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**RECYCLING ARCHAEOLOGY: ANALYSIS OF MATERIAL  
FROM THE 1973 EXCAVATION OF  
AN ANCIENT HOUSE AT THE MAURER SITE**

by

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**THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
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## ABSTRACT

The primary objective of this study is to assess the validity of a prehistoric feature excavated during the 1973 archaeological investigation of the Maurer site (DhRk 8) in the upper Fraser River Valley, B.C., conducted by Ron LeClair. Preliminary reports from this excavation assert that this feature: (1) was a structure; (2) functioned as a house; and (3) was 3500-5500 years old, making it one of the oldest and rarest houses on the Northwest Coast. Widely, though inconsistently, accepted by the Northwest Coast archaeological community, these original reports — the only analyses of this feature to date — provide little substantive evidence supporting these assertions. While information from this feature has potentially wide-ranging and significant ramifications to the prehistory of the upper Fraser Valley area, the encompassing Gulf of Georgia Region and the overall Northwest Coast cultural area, its actual contributions have been negligible due to its uncertainty. A secondary objective of this study is to test the general utility of conducting collections study based archaeological investigations.

In this study, Assertions 1-3 — respectively defined above — were established as focal points for testing the validity of the supposed Maurer house feature. A significant component of this study involved developing a reliable data-set from the available collections of excavation documents and artifacts. Plan and profile drawings were reconstructed and compared to originals in order to determine the degree of agreement between them, thus assessing their level of reliability. Artifacts from sampled excavation units within the feature area were re-analyzed. Reliable data were then able to be applied in testing Assertions 1-3. Expectations supporting each assertion were respectively defined and tested against data from the site.

As a result of this study, the structural nature of the excavated feature, its house function, and its antiquity were verified. However, the verified house differed somewhat from its original description. Detailed descriptions of the house remains and its artifact assemblage were presented. Averaged radiocarbon dates directly associated with the house provided a refined age estimate of 4230 BP (4860 BP calibrated). The socio-economic and technological structure of the inhabitants of this ancient house, their relationship to contemporaneous societies of the lower Fraser Valley and Fraser Delta, and the development of social complexity and inequality in the upper Fraser Valley were discussed. Results of this study upheld the practicality and utility of conducting collections study based archaeological research.

## DEDICATION

This thesis is dedicated to my family and life-line -- Lara, Kiah and Sasha. I also wish to dedicate this research to Ron LeClair, hoping that this work vicariously fulfills his involvement in this project. As well, I dedicate this endeavor to Howard Winters, Anne-Marie Cantwell, Eugene Boesch and Owen Lindauer for their encouragement and instruction in my development as an archaeologist, and to James and Marguerite Schaepe and Otfried and Babeth von Waldenburg for their encouragement and instruction in my development as a human being.

## ACKNOWLEDGEMENTS

Of those who should be thanked for their encouragement, support and assistance, none are more deserving than Lara, Kiah and Sasha, a portion of whose lives are incorporated in this thesis. I heartily thank Ron LeClair, for provided me the foundation of this study and supporting this continuation of his work. Though hardly adequate, additional debts of gratitude are extended to Richard Brolly, Mirjana Roksandic, Andrew Barton, Barb Winter, Sonny McHalsie, Tina van Gaalen and Michelle Wollstonecraft for their insights, advice and technical assistance on this project. I thank Jack Nance (S.F.U. Archaeology Dept.) for his statistical advise and Peter Mustard (S.F.U. Earth Sciences Dept.) for his help with lithic material identifications. Special thanks go to my supervisory committee – Knut Fladmark, Roy Carlson and Dana Lepofsky -- who successfully guided me through this program, as well as to Michael Blake for acting as my external examiner. Lastly, I'd like to thank my friends the grass-hoppers, the birds and the creatures of the forest for helping keep me sane throughout the completion of this project.

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## CHAPTER 1

### Introduction

In this thesis, I examine material from the 1973 excavation – conducted by Ron LeClair – of a prehistoric feature located at the Maurer site (DhRk 8) in the upper Fraser River Valley, B.C. LeClair's preliminary report (LeClair 1976) constitutes the entirety of published work on this feature, which has awaited detailed analysis and description since its excavation 25 years ago. Based on primarily field observations, LeClair described (LeClair 1973, 1976) this feature as an Eayem Phase (3500-5500 BP) house (that is, domestic residence). However, due to the preliminary nature of the published report, little detailed evidence is presented in support of these assertions<sup>1</sup>. Close examination of the published information raises questions concerning the bases for determining the feature's function and date. For example, while LeClair's report contains a verbal description of the feature, detailed architectural diagrams (e.g., plans and profiles) were not presented. As well, alternative explanations for the formation, function and date of the feature were not considered. Without faulting LeClair, the assertion of an ancient house feature at the Maurer site presently remains debatable due to the preliminary nature of the data in his report and a lack of applied critical analysis. The present possibility of assessing the Maurer feature is owed to Ron LeClair, for providing both the entirety of available raw data and an intriguing platform from which to commence this study.

Uncertain as it may be, references to the Maurer house are frequently made in Northwest Coast archaeological literature (e.g., Ames 1996; Borden 1975; Carlson 1994; Coupland 1996; Fladmark 1982; Mason 1994; Matson & Coupland 1995; Pratt 1992). The amount of archaeological attention paid to this feature is likely a function of two things – the general rarity of investigated prehistoric house remains on the Northwest Coast, and the

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<sup>1</sup> The term 'assertion' is applied to LeClair's findings in reference to them as preliminary statements rather than formal, i.e., evaluated, inferences or conclusions.

insight into a prehistoric upper Fraser Valley household potentially available from this feature. While this feature has been widely cited as an example of an early Northwest Coast house, its contributions to the understanding of the prehistory of the upper Fraser Valley and Northwest Coast archaeological model development have been negligible. Though having frequently referred to the Maurer site, archaeologists have variably acknowledged (e.g., Ames 1996; Coupland 1996; Carlson 1994, Fladmark 1982; Mason 1994; Pratt 1992), neglected to acknowledge (e.g., Matson 1996), or questioned (Matson and Coupland 1995:117) the Maurer house feature's validity and place in Northwest Coast prehistory. Such inconsistency is, once again, due primarily to the preliminary nature and incompleteness of the published data and the resultant ambiguity associated with this feature.

Formal analysis and presentation of findings from the Maurer feature has repeatedly been called for (Mason 1994:120-121; Pratt 1992:240-241). Thorough analysis of this feature could benefit the investigation of upper Fraser Valley prehistory in a number of ways, potentially abating the inconsistent treatment of this site. Whether the Maurer feature is determined to be a valid house or not, sound archaeological data will likely emerge from such investigations. Maximizing the comparative archaeological database for the upper Fraser Valley is critical to the evaluation of a number of current archaeological constructs, including:

- cultural sequences for the upper Fraser Valley
- the areal extent of the Charles Culture

Should the Maurer feature be verified as a house, associated data potentially will be useful for:

- defining prehistoric Gulf of Georgia region house architecture
- investigating prehistoric Gulf of Georgia region household patterning
- investigating emergent complex socio-economic structure and inequality on the Northwest Coast.

Between the mid-1970s and early 1990s, the upper Fraser River Valley received little archaeological attention. Though a number of notable excavations were conducted during this period of time (e.g., Hanson 1973; von Krogh 1976; Archer 1980; Eldridge 1982), greater attention was paid to the adjacent portions of the Gulf of Georgia region and the Fraser Canyon. As a result, the culture history of the Fraser Delta and Gulf Islands is founded upon a much larger archaeological data base than its eastern counterpart. Charles Borden's Fraser Canyon culture historical sequence (Borden 1975:62), though based on information from only a few sites -- mostly from the eastern fringe of the upper Fraser Valley -- remains the primary cultural construct for this area.

In the mid-1990s, archaeologists revitalized their interest in the upper Fraser Valley . Between 1992 and 1997, a series of extensive excavations at the Hatzic Rock<sup>2</sup> site (e.g., Mason 1994) and Scowlitz site (e.g., Bernick 1992; Blake 1995; Matson 1994; Morrison 1997; McClay 1994; Thom 1995) have been conducted by the University of British Columbia, in conjunction with Sto:lo Nation. Archaeologists from Simon Fraser University also have recently undertaken research at the Scowlitz site (D. Brown, personal communication, 1997; N. Oakes, personal communication, 1997) and, along with Western Washington University, in the high elevation environments of the Fraser River watershed (e.g., Bush 1997; I. Franck, personal communication 1997; D. Lepofsky, personal communication, 1997). Sto:lo Nation conducted an archaeological inventory study of the Chilliwack River valley, a tributary system to the Fraser River (Schaepe 1998). Geographically pertinent work includes the excavations at the Park Farm (Spurgeon 1984) and Fort Langley (Porter and Copp 1993) sites. Such recent research has greatly enhanced the existing archaeological database of this area.

Much of this archaeological resurgence has been conducted within the theoretical framework of household archaeology. Prehistoric houses and villages -- such as those at the

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<sup>2</sup> The previous site name 'Hatzic Rock', rather than the present site name 'Xa:ytem', is used for the sake of continuity with references mentioned in this study.

Hatzic Rock and Scowlitz sites -- have been the focus of much of this research. Preceding and complementing recent house excavations in the upper Fraser Valley is the 1973 excavation of the house at the Maurer site which, again, if verified, is one of the earliest and most completely investigated houses on the Northwest Coast.

However, the potential contributions of the Maurer site feature to the accumulation of upper Fraser Valley/Gulf of Georgia region archaeological data are still ambiguous. As the sole means of manifesting such 'latent' data, scrutiny of this feature's validity is required. In his 1976 report, Ron LeClair, the director of the 1973 excavation, made three assertions :

- the remnants of a prehistoric structure were excavated at the Maurer site
- the structure functioned as a domestic residence
- the structure dates to ca. 3500-5500 BP

Evaluating these three assertions comprises the primary objective of this thesis<sup>3</sup>.

In fulfilling this objective, I test the reliability of the data from the 1973 excavation by comparing original and reconstructed site plans and profiles and assessing the original lithic typology. I assess artifact frequencies from a number of excavation units associated with the existing profiles. Artifacts -- lithic tools and debris -- from the feature are isolated, described and functionally analyzed. I develop artifact distribution maps and plan diagrams depicting the spatial patterning of artifacts associated with the feature. Radiocarbon dates associated with the Maurer feature are identified and the reliability of sample stratigraphic position, association, and sample material and condition are evaluated.

As a secondary element of this thesis, I evaluate the utility of analyzing previously excavated archaeological remains. Thus, this thesis is a case-study in what I refer to as 'Recycling Archaeology'. The objective of this endeavor is embedded in the nature of collections study-based research, specifically that pertaining to the Maurer site. The question

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<sup>3</sup> Throughout this thesis it must be remembered that LeClair's reports are not final reports, and that any ambiguity surrounding them is largely the result of information derivative of a work in progress. It is not the intention of this thesis to criticize LeClair's assertions, but to clarify them.

of just how much information can be retrieved from an excavation which occurred twenty five years ago must be confronted as a matter of necessity in attempting to evaluate the Maurer feature. Though focused on the Maurer site, addressing this question may have implications for the many other sites whose collected remains have either long awaited complete analysis or have the potential to answer questions unconsidered at the time of their excavation. I attempt to evaluate two questions in this regard:

- do archaeological collections have a shelf life? That is, to what extent can archaeological collections remain viable as potential sources of information?
- can the types of data potentially extractable from archaeological collections transcend the originally stated research objectives governing the material's excavation?

Though generally phrased, I assess these two questions with specific regard to the Maurer site collection. Because archaeological collections are unique entities, with highly variable types of documentation and materials, each analytic attempt must be conducted within its own forum. It is my intention, in conducting this case study, to offer insight into the process and potential utility of revitalizing one such collection.

This study is structured as follows. In **Chapter 2**, I provide background information on the Maurer site location, the written and oral history of the site vicinity and archaeological investigation of the site. I also evaluate the published data on the Maurer site feature and discuss the relevance of evaluating its reliability and validity. In **Chapters 3-5**, respectively, I present and evaluate three testable assertions -- that a structure exists, that the structure functioned as a house, and that the structure is between 3500-5500 years old. In **Chapter 6**, I discuss the results of the preceding analyses. I present concluding remarks in **Chapter 7**.

Lastly, it should be stated that the Maurer site is located in *Solh Temexw* -- Sto:lo Traditional Territory. This study was conducted with the consent of the Sto:lo Nation.

## **CHAPTER 2**

### **Background of the Maurer Site - Its Location, History, and Previous Archaeological Research**

#### **2.1 Objectives**

The objectives of this chapter are to: (1) provide a description of the Maurer site location; (2) review known ground disturbance at the site; (3) provide a history of archaeological investigation of the site, particularly the 1973 excavation; (4) analyze evidence and conclusions from the 1973 excavation, and; (5) discuss the role of reliability and validity in relation to the site data.

#### **2.2 Site Location**

The Maurer site is located in the upper Fraser River Valley of Southwestern British Columbia – a physiographically and ecologically diverse area which stretches from roughly the town of Yale to Sumas Mountain. Easy access to the Fraser Delta, South Coast, and Fraser River as well as Columbia River plateaus is provided by surrounding river valley and mountain ridgetop travel corridors. Thus, the Maurer site lies in a transitional zone between British Columbia's coast and interior, at the eastern limit of the Southern Northwest Coast cultural sub-area.

Approximately 110 km upstream from the mouth of the Fraser River and 5 km SW of the town of Agassiz (Figure 1), the Maurer site is situated on the river's north bank in the transitional zone between the floodplain and adjoining upland. The site is located on a narrow river terrace which is backed by Hopyard Mountain (20 m N) and bordered



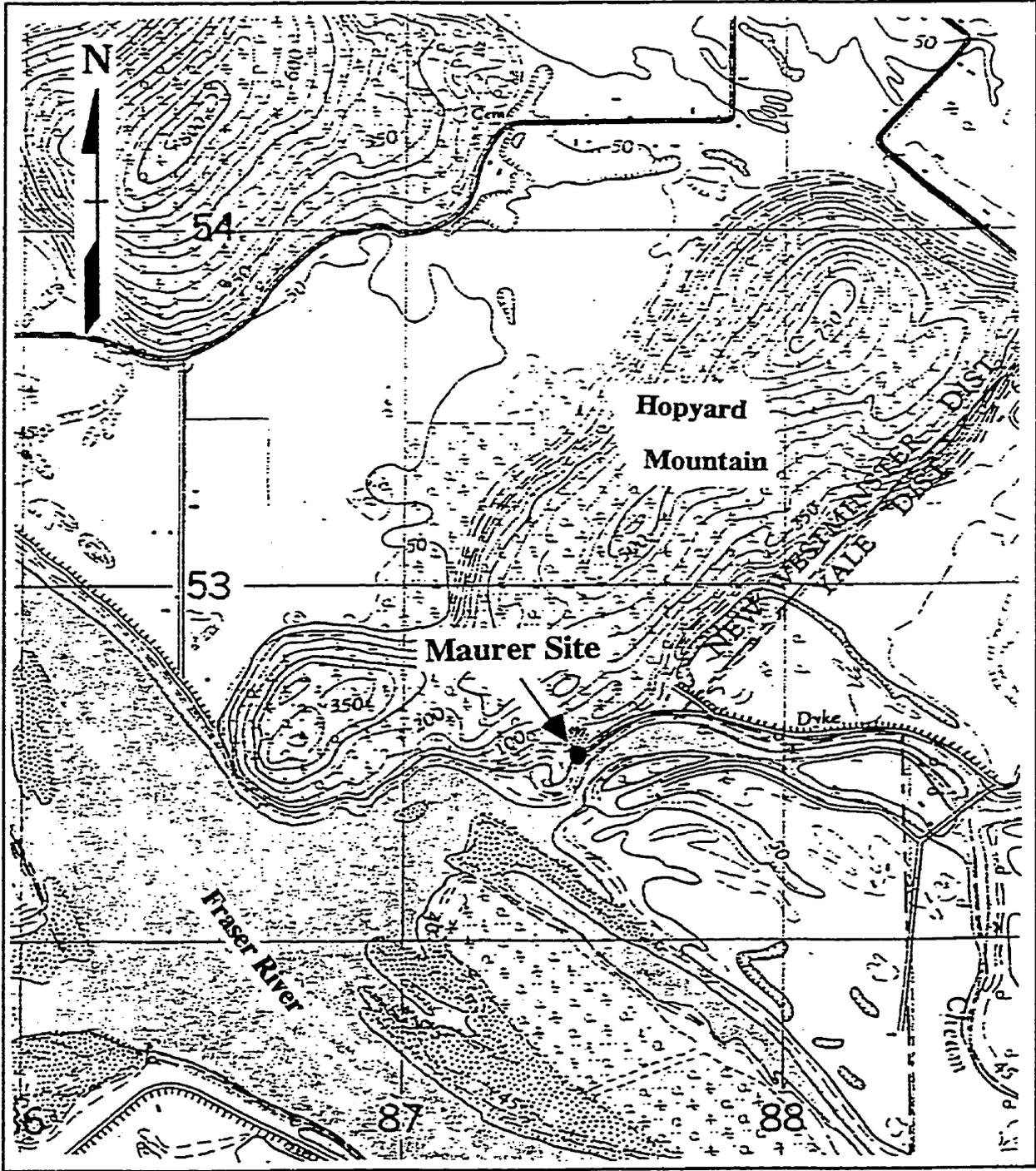


Figure 2. Site Vicinity Map, Upper Fraser Valley (1:25,000, NTS 92H/4f, 1961)

