge material. As a result of manufacturing chisels and possibly awls, high frequencies of metapodial ends with deep grooves circumventing the shaft were deposited at the site.

While the chipped stone assemblage is characteristically expedient, the bone tool assemblage shows attributes of curation. This pattern is consistent with that found at the Meier Site (Hamilton 1994, Davis 1998).

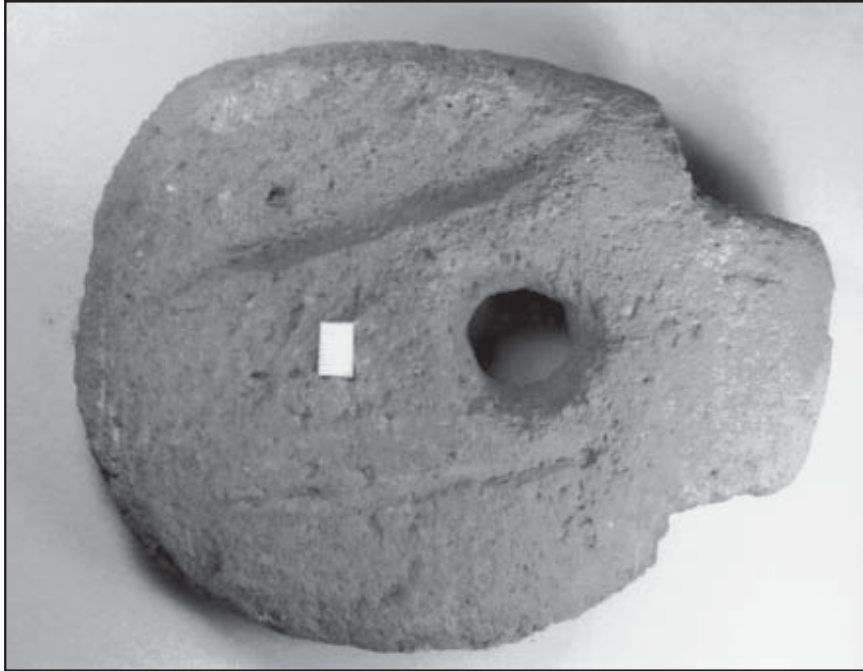


FIGURE 46.
PERFORATED, GROUND PUMICE OBJECT. SCALE=1CM.

The effort and craftsmanship required in manufacturing wood working tools (eg. antler wedges and metapodial chisels) and composite harpoon gear (eg. bipoints and toggles) is relatively high. And, although the production effort is high, these tools are maintainable and strong, capable of withstanding heavy and long term use.

Artifact Preservation

The preservation of bone is excellent at Cathlapotle and comparable to the Meier Site. Cathlapotle has the potential to provide a representative sample of the taxonomic diversity (mammalian, avian, reptilian and fish species) deposited at the site. Unfortunately, botanical remains, like at Meier, are limited to smaller remains including fragments of wood and basketry, seed and bulb tissue and charred material. It certainly does not have the excellent preservation of a classic wet site. A few small worked botanical artifacts have been identified but not typed. The preservation is excellent for flotation analysis (Stenholm n.d.).

Historic Trade Items

Beads are common at Cathlapotle -- as noted, more than 1,000 glass beads have been recovered. One preliminary study has classified and reported on the beads,

particularly the glass beads, as part of an MA thesis (Kaehler n.d.). In her classification, Kaehler primarily used the extensive comparative collection at Fort Vancouver as well as consideration of existing regional bead chronologies. Kaehler was able to identify very informative elements in the assemblage.

The historic trade beads span the entire Fur Trade period. Glass trade beads comprise the bulk of the bead assemblage. The glass bead assemblage has almost twice as many drawn beads as wound. A significant proportion of beads are of the type that suggest introduction into the site during the 1840s or later. Two beads in the collection could not have been circulated until the 1860s. This is the latest temporally-sensitive chronological marker we have for the site. The beads suggest that 45CL1 was used until at least the 1860s.

A critical pattern emerging, at least in the northern portion of the site, is that glass trade beads (the most common historic artifact type) are limited to the upper portion of the deposits.

In Unit N107-109/W98-100, which so far contains the most beads of any unit at the site, a flood stratum defines the lower limit of trade items. Additional analysis



FIGURE 47.
PERFORATED NET WEIGHT FRAGMENT.

is necessary to generalize this pattern for the site. Nevertheless, the artifacts and radiocarbon dates reveal that the cultural sediments represent, vertically, the transition from Chinookan precontact through Euro-American settlement of the region.

The sequence of cultural deposits alternating with alluvial deposits should be fine-grained enough to contribute significant data relating to sociocultural and economic transformation during this relatively short period of rapid change in the history of the Wapato Valley and Greater Lower Columbia River Region. Recent results from Kaehler are encouraging and indeed suggest that beads will be a useful chronological marker when a chronology has been established.

Fossils

It is not unusual at prehistoric sites to find petrified wood that has been culturally altered: it was present at the Meier Site in the form of raw material for lithic tools (Hamilton, 1994). Petrified wood has also been recovered, in corresponding circumstances, from the Cathlapotle Site. However, the fossil assemblage at 45CL1 is more extensive. Flaked, fossilized bone was recovered, and is being analyzed as part of the faunal

assemblage in the hopes that the bone can be identified and possibly sourced geologically.

In addition to the fossil wood and bone, two other fossils were recovered. Neither of these pieces shows cultural modification, and they are not adequate raw material for most lithic tools. The first was recovered from the nonfeatured pit complex in Quad D of N159-160/W91-95 during the 1993 field season. It consists of three trace fossils in a discoid piece of grey sandstone, and was originally interpreted as being an abradar. As of this writing, this specimen has not been identified.

The second fossil (Artifact 4117) was recovered from Unit N136-138/W94-96 during the 1994 field season. This item was identified in the field as *Metasequoia* by two individuals familiar with the flora of the Slanting Leaf Beads Locality, Bridge Creek Flora, John Day Formation. This was confirmed by comparison to known *Metasequoia* specimens and by reference to Guide to Oregon Fossils (Orr & Orr 1981). The fossil is visible on one face of a weathered, possibly heat-affected piece of mudstone measuring 3 cm by 2.5 cm by .4 cm.



FIGURE 48. VARIOUS HISTORIC ITEMS; COPPER RING, THIMBLES, COPPER TUBE, PORCELAIN, GLASS BEADS, MUSKET BALL, UNIFORM BUTTONS AND FROG AND CHINESE COIN.

Metasequoia is present in fossil deposits in the Collawash flora of the Upper Clackamas River valley, at some distance up the Willamette and Clackamas Rivers from 45CL1 (Orr & Orr 1981). Fossil plant localities are listed the Longview-Kelso area, and along the Toutle River, by Livingston (1983), but are not described in detail. Another possibility, although geographically remote, is the Slanting Leaf Beds site, near the John Day River. The appearance of the fossil is consistent with samples recovered from that site, given its weathering and discoloration.

Artifact 4117 was recovered from strata which also produced metal trade items, and trade is one possible explanation for its presence at 45CL1. It is unlikely that its presence at the site is due to geomorphological processes, given the relative location of possible sources, and the fact that it was not recovered from flood sediments. Whether or why fossils entered the regional exchange economy of the Northwest is a question which might be addressed if nonlocal fossil specimens continue to appear at the Cathlapotle.



FIGURE 49.
METAL DAGGER OR KNIFE BLADE.