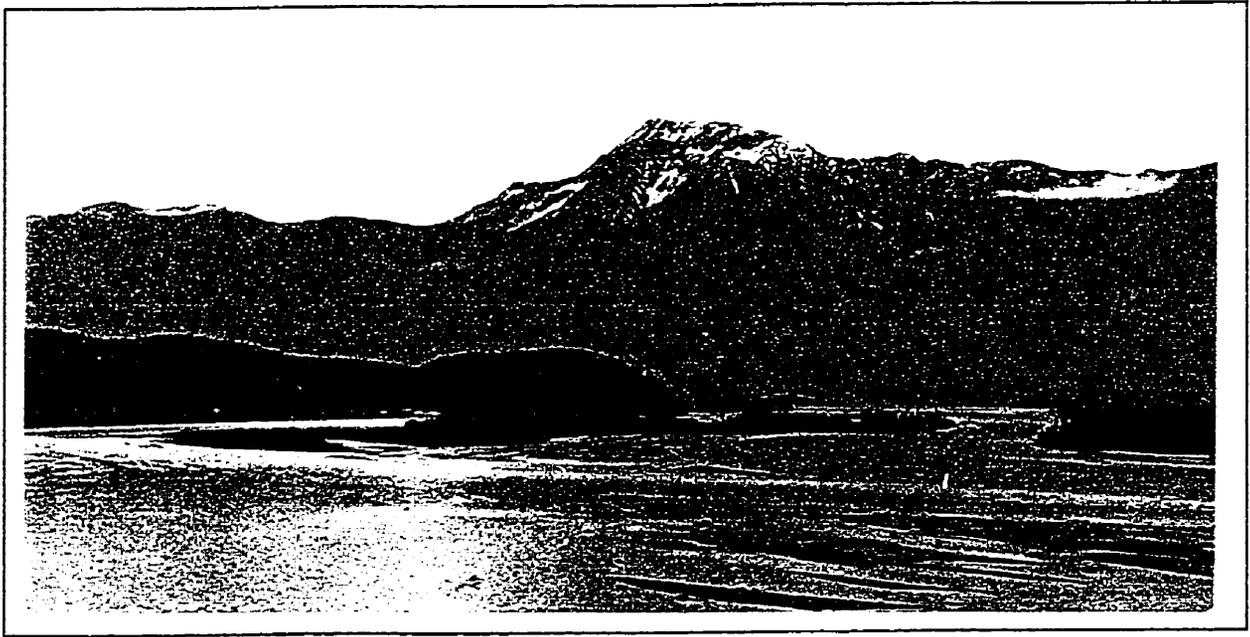


Plate 1. View eastward above the Fraser River with Mount Cheam in the background and Hopyard Mountain in the foreground center.



Plate 2. View east towards DhRk 8, overlooking the Maurer residence on Hopyard Mountain.

(Photos: R. LeClair)

by Cheam Slough (20 m E) and the Fraser River (150 m SSW) (Figure 2; Plates 1 and 2). The terrace is roughly 10 m above the present freshet level of the river. An adjoining portion of the site, referenced in LeClair's excavation notes as DhRk 8A<sup>1</sup>, is located on a lower river terrace approximately 130 m SSW of DhRk 8.

Physiographically, the Maurer site is located near the eastern limit of the Georgia Depression, at the boundary of the Coast and Cascade Mountains, divided in this location by the upper Fraser River Valley. Upstream of Yale, the Fraser River is constricted by the Fraser Canyon. Downstream of Sumas Mountain, the river flows through a broad deltaic plain before emptying into the Strait of Georgia. Geologically, this area is characterized by: (1) intrusive igneous rock (chiefly late Mesozoic) generally ranging from syenite, through granitic types, to diorite; (2) folded and vaulted volcanic rock, including basalts, andesites and some pyroclasts, and sedimentary rock (chiefly Mesozoic) typically including massive and quartz sandstones, conglomerates, shales and limestone; and (3) flat or gently dipping sedimentary rocks (Cretaceous or younger) similar to the sedimentary rocks described above (Ryder 1978:12-16). Basalt, andesite, metasediments and chert, represent locally available and commonly utilized lithic materials in the upper Fraser Valley.

Ecologically, the Maurer site lies within the Fraser Lowland ecosection of the Georgia Depression ecoprovince (Ministry of Forests 1994). Three major biogeoclimatic zones – Coastal Western Hemlock, Mountain Hemlock and Alpine Tundra – exist within the more than the 2000 m vertical rise between the Fraser River and the surrounding mountaintops (ibid.). Abundant plant and animal resources – large mammals (e.g., black-tailed deer, elk, black and grizzly bear, and mountain goat), anadromous fish (e.g., salmon), and numerous berry and tuber species – were traditionally available to and utilized by the Sto:lo people living in the vicinity of the Maurer site (SFU 1994:7-15).

The Maurer site is surrounded by travel routes which provide access and potential

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<sup>1</sup> DhRk 8A is not further discussed in this thesis. Though adjacent to DhRk 8, the lower terrace is not directly associated with the feature under investigation.

trade avenues to a wide range of geographic regions and culture areas, both coastally and in the interior. From the upper Fraser River valley, numerous surrounding regions may be readily accessed via riverbasin and mountain ridgetop corridors. From Maurer, the Fraser River floodplain provides direct, though difficult, access to the Fraser Plateau of Interior British Columbia. Westward, the Fraser River is easily navigable to its mouth, providing access to the Strait of Georgia and other coastal settings. From the mouth of the Harrison River – only 12 km west of the Maurer site – the easily navigable Harrison River/Harrison Lake/Lillooet River drainage complex offers additional and less difficult access to the middle Fraser River region. Slightly more distant to Maurer are the Nooksack, Skagit and Chilliwack River valleys, which lead southward towards the Washington coast and interior.

The dynamism of this landscape must be kept in mind when dealing with sites of any antiquity. Since deglaciation of the region, the physical relationship between the upper Fraser Valley and Fraser Delta has been dynamic. The Fraser Delta has progressively moved westward. Mass wastage events in the upper valley, such as the Cheam slide (ca. 5000 BP), affected the course of the Fraser River (Fladmark 1992:6).

### **2.3 History of Ground Disturbance at the Maurer Site**

In this section, I present a history of the Maurer site area. This review of site use is relevant to the analysis of the integrity and utility of the material remains recovered from the site. Information pertaining to the known use of the Maurer site was obtained through ethnographic documentation, the reported site history (LeClair 1976:33) and local knowledge of the site location.

Aboriginal uses of the site area and vicinity have been documented. Sto:lo oral history records a place name at the south end of Hopyard Hill –*Lhilhkw'elqs*, which

translates to 'hooknose rock' (Duff 1952:37; Galloway 1977:16). This rock, located in close proximity to the Maurer site, was so named due to its importance as a place for salmon dip-netting (*ibid.*). Physical impact on the Maurer site from related traditional aboriginal fishing activities probably would have been minimal and restricted in nature to relatively superficial ground disturbance from fish rack construction, although somewhat more disruptive cache-pits may have been dug. These, however, represent localized disturbances likely restricted to the terrace edge. On a map produced by Duff, an ethnographic village site is also indicated in what appears to be the location of the Maurer site (Duff 1949). Unfortunately, no site description is available and the scale of the map makes it impossible to locate exactly. Given the sketchy information, the lack of supporting local knowledge, and the small size of the upper terrace at DhRk 8, it seems unlikely that an ethnographic village either did or could have existed there in its present configuration<sup>2</sup>. Therefore, potential ground disturbance resulting from documented ethnographic native use of the site is considered to be minimal. Component mixing resulting from preceding site use must be pursued within the context of the archaeological record.

Considering the magnitude of post-contact, Eurocanadian related ground alteration surrounding and affecting the Maurer feature, its complete integrity is questionable and must be carefully scrutinized. Known ground disturbing activities at or nearby the Maurer site include logging on Hopyard Mountain (ca. late 1890s-1912; 1945-1950), limestone quarrying (ca. 1912-1945), and soil mining, house construction and landscaping (ca. 1960-present) -- as summarized by LeClair (1976:33), indicated by Fred Maurer (site property owner, pers. com., 1996) and apparent at the site. A limestone mining camp was apparently established near DhRk 8A, south of DhRk 8. Following inspection of the site area, a number of historic modifications to the landform upon which the site is located are distinctly apparent. These

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<sup>2</sup> However, indirect evidence exists which suggests that the river terrace associated with DhRk 8, while presently quite small, may have been much larger and potentially could have supported a prehistoric village. See Chapter 7 for discussion of this subject.

modifications include:

- a gravel access road which cuts through the back edge of the upper river terrace, roughly 10 m N of the reported house feature
- numerous overgrown logging roads on Hopyard Mountain
- exposed limestone quarry faces approximately 50-60 m N of the reported house feature
- historic machinery remains on a leveled area directly N of the gravel access road
- a narrow, dirt road leading southward, approximately 25 m W of the reported house feature
- the contemporary residence built atop a small knoll to the west of the narrow, dirt road

Again, identifying component mixing resulting from historic ground disturbances must be pursued in an archaeological context.

Recent ground disturbance in the Maurer feature location -- as determined through review of LeClair's descriptions (1976), recent examination of the site, and LeClair's unpublished photographs of the site -- is also discernible. In LeClair's photographs of this location prior to the start of his excavation, a large depression (the cultural feature under examination) is clearly visible. The feature is relatively clear of vegetation with only secondary tree growth marking the surface. Surface vegetation may have been cleared as a result of soil mining. A wooden post and a superficial plywood bin were also located within the feature boundaries. The post, set below ground surface, was documented in the feature profiles (see Chapter 3). The most significant known disturbance to the Maurer feature is, unfortunately, the direct result of the 1972 archaeological investigation of the site, discussed below.

## 2.4 Archaeological Investigation of the Maurer Site

The first archaeological investigation of the Maurer site was conducted in August, 1971 (Percy 1972). Richard Percy, then curator of the Simon Fraser University Museum of Archaeology, was contacted by landowner Fred Maurer regarding a possible cultural depression on his property. Percy tested the site, placing a 3' by 6' by 6' (measurements per Percy) deep test unit in the vicinity of the depression, which he describes as being "roughly 35 to 40 feet in diameter" (Percy 1972:161). Percy recovered cultural material which led him to conclude that "some sort of prehistoric activity had taken place at the site and that the hollow was in all probability the remains of a pit house" (ibid.). Unfortunately, no maps accompany Percy's report and the exact location of the test unit is not known, although it was confirmed that it did not impact the depression (Richard Percy, pers. comm., 1996). Percy's conclusions led to further investigation of the site.

In 1972, Thea DeVos, a graduate student in archaeology at Simon Fraser University, more intensively sampled the site. Ten, 2 m by 1 m test units were placed within a roughly WNW-ESE oriented grid over the depression (Figure 3). These units were excavated to varying depths, with a number of them penetrating what is identified by LeClair as the house feature floor. Information from this excavation is not presently available as the location of the excavation material and documents is presently unknown<sup>3</sup>. This excavation represents the greatest known impact to the Maurer site, and has adversely affected this attempt at analyzing the purported house feature. The fieldwork conducted in 1971 and 1972 provide no usable data for this investigation. Thus, the scope of this thesis is by necessity limited to the only available set of data from the Maurer site, recovered from LeClair's 1973 excavation.

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<sup>3</sup> I made several unsuccessful attempts to locate DeVos and the missing data. Unfortunately, the location of this portion of the Maurer feature collection remains unknown.

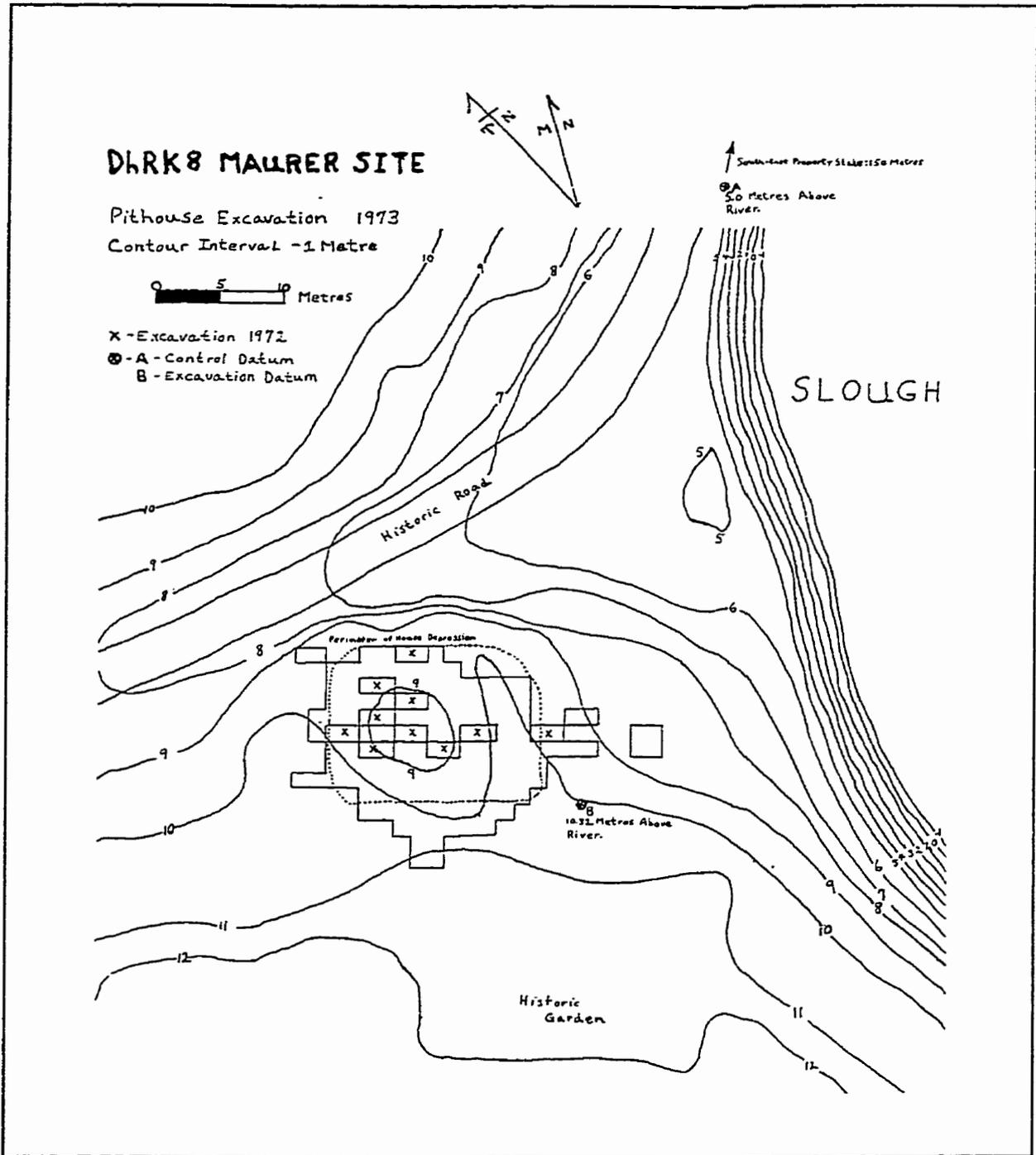


Figure 3. Original site area contour map/excavation plan (per LeClair 1976:36).

## 2.5 The 1973 Excavation

Between May and September 1973, additional testing of the Maurer site (Plates 3 and 4) was conducted by S.F.U. Department of Archaeology graduate student Ronald LeClair. With funding from an Opportunity for Youth grant, LeClair intensively tested both DhRk 8 and DhRk 8A, respectively noted by LeClair as the 'pithouse' and 'south slope' sections. The result of this work is the focus of this thesis. Since this thesis solely involves the purported house feature at DhRk 8, only the excavation carried out in this location will be described.

LeClair's expressed research strategy was focused on "systematically solving the problems of the nature and prehistoric antiquity of the site" (LeClair 1976:34). Thus, his primary intent was to identify the age and cultural affiliation of the presumed house feature. While the subject of his investigation was a presumed prehistoric house, the research did not constitute what today would be known as a formal 'household archaeology' approach. The primary differences between a 'household investigation' and LeClair's culture historical investigation are that: (1) LeClair's research did not incorporate the analysis of social, economic and/or technological organization within the house; and (2) the excavation methods he employed were not specifically designed to collect the types of data required of a 'formal' household analysis.

The scope of LeClair's research set limits on the types of data collected which, in turn, limits the potential range of interpretations from these data. This is not to say that these data do not permit household analyses. Rather, they simply reduce the resolution of possible household investigation and inference.

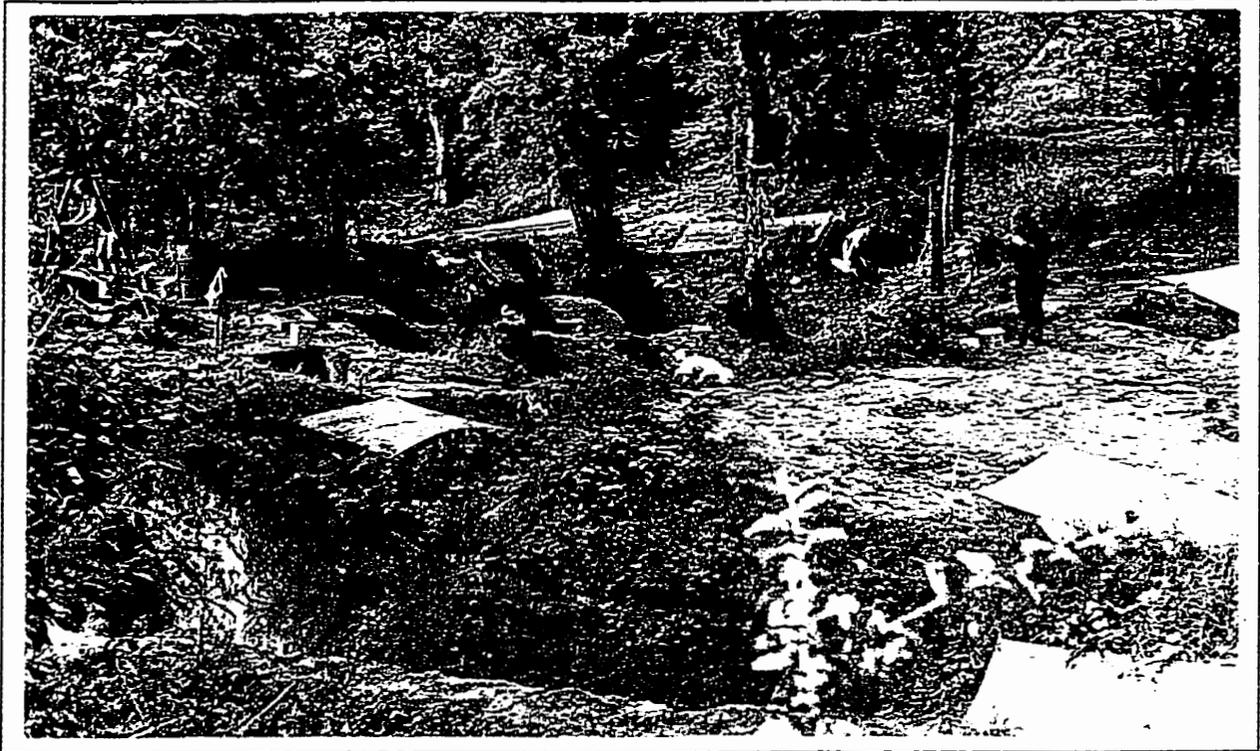


Plate 3. SW view of depression feature at the start of the 1973 excavation (note the extent of the impact from the 1972 excavation).

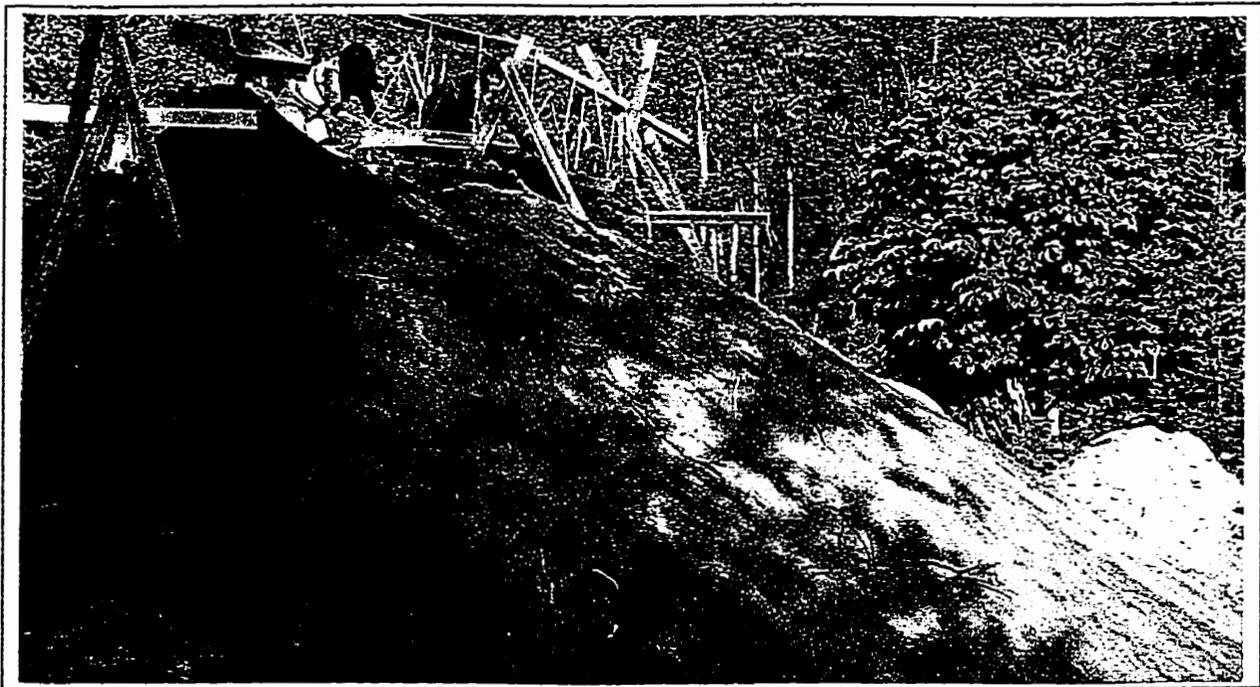


Plate 4. Backdirt accumulations from the 1973 excavation.

(Photos: R. LeClair)

## 2.6 Excavation Methods - 1973

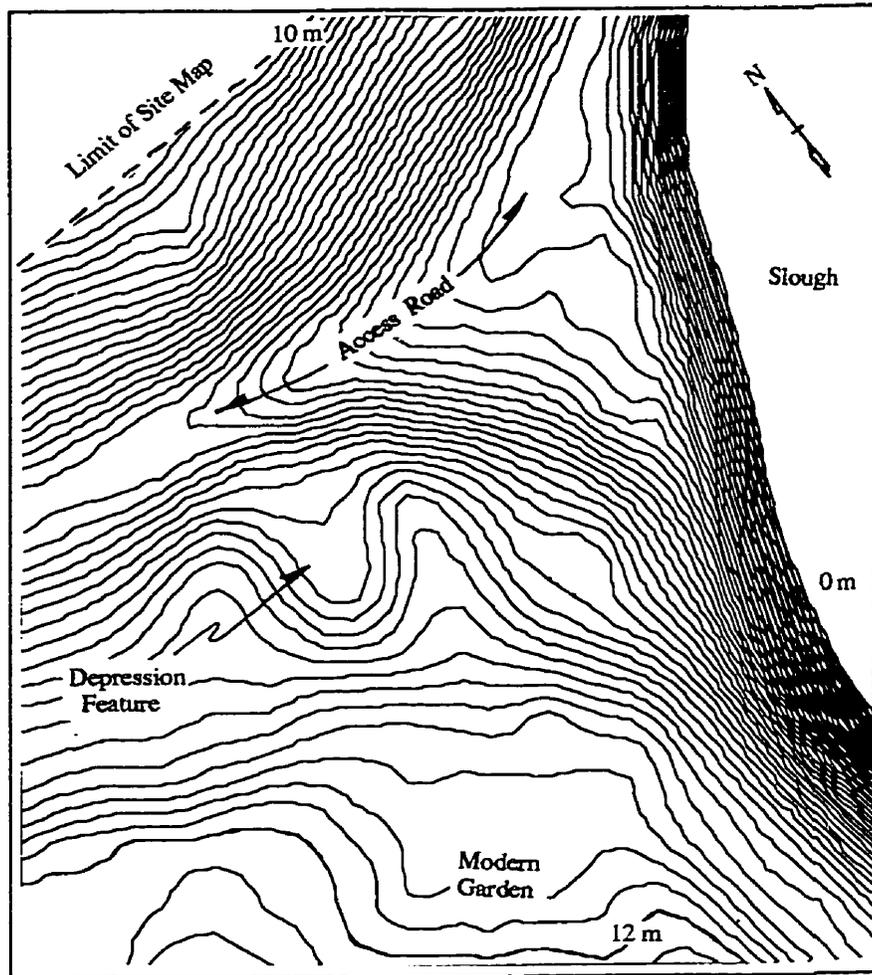
As a matter of necessity in understanding how the existing Maurer collection was gathered, the excavation methods employed by LeClair were reviewed in detail. As presented below, I review the research strategy, methods employed, types of data collected and the stage of analysis achieved by Ronald LeClair's 1973 project. At the same time, I present an outline of the data available to the present study. Explicit understanding of the nature of these lines of evidence is crucial to this examination of the Maurer collection.

Initially, LeClair created a site map of DhRk 8 using a 1 m contour interval. At this vertical scale, little of the depression feature's configuration can be distinguished (see Figure 3). As part of the current study, an attempt was made to enhance the depression image. Elevations from LeClair's contour map were used to create a digitized reconstruction (SYSTAT), over which detail could be manipulated to increase resolution. Viewing various perspectives of these digitized, two- and three-dimensional topographic maps, the location and shape of the depression is shown somewhat more clearly in relation to the landforms with which it is associated (Figures 4a and 4b).

Utilizing DeVos's apparently arbitrary NE-SW oriented site grid, LeClair established a roughly 14 m (NE-SW) by 18 m (NW-SE) excavation grid encompassing the depression feature. Within this area, he excavated a total of:

- 59, 2 m by 1 m units
- two 2 m by 2 m units
- two 1 m by 1 m units

totaling an excavated area of 128 square meters. These units generally ranged between 1.0 m and 1.5 m in depth. Unit provenience was indicated in meters south and west from an arbitrary site datum. A plan depicting the 1972 and 1973 excavations is presented in



Scale: 1 cm = 5 m

Figure 4a. Extrapolated site area contour map (0.25 m contour intervals).

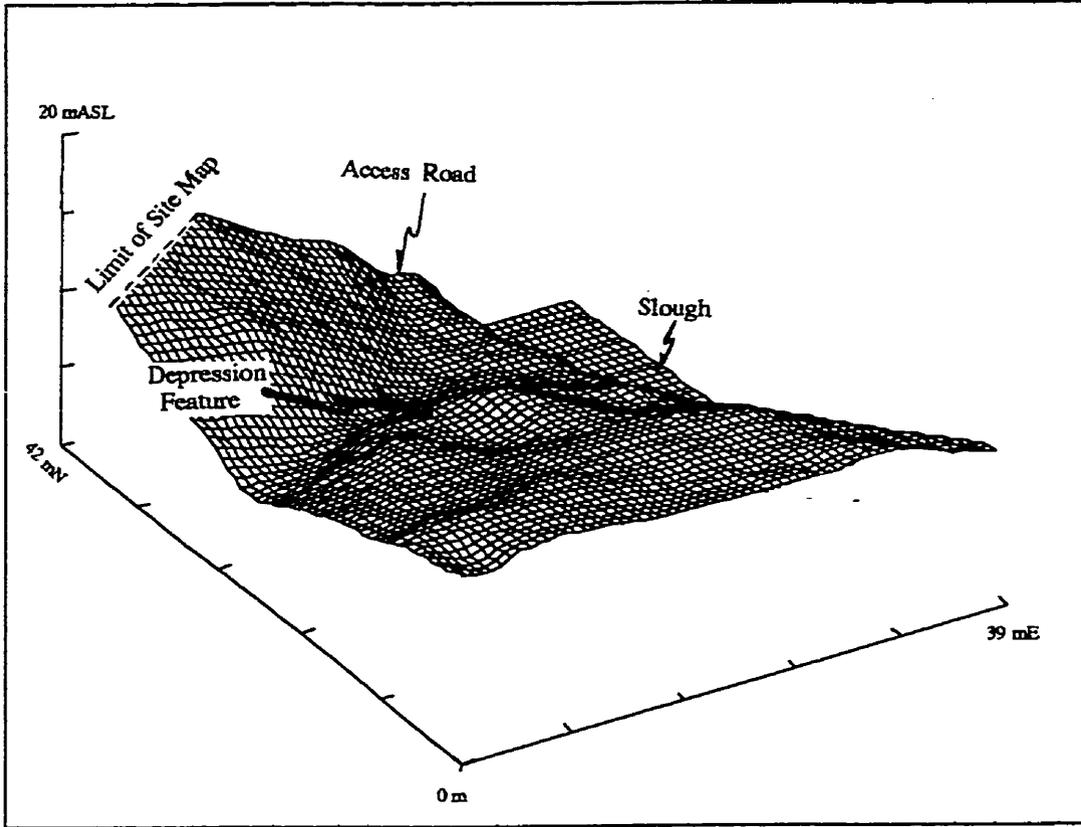


Figure 4b. Extrapolated three-dimensional topographical site area map (note the visibility of the depression feature).

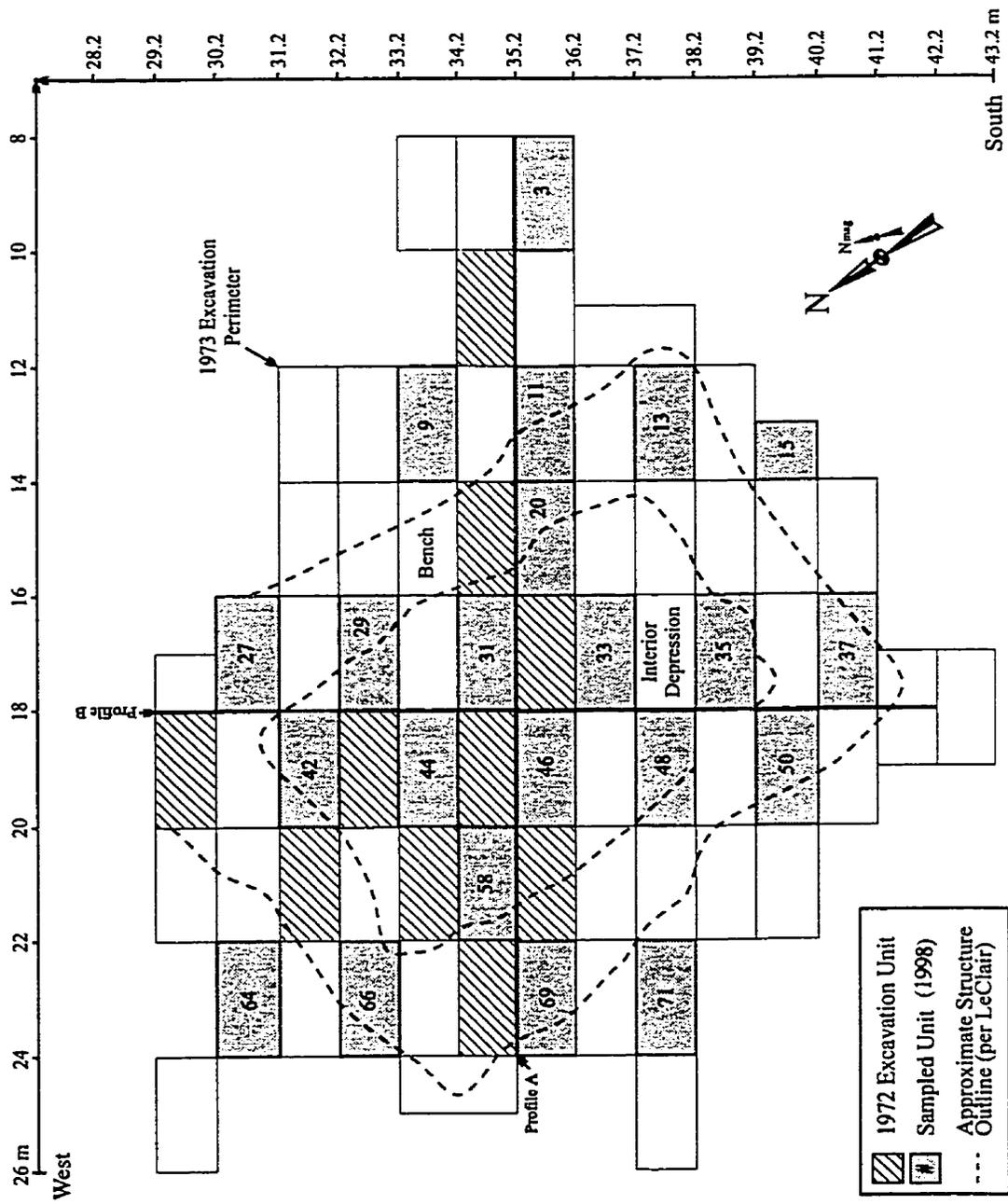


Figure 5. DhRk 8 Excavation Plan.