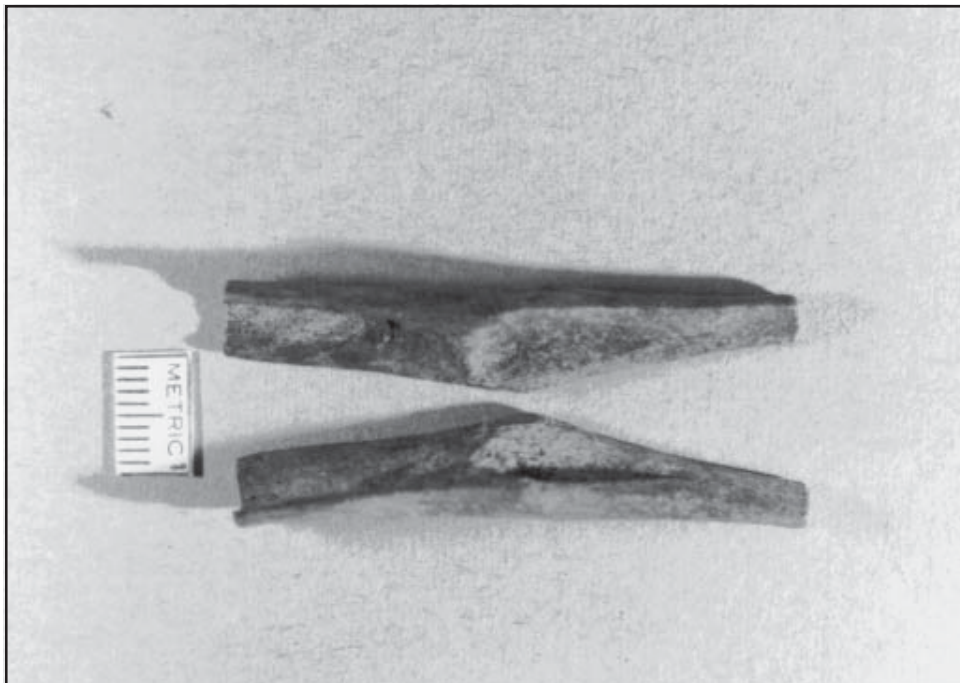


FIGURE 50.
PAIR OF TOGGLING HARPOON VALVES, RECOVERED TOGETHER.



FIGURE 51.
BONE PENDANT OR FIGURINE FRAGMENTS.

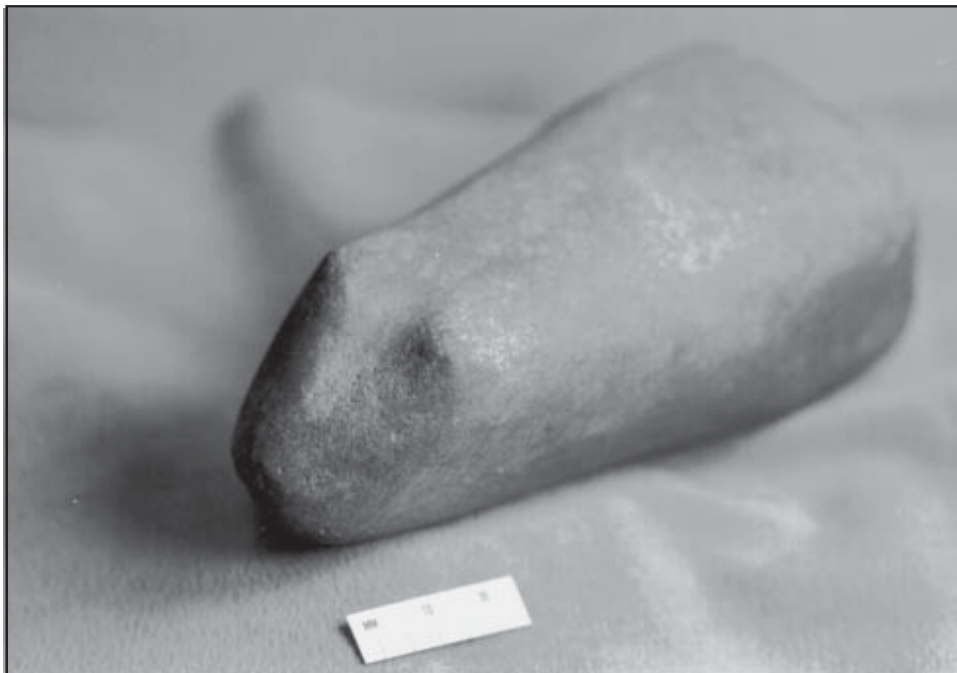


FIGURE 52.
ZOOMORPHIC FIGURINE.



FIGURE 53.
ANTHROPOMORPHIC FIGURINE.



FIGURE 54.
BONE BARB.



FIGURE 55.
PLAN VIEW OF METAPODIAL CHISEL



FIGURE 56. IRON ADZE BIT (LEFT) DATING TO AD 1400-1500.
TO RIGHT IS A GROUND STONE ADZE BIT FROM THE MEIER SITE.



FIGURE 57.
SHOTO CLAY OBJECT.



FIGURE 58.
ROLLED COPPER BEADS, RING AND TUBE.