Figure 5. Total excavated area accounted for 100% of the purported house remains.

Excavators used trowels and shovels, following a mixed methodology of arbitrary level and natural layer excavation. Examination of the excavation unit level notes indicated that the humus was removed as a single natural layer receiving no vertical sub-division. Importantly, the layer identified as the house floor was also excavated as a discreet stratigraphic layer, separate from overlying sediments, and sub-divided into arbitrary 10 cm levels where the thickness of these deposits allowed. Excavating the observed floor as a discrete layer proved to be a crucial factor permitting re-assembly of the associated artifact assemblage without mixing strata.

Depth measurements were taken from both the ground surface and an arbitrary datum line strung above the depression. While this method was followed in most cases, notes for a number of units lacked reference to one or the other of those proveniences. Fortunately, notes were located which document the depths of the ground surface below datum for all the excavation units. This reference allowed missing depth measurements, either DBS or DBD, to be extrapolated.

Level information consists of data recorded on level and feature forms. These forms provide only basic information, including:

- the Borden Site Number
- date
- recorder
- horizontal provenience (e.g., 31.2-32.2 m S, 18-20 m W)
- vertical provenience (e.g., 30-40 cmBS)
- a brief description of soil color and cultural material

Generally, depth measurements and a plan drawing of the bottom of each excavated level are provided, along with a directional indicator. Indication of the level or layer being excavated is generally lacking.

Stratigraphic profiling of the site was minimal. Only two provenienced profiles were located among the excavation documents. They record intersecting 13 m (roughly N-S) and 16 m (roughly E-W) cross-sections of the complete vertical excavation of the depression (see Figure 5). Different versions of these profiles, in preliminary and finished states, are present in the collection. The N-S profile is labeled with written and color codes, while only written descriptions label the E-W profile. Also depicted in both profiles is the datum line from which depth measurements are referenced. These profiles provide a basis for conducting stratigraphic analyses, a crucial element of this investigation.

As mentioned above, plan drawings are depicted in the level notes for most excavation units. Scales are lacking in some of these drawings. In such cases, distance measurements are noted for significant points. In addition, three scale plan maps of the excavated structure are included in the site documentation. Comparison of these structural plans reveals some discrepancies, as discussed in Chapter 4.

LeClair's photographs, negatives and photo record forms provide additional documentation of the excavation. Photographs were taken of the site prior to, during and at the completion of the 1973 excavation. Of particular interest are oblique aerial photographs of the exposed excavation area at the completion of the project, and close-up photographs of a number of exposed features (not to mention the fashion statements of 1970's archaeologists). Two photographs show the dark stain of what appears to be the floor layer of a feature exposed in the road cut-bank approximately 15 m NE of the north side of the depression. The significance of this second feature is discussed later.

LeClair maintained field notebooks which include details of the project's progress. Log entries largely provide routine information and become increasingly sparse throughout the course of the excavation. They do, however, include detailed notes on the three-dimensional proveniences, contexts and material descriptions of both processed and unprocessed radiocarbon samples. Site soil acidity values by depth below surface were

recorded. A rough outline of project objectives was also included.

The entire DhRk 8 collection consists of roughly 17,000 individual lithic specimens, perhaps 2,000 of which are tools. Tool classification was minimal and lacked explicit definition. Identified tool types mainly consist of unifaces, bifaces, drills, spall tools, cobble and pebble tools, hammerstones, and cores. No classification of the debitage was attempted. Artifacts were generally catalogued by:

- the date of catalogue entry
- artifact number
- artifact type
- artifact location
- depth (cmBS and/or cmBD)
- excavator(s)

Lithic artifacts from DhRk 8 received catalogue numbers 1-4,053. However, the actual number of lithic artifacts in this collection is, as indicated above, much greater. Only identified tools were assigned and labeled with individual artifact numbers. Debitage, however numerous, was assigned one number per unit/level. All artifacts were provenienced by unit and depth. A very small number of artifacts, primarily tools, received three-dimensional provenience. Lithic material type was generally not noted. No mention was made of layer association, except for the occasional notation of 'floor association'.

The state of collection organization at the beginning of the present study was such that all debitage remained in its original level bags, while tools had been removed to a series of collections cabinets. However, the tool assemblage was unsorted and required complete re-organization. Fortunately, the tools (with only a handful of exceptions) had been properly labeled with artifact numbers. Thus, I was able to cross-reference numbered artifacts with the artifact catalogue as a means of re-establishing their provenience. Lastly, I located preliminary artifact frequency figures by cmBS among the collection documents.

## **2.7 Evaluating the Basis for LeClair's Assertions**

In this section, I evaluate the bases for LeClair's assertions -- as presented in his two reports on the 1973 excavation of the Maurer site (LeClair 1973, 1976) -- that:

- the excavation of the depression feature revealed a structure (1976:35)
- the structure is a house (1976:35)
- the house dates to between 3500-5500 BP. (1976:42).

These two references contain the sum of commonly known information about this site. Both references are field reports, one (1973) provided to the then Archaeological Sites Advisory Board, the other (1976) being a near-duplicate published report. The more comprehensive 1976 article, containing radiocarbon dates, is the basis of many commonly accepted 'facts' about the Maurer site. As the most complete reference, I used the 1976 article as the focus for examination of LeClair's conclusions. However, it should be reiterated that the 1976 report was not intended to be a final report and presented, however insightful, a preliminary and incomplete assessment of the site.

### **2.7.1 Is the Feature a Structure?**

That the excavated feature is a structure is a primary assertion presented by LeClair. Due to its brevity, the structural description may be presented below in its entirety. LeClair states:

...there was an anomaly in the soil color within the light yellow-brown stratigraphic unit. The anomaly was a dark yellow-brown deposit about one meter deep which began below the humus and was apparent only in the interior of the depression. Near the perimeter of the depression this deposit merged into the light yellow-brown unit. There was also a charcoal lens a few centimeters thick below the dark yellow-brown deposit (about one meter deep) and sterile below this. This lens appeared continually during our excavation of the depression and has been interpreted as the remains of a burned superstructure

covering the house floor. The house floor rested on what should have been the olive-brown stratigraphic unit but was a gray-brown color. This color was only evident within the house itself as defined at the completion of excavation.

During the summer, excavation revealed that the house was not circular, oval or sub-rectangular but actually rectangular in shape. Architecturally, it had a central depression about seven and a half meters long by five and a half meters wide surrounded by a one meter bench raised thirty to forty centimeters, measuring eleven meters long by seven meters wide on its outer perimeter. The house was oriented in an almost magnetic north direction. Although a roof entrance might possibly be inferred... there is evidence on the east side for a ground entrance cut through the bench. The hearth was located at the south end of the central living depression. It was an elongated subterranean feature oriented east-west (with a slight convexity on the north side), three meters long and fifty centimeters wide. There were firecracked rocks at both ends and charcoal in the middle.

Twenty-five post moulds, all apparently associated with the house were recorded. There were six large upright posts on the perimeter of the central depression - one in each corner and one in the middle of each long side. The post mould pattern on the outer edge of the bench indicated gabled walls and the angle of declination suggests a height of six to seven feet for the roof. The roof itself was probably flat, supported by the six large interior posts. There was no definitive break in the dark yellow-brown stratigraphy which could be interpreted as another living floor. Thus, it seems reasonable to assume that all the post moulds recorded were associated with this pithouse. (LeClair 1976:35-36)

From this description, numerous questions arise concerning:

- the stratigraphic composition of the depression as a whole
- the horizontal and vertical extent of the floor stratum
- the horizontal and vertical distribution of artifacts in the area of the floor
- the association of the floor stratum to the elevated bench
- the association of the hearth to the floor
- the nature of evidence for the supposed entrance
- the horizontal and vertical distribution of all the post moulds
- metric attributes of the post moulds
- the stratigraphic association of the post moulds to both the bench and the floor

Additional data are needed to answer these questions. No substantive data verifying

LeClair's descriptions/interpretations are provided. Profiles and plans depicting the structure, were not presented. Artifact frequencies were not related to the site stratigraphy. Alternative interpretations for the observed pattern were not entertained. While this structure, as described by LeClair, may very well exist, it remains unsubstantiated.

### **2.7.2 Is the Feature a House?**

Equally unsubstantiated is the assumption that the putative structure is a house. The functional term 'house' is not defined by LeClair, nor is any justification provided for this interpretation. Indirectly related to this topic, LeClair states that "...there is a broad range of [tool] types associated with the pithouse" (LeClair 1976:42). However, the nature of this association, direct, indirect or otherwise, is not explicitly stated. Most importantly, the types and frequencies of artifacts supposedly in direct association with the floor are not described. Untested alternative functional possibilities for this feature do exist, such as:

- a refuge
- a fort
- a specialized economic activity area such as a fish processing or smoking structure
- a specialized social activity area, such as a feasting structure

Most of these types of structures have been documented ethnographically in the Gulf of Georgia/upper Fraser Valley Region (Smith 1947, Duff 1952). Sto:lo oral history describes refuge structures constructed at the back of ethnographic villages (Sonny McHalsie, Sto:lo Nation Cultural Advisor, pers. com., 1997). Prehistoric forts, refuges and inferred fish racks also have been documented in and around this region (Patenaud 1985, Moss and Erlandson 1992). These alternative structural functions cannot be ruled out without examination.

### 2.7.3 How Old is the Feature?

Dating of the site represents the third aspect of this investigation. LeClair's rationale concerning the age of DhRk 8 is presented below:

The absence of ground and pecked stone from such a large tool assemblage as that recovered from the Maurer site indicates an age probably earlier than the first millennium B.C. Therefore, Dr. Borden's Fraser Canyon sequence was reviewed and it appears that there are a number of similarities with the Eayem Phase, dating between 1500 and 3500 B.C. Seven radiocarbon estimates were made by the Gakushuin laboratories in Japan (GaK 4919, 4920, 4921, 4922, 4923, 4926, 4927). Five of these estimates gave dates between 1910 and 2830 B.C. The other two estimates which gave ages of A.D. 540 ± 90 and A.D. 1340 ± 70 should be discounted as they do not reflect the true age of the site (LeClair 1976:42).

Again, these statements require clarification. Exactly what portion of the site is being dated -- the suggested structure or some portion of overlying or surrounding material -- is never stated. The basis for comparison and the types of similarities between the Maurer assemblage and Eayem Phase materials are not specified. The broad timespan over which leaf-shaped and contracting stem bifaces, cobble choppers and spall tools (all found at Maurer) occur make them poor temporal markers and poor subjects for such comparison, if used alone. The absence of ground and pecked stone indicated by LeClair, while a potentially important temporal indicator, is of limited significance without proper investigation of site function and taphonomic processes.

Only four of the seven radiocarbon dates reported by LeClair are specified. Presented dates range from 4780 BP to 1410 BP<sup>4</sup>, representing a considerable timespan. The two youngest dates are discounted without adequate explanation, and no proveniences or material descriptions are provided for any of these radiocarbon samples. In fact, I found provenience

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<sup>4</sup> These dates were derived from the uncalibrated Julian dates of 2830 BC and 540 AD, presented by LeClair. The base date of 1950 was used in the conversion of those dates to the 'BP' format.

information which indicates samples from both DhRk 8 *and* DhRk 8A as sources for these dates. Dated samples from DhRk 8 must be isolated and their associations examined . Fortunately, sufficient unpublished information exists to re-evaluate the age of the feature as determined by radiocarbon age estimates.

The preceding deconstruction of evidence supporting the commonly accepted interpretations of the Maurer 'house' exemplify the necessity for re-evaluating this feature. While the assumptions and conclusions made by LeClair *may* be valid, they lack substantiating arguments and corroborating data. The principle factor affecting archaeological interpretations of the Maurer site is the deficit of reported data. However, unreported data useful in evaluating this feature are available. The three assertions specified above represent the basis for the perceived significance of this site, and will be evaluated in the following three chapters. Before pursuing this course, however, the actual reliability of these data, in their various forms, must first be assessed.

## **2.8 Validity and Reliability of the Maurer Data**

The present examination -- a collections study of the Maurer 'house' -- is completely reliant upon the existing archaeological collection and documentation from Ron LeClair's 1973 excavation<sup>5</sup> . As in any collections study, assessment of data reliability is critical to defining the scope of possible research. Unreliable data limit the scope of such research, beyond the restrictions imposed by the research strategy and methods employed in original data collection. Diminution of usable data detracts from the ability to examine the validity of conclusions based upon these data, and generally reduces resolution.

Before continuing, explicit definitions of the terms 'reliability' and 'validity,' as I use

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<sup>5</sup> Further excavation of the Maurer feature was not an option as it was completely sampled between the 1972 and 1973 projects.

them, are presented. Following Nance, *reliability* refers to dependability and consistency (Nance 1987). With reference to measurements, “a measurement or observation is reliable if repeated attempts to make the measurement yield the same results. An observation is unreliable if it does not yield consistent data.... The reliability of a measurement is inversely related to the amount of random error present in that measurement” (Nance 1987:246). Increasing random error decreases replicability and reliability in a data set.

Connected to but not dependent upon reliability is the concept of *validity*. *Validity* refers to the degree to which “observations yield satisfactory responses or data. Satisfactory data tell you what you want to know....an observation is valid if it measures what you think it measures” (ibid.). *Validity*, then, is a measure of systematic error; that is, bias. “Thus an invalid observation is a biased observation, degree of validity is inversely related to the amount of systematic error present in measurements” (ibid.).

Two factors represent basic determinants of reliability and validity for the Maurer data. The first relates to the general inexperience of the crew which participated in the 1973 excavation. One of the project objectives of this Opportunity for Youth funded project was to provide a means for interested youths to obtain experience in archaeology. The Maurer site was, thus, the training ground for a number of 1973 field personnel. The potential for random error in the collection of data was therefore high, and the resulting data reliability is questionable. Internally conflicting data, as shown by the plan views, exemplifies this problem. A second factor affecting data validity was LeClair’s apparent assumption of the existence of a house feature at Maurer. This assumption represented a bias in the way LeClair approached the excavation and analysis of this feature, and a resulting systematic error in the interpretation of those remains must be suspected. Thus, a critical approach to measuring the degrees of validity and reliability of those data will be applied in the following chapters.

## 2.9 Summary

In this chapter, I provided the background information needed to begin the current analysis of DhRk 8. Physical location – intermediate to the British Columbia coast and interior, near a range of eco-zones with varied and abundant food resources, and in close proximity to numerous travel routes – is an important factor with this site. Historical activities have severely disturbed the area immediately surrounding the depression feature. Between 1972 and 1973, archaeological researchers completely excavated the Maurer feature, which limits this investigation to a collections study. Only data from the 1973 excavation are available for use. I examined reported documentation and conclusions about the site and raised a number of unresolved questions. I defined three of LeClair's reported assertions as the foci of this study. I indicated that the employed strategy and methodology of the 1973 excavation constrain the scale and resolution of the present research. Lastly, I explained how indications of both random and systematic error in the 1973 data mandate assessment of the degrees of associated reliability and validity.

## CHAPTER 3

### DhRk 8 - Is there a Structure?

#### 3.1 Objectives

In this chapter, I examine the assertion that the remains of a structure (that is, a feature comprised of architectural elements) was excavated at DhRk 8. I develop archaeological expectations associated with this assertion. Taphonomic factors possibly affecting these expectations are proposed, methods applied in current research are described, and reliability of the 1973 data is assessed.

#### 3.2 Assertion One

*Assertion One* states that structural remains were identified at the Maurer site. This assertion, the first of LeClair's three assertions identified in the previous chapter, is evaluated below.

#### 3.3 Expectations

Evaluating *Assertion One* includes developing expectations of what types of material remains may constitute structural (that is, architectural) remnants. This endeavor was hindered by three factors: (1) the type of expected structure is not known; (2) its associated time period is not definitely known; and (3) data from which to model expected structural

remains in the upper Fraser River Valley, though available, are somewhat limited. Circular and sub-rectangular semi-subterranean structures (Hanson 1973; von Krogh 1976; Mason 1994), platform structures (Matson 1994; Blake 1995; Morrison 1997) and elements of surface structures (Eldridge 1982) of various time periods have been excavated in the upper Fraser River Valley. Descriptions of these features provide an interpretative basis for the Maurer remains, but do not assist in clarifying what type of structural remains to expect at this site.

LeClair's description of the Maurer structure represents the most specific set of data from which to devise testable expectations for this feature. LeClair's description contains three basic structural elements – the *sub-structure*, *sub-structural features*, and the *super-structure*. Definitions of these structural elements and associated archaeological remains from Maurer are presented below.

- *sub-structure* - that portion of the structure which is either set into or incorporates the associated ground surface, including:
  - a rectangular pit, measuring roughly 7.5 m by 5.5 m, excavated 30-40 cm into the associated ground surface and capped by a grayish brown floor deposit of unspecified thickness
  - a roughly 1 m-wide bench which incorporates the associated ground surface surrounding the central depression
- *sub-structural features* - features directly associated with the sub-structure, including:
  - a 3.0 m by 0.5 m hearth (of unspecified depth) associated with the floor in the south end of the central depression
- *super-structure* - that portion of the structure which stood above the associated ground surface, including:
  - six upright post-holes around the outer edge of the central

depression (at each corner and centered along the long axis walls)

- nineteen post-holes (apparently angled), surrounding the outer edge of the bench
- a roughly 3 cm-thick charcoal lens, representing the decayed remnants of a super-structure, capping the floor deposit

From this description, expectations of how these structural elements should appear in the archaeological record may be developed.

One of the principle tests by which this structure may be evaluated lies in its ability to be stratigraphically defined. Profile and plan views, each of the three structural elements described by LeClair (1976) potentially are observable. Thus, a number of expectations can be developed in relation to the sub-structure, sub-structural features and super-structure:

*Sub-structure -*

- the sub-structural floor and bench features should constitute a distinct stratum with clear vertical and horizontal limits which are distinguishable from and bounded by the natural stratigraphy (to be defined later)
- in profile, the floor, and possibly the bench, should be definable as an organic stratum, distinct from its surrounding matrix
- the remnant super-structure should provide an association between the floor and the bench
- both the floor and the bench, as *interior* structural elements, should be consistently overlain by carbonized *super-structural* remains, unless these were deliberately removed prior to collapse
- the floor/bench stratum should have a stepped configuration due to the elevation difference between the floor and surrounding bench, assuming that the same kind of organic deposition occurred in both areas and depending

upon the degree of post-abandonment slumping

*Sub-structural Features -*

- sub-structural features should be identifiable as pits in the floor surface, intruding into the sub-floor stratum

*Super-structure -*

- in plan view, two sets of post-hole patterns should be definable
  - one set of large post-holes is expected to define the outer edge of the central depression
  - a flanking series of smaller post-holes should define the outer edge of the bench
- these two sets of post-holes should define the horizontal limits of the structure
- in profile, the tops of the post-holes surrounding the central depression should have similar depths below datum, indicating that they were set into a common ground surface

In sum, verifying this structure, as described by LeClair, requires identifying each of the three defined structural elements in the archaeological record at DhRk 8. As a single structural unit, direct association between these elements must be demonstrated. Identifying these elements and their associations is the aim of this chapter.

Artifact vertical distributions may also provide important insights for analyzing this structure. However, far less artifact data was reported than for the structural remains themselves. While LeClair notes artifacts as being associated with the structure, their frequencies and proveniences are not described. As a result, no valid expectations may be developed concerning the relationship of the structure to the artifact assemblage. Nevertheless I will examine horizontal and vertical artifact distributions to attempt reveal meaningful patterns within the feature area.

### 3.4 Taphonomy

Analysis of this structure requires evaluation of possible taphonomic and post-depositional factors which might have affected the configuration of its remains and the archaeological expectations discussed above. However, aside from the 1972 test excavations, taphonomic factors affecting the site are not known. Furthermore, lack of comparative data hampers the definition of taphonomic factors which might have affected this structure. However, site formation processes identified from the investigation of semi-subterranean structures in other regions may be applied to the Maurer feature.

Both Fladmark (1982) and Spafford (1991) present a number of taphonomic processes which tend to interfere with the interpretation of semi-subterranean structures . Though derived from Fraser Plateau and Canyon pit-house excavations, a number of these processes are doubtless applicable to the expected situation at Maurer. As adopted from Fladmark (1982:123), taphonomic processes possibly affecting the purported Maurer structure include<sup>1</sup>:

- excavation of housepits into older cultural horizons
- mixing of housepit and older cultural component materials by trampling on the house floor
- house abandonment and -
  - slumping of roof materials into pit
  - slow size-sorted filtering of materials through roof back onto the floor
  - slow collapse of the roof accompanied by natural aeolian or fluvial deposition
  - burning of the structure and collapse of the charred roof into the pit
- slumping of pit walls, and the accumulation of intrusive cultural materials onto the house floor

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<sup>1</sup> Additional taphonomic processes affecting *artifact distributions*, specifically, will be presented in the following chapter.

- re-occupation and partial or complete re-excavation of the housepit, and the repetition of the entire cycle
- final abandonment and in-filling of the depression which might result from later, transitory non-pit-house occupations, and/or deliberate filling with cultural refuse, coupled with natural sedimentary and disturbance processes

Awareness of the possible effects of these taphonomic factors is critical when dealing with any form of semi-subterranean structure.

All the factors listed above affect the way structural and artifact distribution patterns appear in the archaeological record. Some, all, or none of these factors may affect the expected pattern of structural remains presented above, potentially serving to obscure their archaeological visibility. Determining the occupational history of the site in relation to the construction, use, abandonment and decay of the structure is essential in assessing the effect(s) of taphonomic agents.

Identification of taphonomic agents affecting the integrity of the proposed Maurer structure may be approached in a number of ways. Stratigraphic analysis may be used to identify superimposed structures or occupation surfaces, the re-use and re-occupation of the structure, the extent of post-abandonment infilling, and evidence of bioturbation. In conjunction with stratigraphic analysis, analysis of artifact vertical distributions may be helpful in determining the number of cultural occupations at the site. The effects of natural vertical size-sorting on artifact distributions can also be assessed through size-dependent distribution analyses of this sort. I apply such analyses to the Maurer feature in the following portion of this chapter. Identification of active taphonomic processes is important as it serves to establish interpretive limits based upon accurate assessments of feature integrity and artifact assemblage integrity.

### **3.5 Reliability and Validity**

Stratigraphic profiles and plan drawings are essential analytic tools critical to conducting this investigation. As discussed in the previous chapter, the reliability of the original plan and profile descriptions is, however, questionable. Testing the *reconstructibility* of profiles and plans from the 1973 excavation provides insight into the accuracy of these data. ‘Reconstructibility’, as I use it, refers to the ability of original data such as plans and profiles to be re-created from (primarily) the excavation unit notes. Non-reconstructible data must be viewed as being prone to error and lacking reliability. The objective of the *reconstruction test*, then, is to identify a primary set of reliable data with which to proceed in analyzing the Maurer feature.

Artifact frequencies presented in this and following chapter(s) are the result of a complete reclassification of the DhRk 8 assemblage which I conducted for this study. Due to discrepancies between the objectives of the original and present artifact classifications, I considered the adoption of LeClair’s unmodified classification as impractical. In Appendix I, I present explicit definitions and descriptions of artifact classes used in this study.

### **3.6 Methods**

This section describes the methods I used in the following structural analysis. Subsequent chapters will include additional relevant methodological considerations. Again, the data I used in this analysis are limited to those collected by LeClair in 1973. Initially, LeClair’s excavation plan was reconstructed using unit proveniences (meters south and west of the site datum) recorded in excavation unit level notes. In this way, LeClair’s reported site

plan, which only outlines the excavated area, was filled in with specific unit locations (see Figure 5). I compared this reconstruction to photographs and preliminary plans to verify its accuracy. I then systematically numbered all the DhRk 8 excavation units, including those from DeVos's 1972 project. I identified the location of the two provenienced stratigraphic profiles within the excavation plan (labeled Profile A and B), to provide an intersecting cross-sectioned view of the depression feature.

For this study, I sampled 15, 2 m by 1 m units adjoining Profiles A and B. Assemblages of lithic artifacts from these units were completely re-analyzed. I developed individual, reconstructed profiles for each of these sampled units. Such reconstruction was permitted from data contained in the excavation unit level notes. Individual profile reconstructions were linked together to create replicas matching LeClair's Profiles A and B. As a means of comparing consistency (that is, reliability), I overlaid the original and reconstructed versions of the profiles. What I determined to be *reliable* profiles were then compared to the recorded natural stratigraphy of the site vicinity and used for analysis of the structural remains, site taphonomy and occupational history. In addition, I developed artifact vertical frequency distribution profiles for the sampled units which could be overlain on the stratigraphic profiles as part of this analysis.

In addition to the above, four 2 m by 1 m excavation units and one 1 m x 1 m unit, not along Profiles A and B, were selected due to their locations beyond the structure boundary indicated by LeClair. I reconstructed profiles along the center line of each of these units (long axis for the 2 m by 1 m units; N-S for the 1 m by 1 m unit). Artifact assemblages and their vertical artifact frequencies were also re-analyzed from each unit. This strategy allowed for analysis of stratigraphy and vertical artifact frequencies between locations inside and outside of the structure.

Two additional 2 m by 1 m units, also not associated with Profiles A and B, were sampled from portions of the structure LeClair indicated as comprising the bench. Again, I

reconstructed these unit profiles along their center line (long axis) and re-analyzed their artifact assemblages and vertical artifact frequencies. This sampling strategy allowed for assessment of the bench feature, as a distinct structural element.

For the purposes of this study, I classified lithic artifacts broadly as either tools or debitage. Again, specific artifact definitions and a complete classification outline are presented in Appendix I. Tool sub-classifications are not applicable in this chapter.

I sub-classified debitage by variables derived from Ahler's Mass Analysis method (Ahler 1989) and Sullivan and Rozen's Flake Completeness method as modified by Prentiss (Sullivan and Rozen 1985, Prentiss and Romanski 1989). Debitage was separated by size using 1", 1/2" and 1/4" square wire-mesh screens, equivalent to Ahler's G1, G2 and G3 size gradations, respectively. Because 1/8" screening was not employed by the 1973 excavation, no representative G4 sample exists and the insignificant amount of debitage smaller than 1/4" screen mesh is neither recorded nor used in this thesis<sup>2</sup>. The absence of a G4 size grade sample negates the possibility of properly implementing Mass Analysis which requires a complete set of debitage size grades for assessment of size-relative debitage proportions, as defined by Ahler (Ahler 1989). The absence of a G4 debitage class may be compensated for by experimentally replicating a comparative sample of G1-G3 size classes, thus developing relative proportions of these three size classes. Unfortunately, comparative relative proportions of G1, G2 and G3 debitage (as a specific set) are currently unavailable and replication of this debitage set is beyond the scope of this study. Despite lacking the 1/8" sample, the Maurer data are available otherwise for pursuit of Mass Analysis by interested archaeologists. I compared the cumulative relative proportions of G1, G2 and G3 debitage vertically across the sampled units adjoining Profiles A and B. Thus, for this study, size sorting allowed the analysis of possible natural sorting factors at the site.

As with the profiles, I used excavation unit level descriptions and plans to reconstruct

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<sup>2</sup> Insufficient bulk sediment samples were collected to allow for fine-screening of a representative sample of G4 debitage.

plan drawings of specific areas at specific depths. Again, the reconstructed plans represent comparative data against which I could evaluate the reliability of LeClair's original plan drawings. I used replicable plan elements, as reliable data, for evaluating the horizontal extent of the structure and proposed structural elements not identified in the profiles.

In addition to profiles, plans, and artifact frequencies, photographs represent an additional source of comparative data. Photographic evidence for a number of structural elements is available. With the exception of subject selection, focusing, etc., photographs are free from the effects of human random error. Due to their comparable objectivity, photos are considered reliable, though contextually dependent, sources of data.

### **3.7 Natural Profile of the Site Vicinity**

The natural profile of the Maurer site locality provided a context within which I assessed DhRk 8 Profiles A and B. Table 1 provides the Maurer site locality soil horizon profile adapted from an Agassiz area soil survey description (Luttmerding and Sprout 1967:65). According to this soil survey (*ibid.*), upland, Ryder series orthic acid brown wooded soil predominates in the vicinity of Hopyard Mountain, including the location of DhRk 8. Parent material for this soil series is "silty aeolian deposits over glacial till or bedrock... Generally the depth of the aeolian overlay is three or more feet" (*ibid.*). This series is comprised of three major soil horizons (A, B and C) with six subdivisions (Ah, Bfl, Bf2, BC, Cgjl, Cgj2, underlying bedrock).

Horizon transitions are generally gradual or diffuse, with abrupt boundaries existing only between the Ah and Bfl horizons, and the Cgj2 horizon and bedrock. Ryder series soils are slightly acid with noted pH values ranging from 6.0 at Ah to 6.7 at Cgj2. Local variations of this profile are expected to exist.

Table 1. Maurer site vicinity soil horizon profile		
Depth Below Surface (cm)	Soil Horizon	Description
0-5	Ah	very dark grayish brown to dark brown silt loam
5-18	Bf1	dark reddish brown silt loam
18-43	Bf2	reddish brown to dark brown or yellow brown silt loam
43-56	BC	dark brown or light yellowish brown loam
56-127	Cgj1	dark grayish brown to dark brown loam
127-204	Cgj2	dark brown to brown loam or very fine sandy loam, overlying bedrock

### 3.8 Profile Interpretation - Cultural Stratigraphy

Original profiles from the 1973 excavation are presented in Figures 6a and 8a. Profile A (Figure 6a) is oriented roughly E-W. Profile B (Figure 8a) is oriented roughly N-S. The two profiles intersect at 35.2 m South (mS) and 18 m West (mW). These profiles generally match the natural stratigraphy<sup>3</sup> of the area as described above, with the exception that the C horizon appears to be somewhat grayer than expected. While there is a good deal of accordance between the cultural and natural stratigraphic profiles, one difference is obvious. A stepped, narrow layer of orange and black mottled sediment is shown at the base of both Profiles A and B, at what would naturally be the depth of the C horizon grayish brown sediment. While this black layer is continuous across Profile B, it is seemingly of limited

<sup>3</sup> These 'strata' are largely pedogenic soil horizons which developed, in situ, in previously existing sediments. No intrinsic chronological or associational relevance is provided to the cultural remains found within them.

Table 2. Profiles A and B Legend.

Colour Codes	Sediment Description		
BG	Brownish Gray		Humus
C or 	Charcoal		Stump
CB or 	Mottled Charcoal & Black Staining		Post
CO or 	Mottled Charcoal Flakes & Orange		Fire-Cracked Rock
DB	Dark Brown (Silt)		Pebble
DO	Dark Orange (Silt)		Slump
DOT	Dark Orange Tan (Silt)		Unexcavated
DYB	Dark Yellowish Brown (Silt)		
G	Gray (Sandy Silt)		
LB	Light Brown (Sandy Silt)		
LGB	Light Gray Brown (Sandy Silt)		
LYB	Light Yellowish Brown (Sandy Silt)		
O	Orange (Silt)		
OLB	Olive Brown (Silt)		
OT	Orange Tan (Silt)		
YB	Yellowish Brown (Sandy Silt)		
YBG	Yellowish Brown Gray (Silt)		
YG	Yellowish Gray (Silt)		
VDGB	Very Dark Grayish Brown (Sandy Silt)		



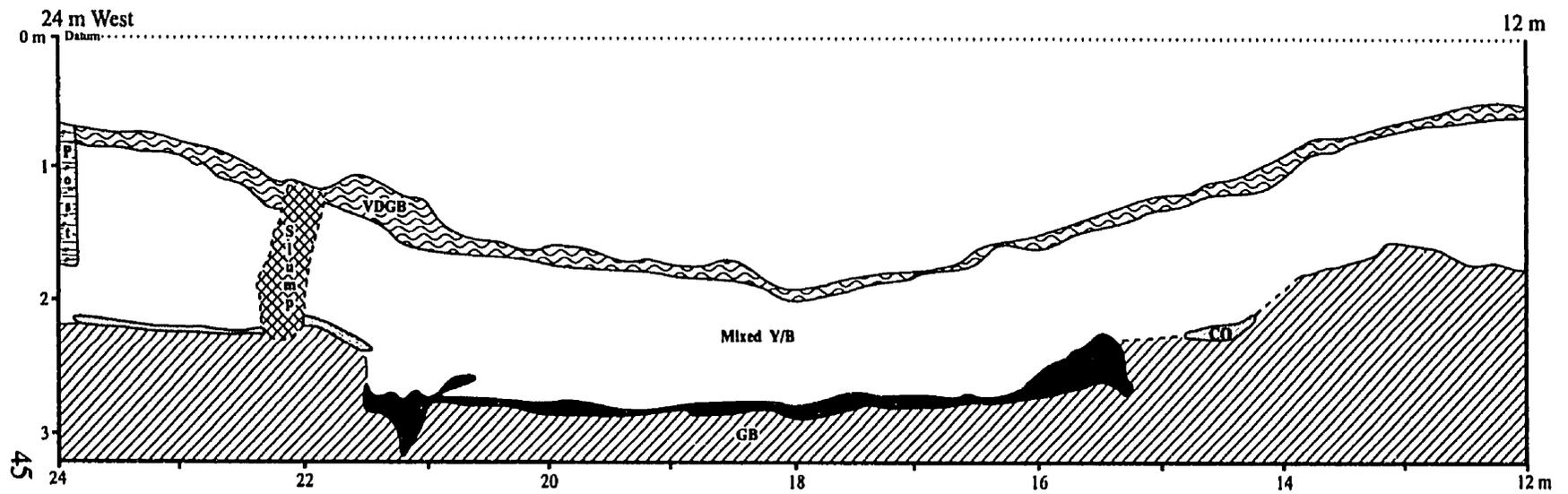


Figure 7a. Original Profile A with Consolidated B Horizon.

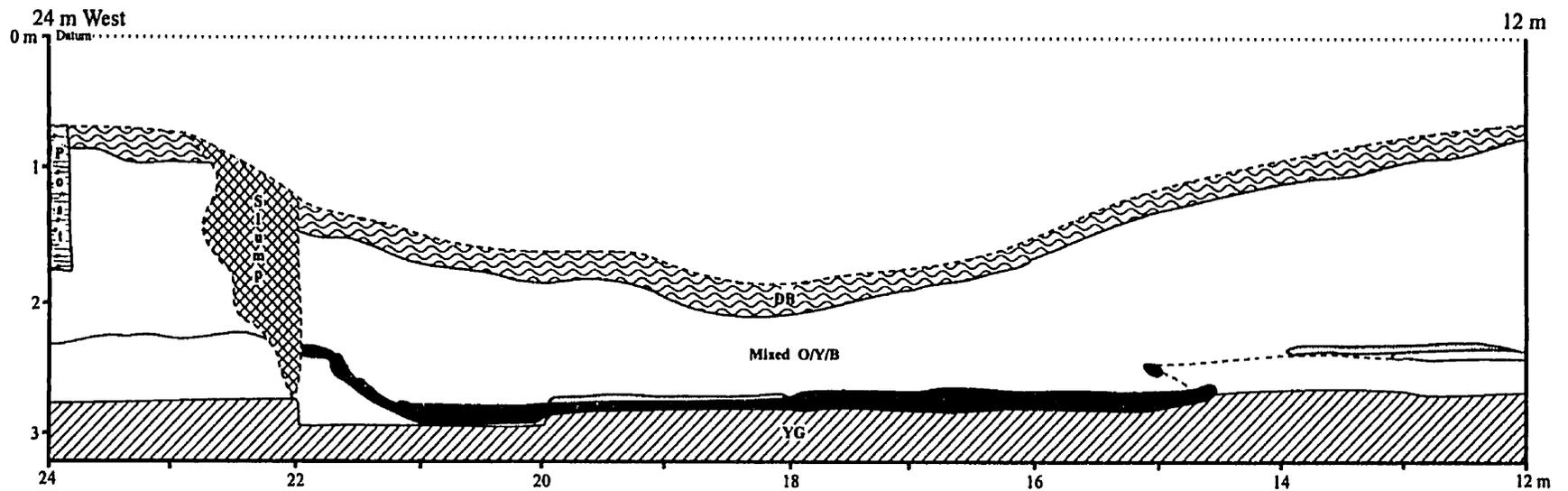


Figure 7b. Reconstructed Profile A with Consolidated B Horizon.

horizontal extent in Profile A. Three associated pit features, one in Profile A and two in Profile B, appear to intrude into the C horizon substrate below the black layer. This black layer and associated pits stand out as anomalies in the natural soil horizon profile. Not only is the natural soil profile interrupted at this level, but the transition between sediments is unexpectedly abrupt. The stratigraphic anomalies, as well as lithic artifacts located throughout the sediments in these profiles, provide definite evidence of cultural activity. Additionally, the stratigraphic anomalies match elements of LeClair's structural description - an excavated, level-floored structure with a surrounding raised bench, a hearth and post-hole features. Initially, evidence from these profiles appears to substantiate portions of LeClair's conclusion that this feature represents a structure.

### **3.9 Reliability - Profile A**

Assessment of the reliability of LeClair's Profiles A and B is required before any sound stratigraphic interpretations may be made. LeClair's Profiles A and B were compared to the versions reconstructed for this study. The original and reconstructed versions of Profile A are presented in Figure 6. A number of similarities and differences between these two profiles are immediately noticeable. *Differences*, comprised of irreproducible elements of the original profile (that is, absent from the reconstructed profile), are summarized as follows:

- the majority of the B horizon composition (that is, the majority of the orange-yellow brown ranging sediments between the humus and the black layer)
- a charcoal and ash lens indicating the raised bench at roughly 225 centimeters Below Datum (cmBD) between 24 m - 21.5 mW
- a pit feature at roughly 275-310 cmBD, 21 mW

- a post feature at 24 mW

*Similarities*, comprised of reproducible elements of the original profile (that is, present in both profiles), are summarized as follows:

- the A horizon (that is, the humus layer noted as DB and VDGB)
- the general vertical extent of the B horizon
- a slumped portion of the profile at 22 mW
- a black layer at the base of the profile, roughly between 22 mW and 14 mW, 275 cmBD

Additionally, the reconstructed profile provides information for areas not shown in LeClair's original profile – particularly at the horizontal extremes of the black layer, below 225 cmBD.

In order to maximize agreement between the two versions of Profile A, the B horizon in each profile was consolidated to form a single zone of undifferentiated sediments, as depicted in Figure 7. The degree of agreement between the two profiles is increased at the expense of stratigraphic resolution. However, considering the apparent lack of 'real' stratigraphy in the B horizon, and apparent degree of unreliability, its homogenization is not considered to significantly affect the amount of usable data.

With the exception of bench and floor pit, the profiles in Figure 7 represent data with maximum reliability. The post feature is added in Figure 7b as it is documented in photographs of the site. Importantly, the black layer is, with only slight variation, one of the reproducible elements of Profile A. This layer represents consistent, reliable data and may be further investigated as such. Because it was adapted from referenced sources of information, using known and reproducible methods, the reconstruction is considered the more reliable of these two profiles. Further reference to Profile A will be in regard to the reconstructed profile in Figure 7b.

### 3.10 Reliability - Profile B

Repeating the above procedure, original and reconstructed versions of Profile B are presented in Figure 8. For unknown reasons, LeClair's version of Profile B is considerably less detailed than his version of Profile A. A number of similarities and differences are again immediately noticeable between the original and reconstructed versions of Profile B.

*Differences*, comprised of irreproducible elements of the original profile (that is, absent from the reconstructed profile), are summarized as follows:

- the composition of Horizon B, within an area lying roughly between the humus and the black layer, from the rock at 36.5 mS to 30.2 mS
- a stump at 32.2 mS
- thick black bench lenses at either end of the central black layer (40.2 mS-41.2 mS and 30.2 mS-31.2 mS, at 230-240 cmBD)
- a thin black concave lens (39.5 mS-40.2 mS, at 250 cmBD) immediately adjacent to a small pit feature

*Similarities*, comprised of reproducible elements of the original profile (that is, present in both profiles), are summarized as follows:

- the A horizon (humus)
- a rock in Unit 33
- the composition of the B horizon south of the rock (36.5 mS - 41.2 mS)
- a pit feature at roughly 40.2 mS, 260-275 cmBD
- a second pit feature, at roughly 38.4 mS, 275-305 cmBD
- a black layer at the base of the profile, roughly between 31.2 mS-39.2 mS, at 275 cmBD

As in the Profile A, the reconstructed Profile B contains some information not included in the original, such as in Unit 27 below 230 cm BD.



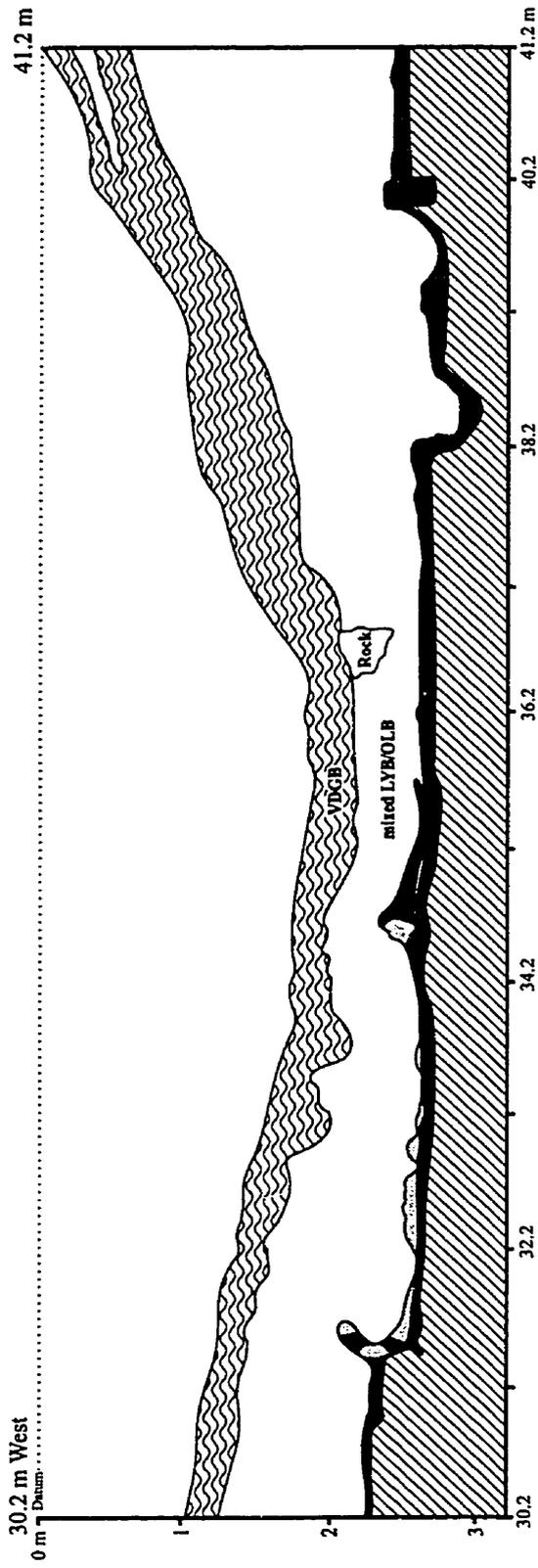


Figure 9a. Original Profile B with Consolidated B Horizon.

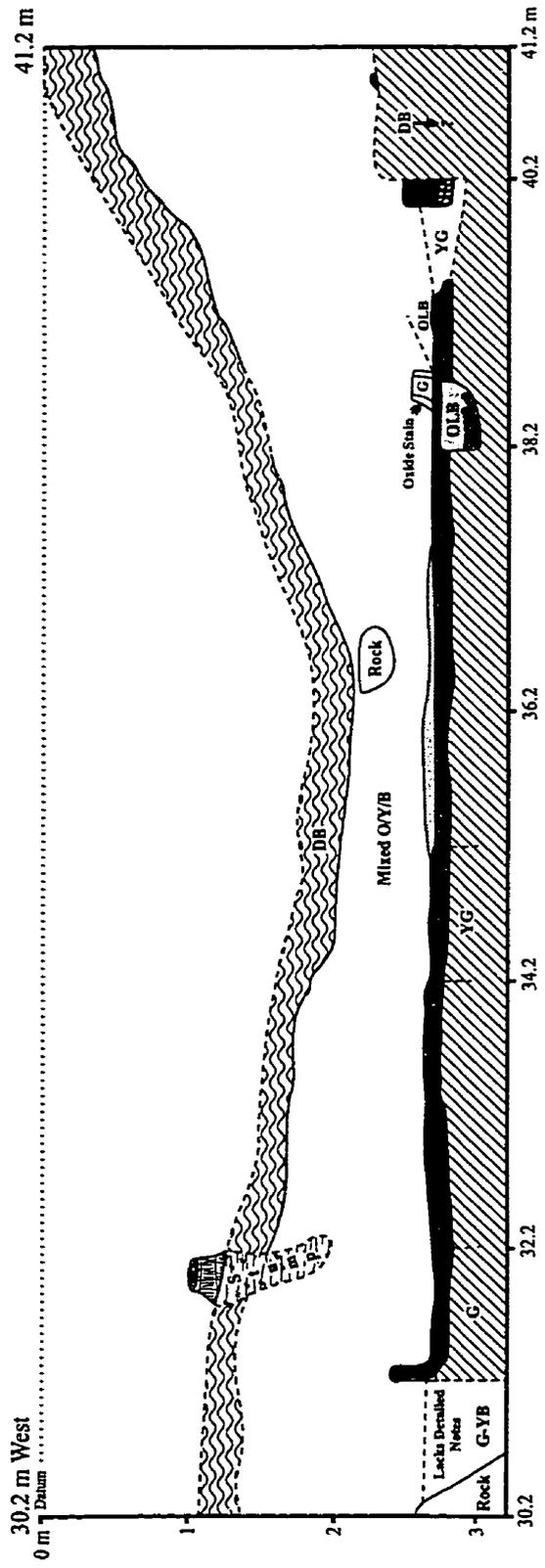


Figure 9b. Reconstructed Profile B with Consolidated B Horizon.

As above, portions of the original and reconstructed versions of Profile B were consolidated to maximize the level of agreement between the two. Figure 9 presents the tailored versions of Profile B, excluding all but reproducible profile elements. Detail is lost as a result of identifying and extracting unreliable, error-prone data and maintaining data which are reproducible and reliable. Further reference to Profile B will be solely to the reconstructed profile depicted in Figure 9b.

Two interesting results arise from the comparison of Profiles A and B. First, the black layer is identifiable in both cases -- indicating reliability. Second, the organic layer expected of the bench feature cannot be identified in either case -- calling this architectural feature into question. This analysis provided useful primary information from which to expand this investigation.

### **3.11 Profile Interpretation - Reliable Cultural Stratigraphy**

Profiles A and B suggest the presence of four '*strata*<sup>4</sup>.' Bedrock, incontrovertibly establishing the base of the site, was exposed at the northern end of Profile B. Overlaying bedrock is the basal stratum (C horizon) comprised of grayish to yellowish brown sandy sediments. Capping a portion of the basal stratum is a 10-15 cm thick layer of compact, black to orange and black mottled sediment with distinct horizontal limits (ranging between 7-8 m in length) and a consistent depth (ranging between 260-280 cmBD). At least one pit feature is directly associated and a second pit feature indirectly associated with the black stratum. A narrow, vertically oriented, 5-10 cm wide, black band defines the lateral extremes of the black layer, separating it from the surrounding grayish sediment. The black band is

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<sup>4</sup> Again, I am aware that, with the exception of the cultural 'floor' layer, the so-called 'strata' are actually soil horizons. Given the combination of both the cultural stratum and the soil horizons in these profiles, the descriptive term 'strata' is employed for the sake of continuity and ease of communication.

particularly apparent in Profile A and the north end of Profile B, where it extends 30-40 cm upward from the black stratum to the approximate beginning of the grayish stratum. Level notes describe the dark band as composed of 'burned organic matter.' While this linear feature may be composed of organic matter, some doubt exists as to its carbonized nature. Long-term pedogenic processes as well as rapid combustion can result in the carbonization of organic material, such as wood. This issue will be discussed later in this chapter. Directly overlying both the gray and black layers is a roughly 50-150 cm thick accumulation of loose to moderately compacted orange, yellow and brown silts (the contemporary B horizon), with sparse charcoal and ash lenses. This layer is concave in profile, as though overlying an existing depression. Directly overlying the B horizon is the humus (A horizon), a moderate to loosely compacted dark brown, silty loam varying between 5-30 cm thick. This basic stratigraphy is consistent between Profiles A and B.

For organizational purposes, the above described sequence of sediments was divided into six discrete *strata*. *Stratum 1*, the A horizon (humus), was excavated as a discrete horizon. *Stratum 2*, the B horizon, is divided into three pedologically based sub-divisions -- 2.1, 2.2 and 2.3. *Stratum 2.1* represents the Bf1 horizon - a dark reddish brown sediment. *Stratum 2.2* represents mixed reddish brown, dark brown and yellow brown sediments. *Stratum 2.3* is a grayish yellow to grayish brown sediment bearing cultural material, and represents transitional B and C horizons. Within *Stratum 2*, artifacts were given specific 2.1 or 2.3 provenience whenever possible. Artifacts lacking a definite provenience within *Stratum 2* were otherwise classified as general *Stratum 2.2*. *Stratum 3*, in reality a portion of the B horizon, was defined as an arbitrary level comprising the approximately 10 cm thick deposit of yellowish brown to brown sediment capping the black layer. *Stratum 4* represents the top 10 cm (or portion thereof) of the organic, blackish and orange and black mottled sediment. The orange and black mottled sediment appears mainly on the surface margins of *Stratum 4*. *Stratum 5* represents the subsequent 10 cm (or portion thereof) of the blackish

sediment. Importantly, the black sediment comprising Strata 4 and 5, the only *layer* in this profile, was isolated and excavated separately from the surrounding horizon sediments. This layer was sub-divided into arbitrary 10 cm levels where its thickness allowed. This excavation method allowed cultural material within the black sediment to be consistently and accurately associated with either Stratum 4 or 5. *Stratum 6* is the basal C horizon – a sterile, grayish sediment.

A number of initial interpretations can be based on this stratigraphic analysis. *First*, Strata 4 and 5 – the black layer – has the characteristics of an occupation surface or floor:

- it is level in cross-section
- it is distinctly confined both vertically (10-15 cm thick) and horizontally (6-8 m in profile) by sediment of a different nature (color, texture, composition, compaction)
- its horizontal limits are outlined by a dark, linear band of either carbonized or decayed organic material
- at least one feature -- a fire-cracked and thermally altered rock-filled pit indicative of a hearth -- is associated with its surface

*Second*, these strata are inset, as though excavated, into Stratum 6 – the grayish sandy sub-strate. The linear black band which outlines Stratum 4 establishes the association between the surface of Stratum 4 and the approximate surface of the surrounding gray sediments, 30-40 cm higher. Some inward slumping of the stepped outline appears to have occurred at the east edge of Stratum 4 as is seen in Profile A, Unit 20.

*Third*, the black layer (Strata 4 and 5) is capped and further defined by a patchy lens of oxidized, orange-red sediment and charcoal. The composition of this lens resembles the effects of burning of this surface, but is also typical of ferro-humic podzols which predominate in the site vicinity. The dark band surrounding this layer appears to represent wood which either burned or decayed and blackened through natural pedogenic processes.

There is insufficient data from which to determine conclusively the formation process(es) -- either pedogenic or combustive -- of the oxidation and blackening of the lens capping Stratum 4 and the dark-stained band.

*Fourth*, the black layer is overlain by sediments which lack other identifiable unconformities. Analyzing vertical artifact distributions within this stratigraphic sequence adds insight to these four initial interpretations.

### **3.12 Artifact Distribution - Cumulative**

In this section, I present the results of the analyses of cumulative frequencies of artifacts from excavation units associated with Profiles A and B associated. Unit specific analyses will be presented in Section 4.13. Artifact frequencies in the cumulative analysis are presented by separate tool and debitage classes. Tool and debitage frequencies will be presented both by layer and depth below datum. Depth below datum<sup>5</sup>, though an arbitrary measurement, is initially used as a means of analyzing the correlation of artifact frequencies to potential floor or occupation layers, focusing primarily on Strata 4 and 5.

Distributions of debitage and tool frequencies by layer are presented in Figures 10 and 11, respectively. Analysis shows a pronounced bi-modal distribution pattern which is identical in both graphs. Extremely distinct peaks in artifact frequencies are associated with Stratum 2.2 and Stratum 4. Debitage frequencies (per stratum) peak in Stratum 2.2 (n=1225) and Stratum 4 (n=740), respectively. In contrast, Stratum 3 -- with the next highest frequency -- contains only 224 pieces of debitage. The marked difference between peak (Strata 2.2 and 4) and non-peak (Strata 1, 2.1, 2.3, 3, 5 and 6) frequencies is readily apparent. Likewise, tool frequencies (per stratum) also peak in Stratum 2.2 (n=217) and Stratum 4

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<sup>5</sup> I acknowledged that artifact frequency analysis by depth below datum is ineffective at identifying patterns on uneven, particularly concave, surfaces. This topic will be discussed later in this section.

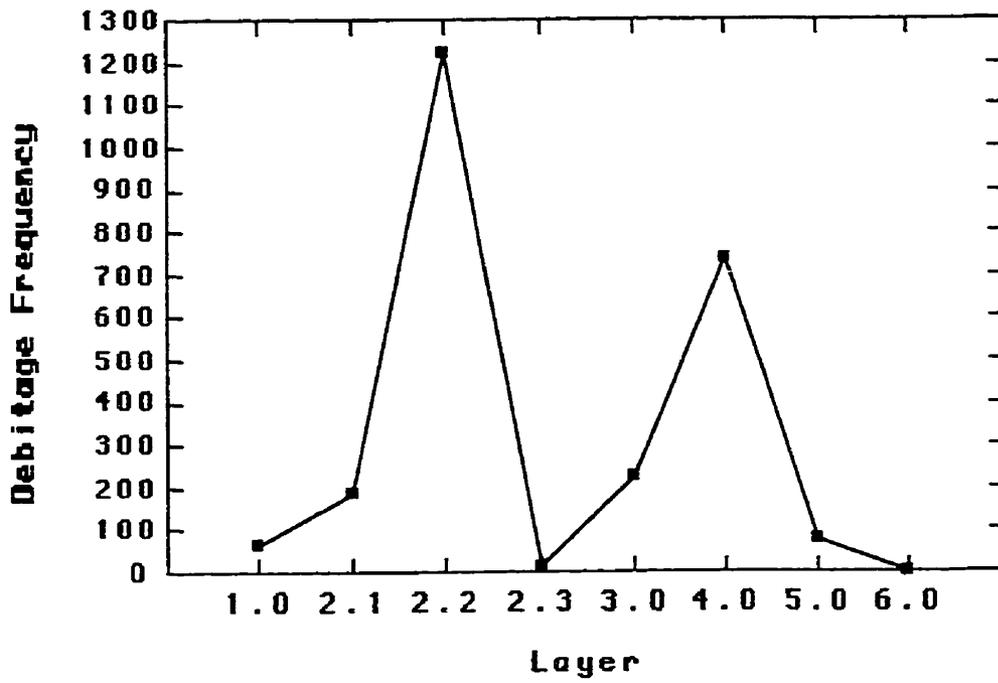


Figure 10. Frequency ofdebitage from profile units -- by layer

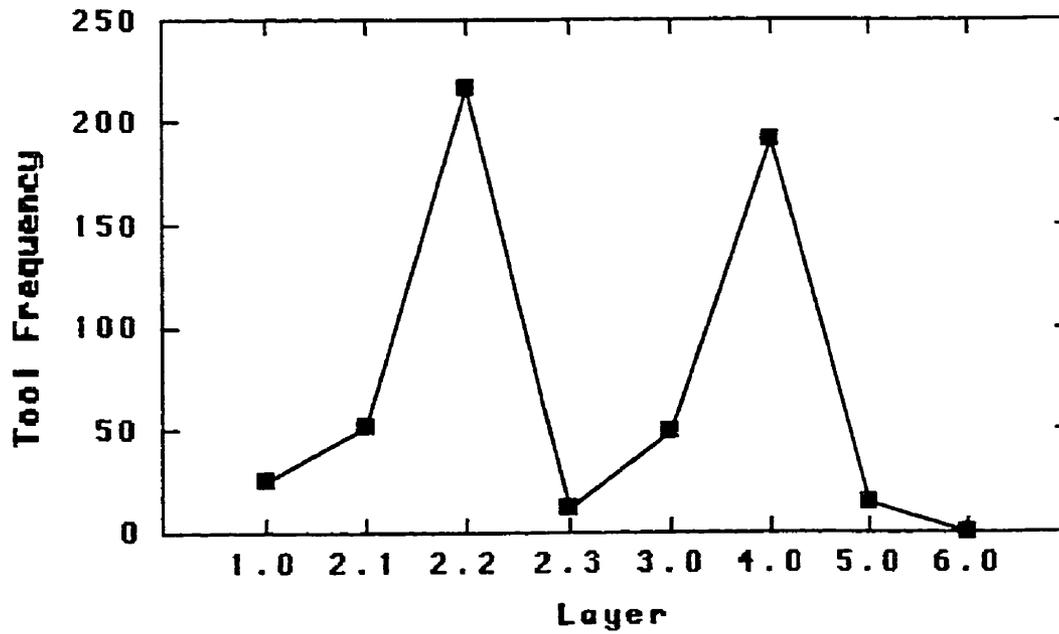


Figure 11. Frequency of tools from profile units -- by layer

Figure 12a. Frequency of debitage from profile units – by Depth Below Datum (cm).

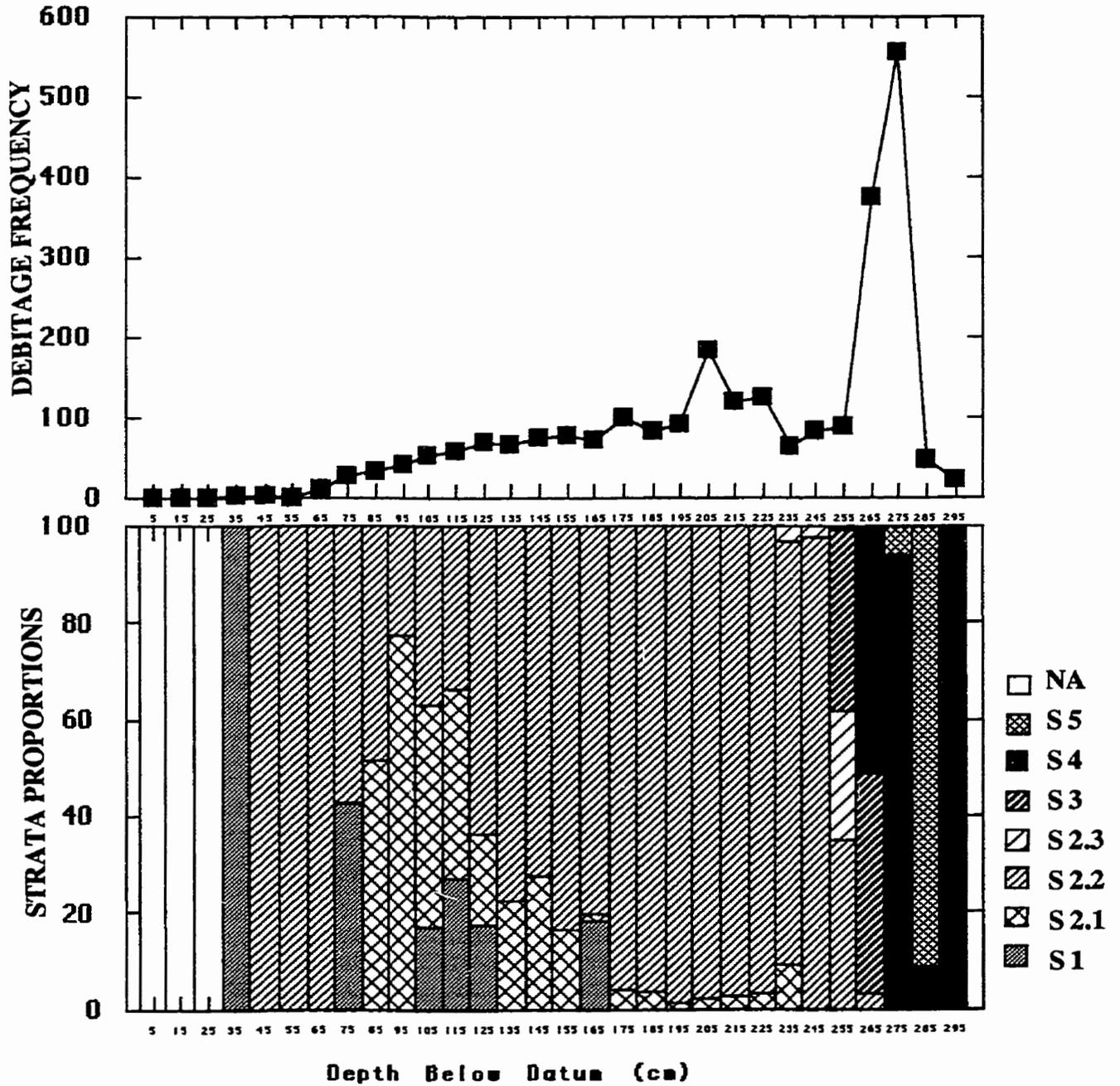


Figure 12b. Strata proportions by Depth Below Datum (cm) – as extrapolated from profile unit debitage frequencies.

Figure 13a. Frequency of tools from profile units -- by Depth Below Datum (cm).

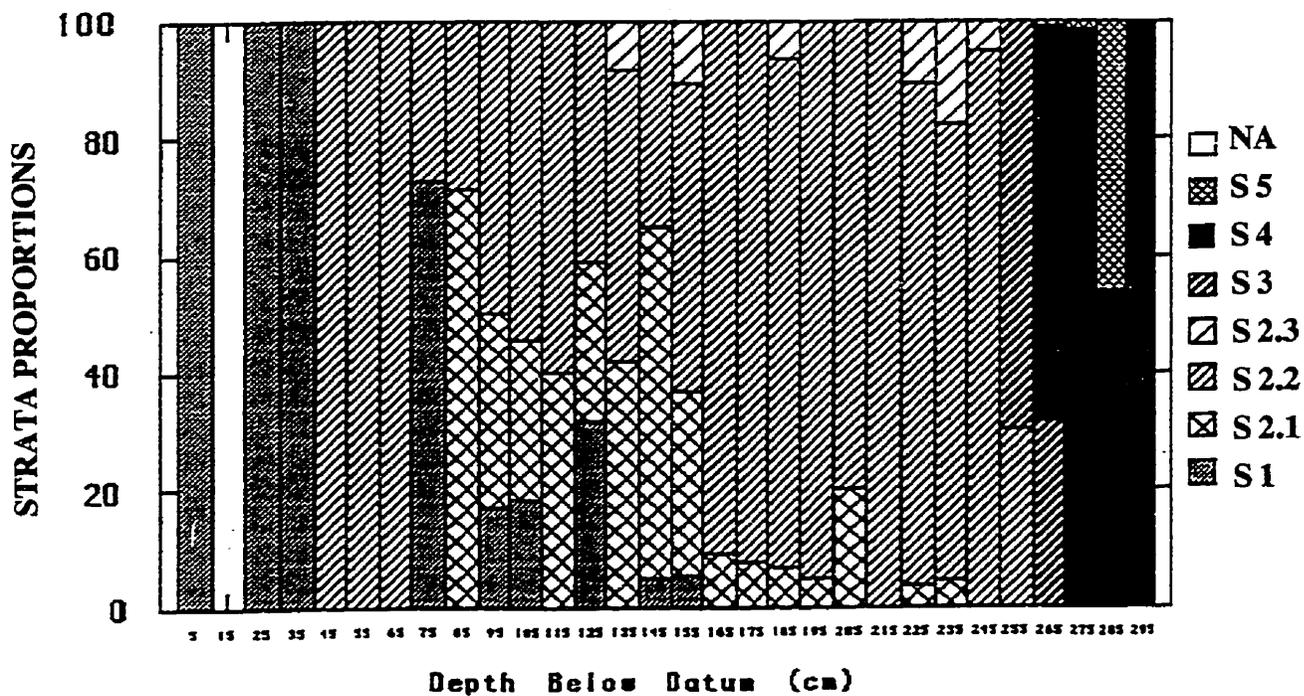
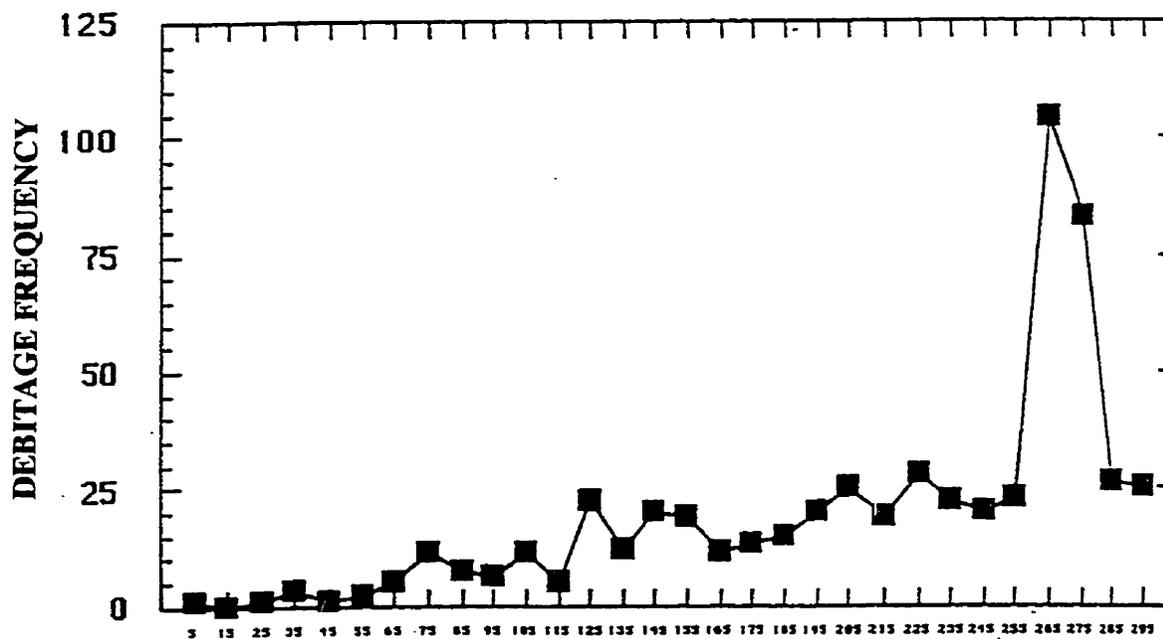


Figure 13b. Strata proportions by Depth Below Datum (cm) -- as extrapolated from profile unit tool frequencies.

(n=191). A marked difference again separates tool peak (Strata 2.2 and 4) and non peak (Strata 1, 2.1, 2.3, 3, 5 and 6) frequencies, with the next highest tool frequency – in Stratum 2.1 – being only 52.

Superficial analysis of the bimodal pattern in these graphs suggests two major cultural occupations of the site, associated with Stratum 2.2 and Stratum 4 – the consolidated B horizon and the primary portion of the black layer, respectively. This pattern raises questions about vertical distributions of both artifacts and strata. Over what vertical range are the peaks associated with Strata 2.2 and 4 spread? Are the artifacts within these layers vertically clustered? Are these peaks the result of genuine vertical artifact clustering or simply differential numbers of excavation levels per layer?

Graphs of cumulative artifact frequencies and relative proportions of associated layers by depth below datum (in centimeters) are presented in Figures 12 a & b (debitage frequency/layer proportions) and Figures 13 a & b (tool frequency/layer proportions). Artifact frequencies are plotted at 10 cm intervals for central proveniences starting at 5 cmBD. Patterns similar to those identified above are apparent in these two sets of graphs.

Considering the graphs of tool and debitage frequencies by cmBD (Figures 12a and 13a), the previously identified bi-modal pattern is smoothed out to form a single prominent peak, with a weaker secondary peak noticeable in debitage distribution in Figure 12a. Between 265-275 cmBD, tool frequency peaks at 104 compared to the next highest value of 28, and debitage frequency peaks at 553. The next highest debitage frequency is 183 at 205 cmBD - forming a weak second peak. Aside from the individual pronounced peaks in each of these graphs, artifact frequencies are generally low with regular distributions.

Figures 12b and 13b present the 'relative proportions' of strata by depth below datum (in centimeters). These figures are derived from the cumulative percentages of artifacts within each stratum, per 10 cm level below datum. When paired with Figures 12a and 13a, the association between the vertical range of both artifacts and strata can be observed. As

before, strata are provided central depth proveniences beginning at 5 cmBD. Figures 12b and 13b show very similar vertical distribution patterns per layer. Of interest are the distributions of Stratum 2.2 and Stratum 4, previously representing artifact frequency peaks. Significantly, Stratum 2.2 is vertically dispersed over a range of approximately 2.1 m between 145-255 cmBD, while the comparable vertical range of Stratum 4 is generally limited to the 20 cm between 260 and 280 cmBD. The additional range of Stratum 4 between 280-300 cmBD is associated with the rock-filled pit feature which intrudes into the sub-strate below 270 cmBD. Below 280 cmBD, artifact frequencies are insignificant. The pattern of primary interest is the peak in vertical artifact frequency associated with Stratum 4, and quickly diminishing distribution thereafter.

In relation to questions posed above, the data presented in Figures 12 and 13 indicate vertical clustering of artifacts between depths of 260 cmBD and 280 cmBD. Stratum 4 is predominantly concentrated within this vertical range. This range is consistent with the depth of the Stratum 4 in Profiles A and B. Stratum 2.2, alternately, is dispersed over a vertical range of more than 200 cm. A weak debitage frequency peak remains identifiable within Stratum 2.2. Thus, the only pronounced artifact cluster is in association with Stratum 4.

While a strong association of cultural material with Stratum 4 is indicated, the possibility of a second, overlying, cultural occupation cannot yet be dismissed. Graphs of cumulative vertical artifact frequencies by depth below an arbitrary datum only reflect artifact concentrations on level surfaces. Curvilinear artifact clusters associated with a concave ground surface or stratum, as at the Maurer site, would not be readily apparent in such graphs. Even so, weak indications of a second debitage distribution peak are noticeable. The effect of the curved surface is noticeable in the 'floating' 5 cmBD level in Figure 12b. This illusion is simply the result of the vertical rise between upper levels of units in markedly sloped sections of the profile. To compensate for this analytic drawback and investigate the possibility of a second cultural occupation, vertical artifact distributions are presented for

each of the sampled units along Profiles A and B.

### **3.13 Artifact Distribution - Unit Specific**

Figures 14 a & b (debitage) and Figures 15 a & b (tools) present artifact frequency profiles for the sampled units along Profiles A and B. Artifact frequency profiles were plotted to scale and overlain on stratigraphic Profiles A and B. It should be noted that sub-lettered figures correlate with profile designation, that is, Figures 14'a' and 15'a' correlate with Profile 'A,' while Figures 14'b' and 15'b' correlate with Profile 'B'. To permit horizontal continuity between graphs, artifact frequencies are plotted by depth below datum (in centimeters).

Four observations characterize the relationship between artifact and stratigraphic profiles. These are best exemplified by the debitage profiles (Figures 14a & b) and are summarized as follows:

- two distinct modes -- manifest as either bimodes or individual upper or lower modes -- are generally apparent in the artifact distribution profiles
- lower modes represent pronounced frequency peaks consistently associated with and limited to Strata 4 and 5
- comparatively less pronounced upper modes exist consistently within a limited vertical range between approximately 50-70 cmBS, creating a concave, crescent shaped band across both profiles
- upper mode frequencies increase west to east and are generally consistent north-south
- the transition to the lower, Strata 4 and 5 associated mode is typically abrupt -- defining the separation between Strata 3 and 4

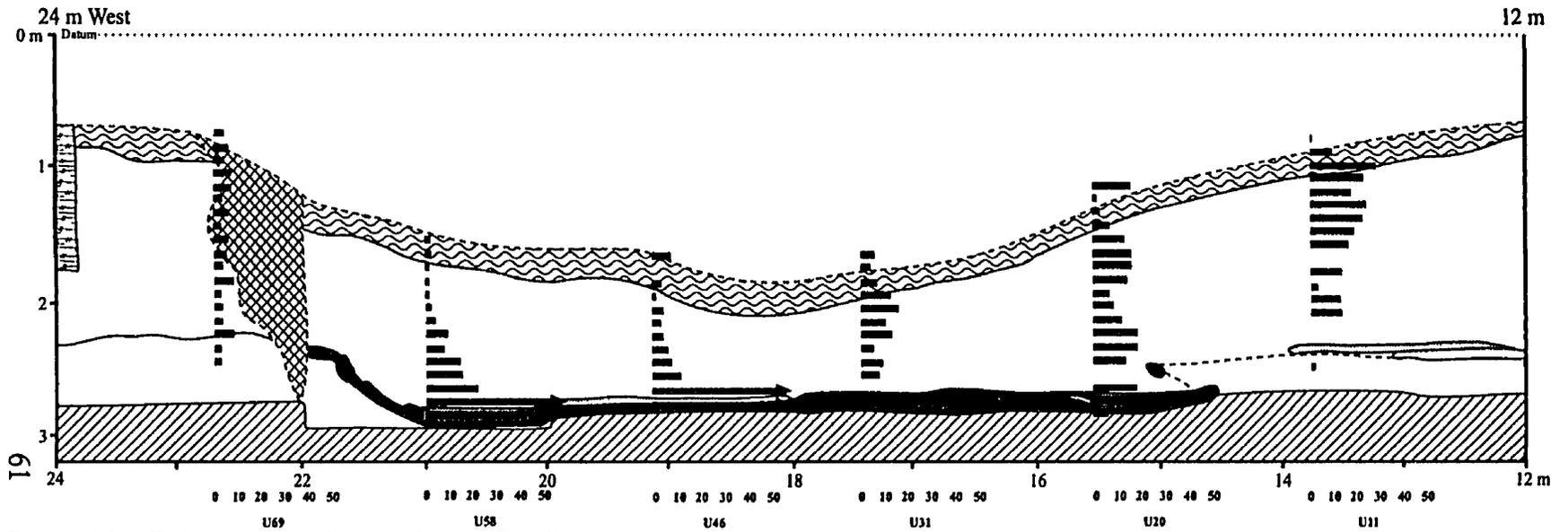


Figure 14a. Debitage Distribution Across Profile A.

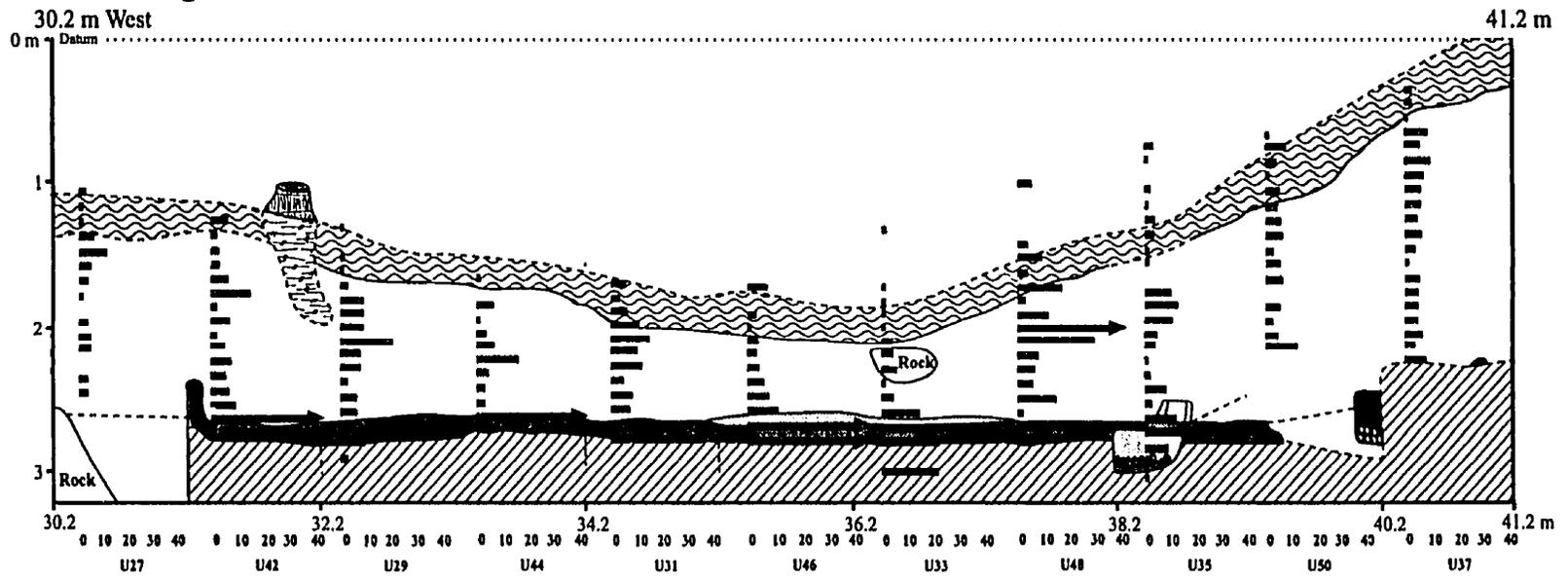


Figure 14b. Debitage Distribution Across Profile B.



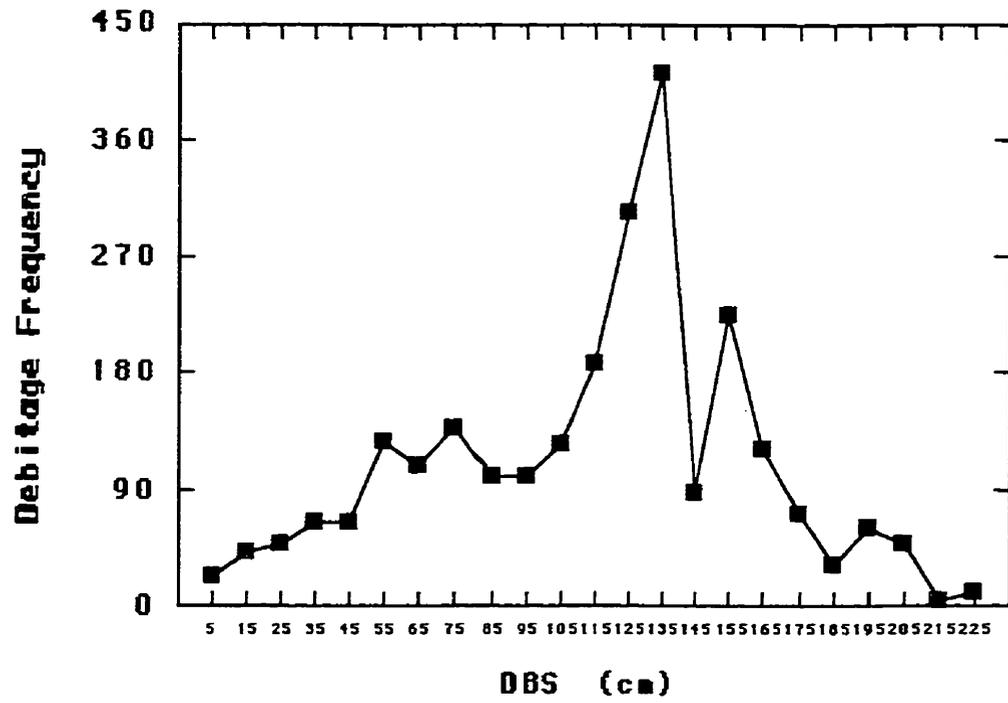


Figure 16. Profile unit debitage frequency — by Depth Below Surface (cm).

These four observations comprise basic patterns expected of a continuous, crescent shaped band of artifacts indirectly overlying a level, horizontally limited band of artifacts. Reproducing the bimodal pattern first described in Figure 10, these discrete bands suggest that two major cultural occupations are present within the area of the purported structural feature. The lower cultural band is positively associated with Strata 4 and 5 and contains high frequencies of both tools and debitage – strongly suggesting a true floor or occupation surface assemblage. The upper cultural band is associated with a concave surface and contains far fewer artifacts than its lower counterpart – suggesting debris from a younger, less intensive occupation. The artifact cluster on that higher concave surface should also be identifiable through analysis of artifacts by depth below surface. Figure 16 represents cumulative debitage frequencies by depth below surface (cmBS). A distinct debitage cluster is identifiable between 55-75 cmBS, matching the profile pattern. These data support the presence of a second cultural component in the area of the Maurer house feature. The vertical distance separating these two assemblages, and the abrupt artifact frequency transition, is suggestive of unmixed cultural components. However, while the majority of this evidence indicates discrete cultural components, two anomalous observations must be addressed.

Contrary to the bi-modal pattern with the abrupt transition, described above, the debitage profiles of Units 58 and 20 (Figure 14a) respectively depict a gradual downward transition to the 'lower' mode distribution, and an overall tri-modal distribution pattern. Interestingly, these anomalies occur at the lateral limits of the black layer. The gradually increasing artifact debitage frequency approaching Stratum 4, displayed in Unit 58, represents slumpage of debris from the adjoining ground surface -- approximately 40 cm higher. A similar explanation may be applied to the tri-modal pattern in Unit 20. The peak of the third mode is coincident with the level of the proposed bench, and tapers off downward toward Stratum 4. This pattern is, again, indicative of the accumulation of slumped debris at

the edge of the recessed occupation surface. Substantiating this explanation are:

- the apparent inward slumping of the dark stained band (possible wall remains) associated with the edge of the black layer (occupation surface or floor)
- the vague extension of the lens capping the mixed yellow-brown-gray sediments (Stratum 2.3) -- into which the floor appears to have been dug -- towards the inwardly sloping dark stained band (see Figures 14 and 15)

While sidewall slumping is generally expected to occur during post-abandonment erosion of structures with recessed floors, artifact frequencies and stratigraphic data coincident with Profile A indicate limited effects of this sort in the present case. While slightly higher debitage frequencies typify Stratum 3 deposits in Units 58 and 20, upper and lower assemblage mixing due to slumping is considered to be insignificant. Strata 3 (10 cm above occupation surface/floor) and 4 (occupation surface/floor) remain separable by:

- an abrupt stratigraphic transition
- significant differences in debitage frequencies, as evident in Unit 58
- significant differences in tool frequencies, as evident in both Units 58 and 20

Thus, contamination of the occupation surface/floor (Strata 4 and 5) with cultural material from the slumped ground surface does not appear to be a real detriment to the integrity of the Strata 4 and 5 assemblage. Additionally, no stratigraphic evidence of significant side-wall slumping is apparent in Profile B.

### **3.14 Sub-Occupation Surface/Floor Component**

Given identifiable occupation surface/floor and overlying cultural components, the possibility of an earlier sub-floor cultural component must also be investigated. Whether or not the recessed occupation surface/floor intrudes into material from an earlier cultural

occupation is an important consideration with potential taphonomic implications. Constraints on this aspect of the investigation are imposed by the variable depths of the excavated units and the fact that a definite sterile, natural basal deposit was not located by deep test excavations throughout the *entirety* of the feature area. Considering units along Profiles A and B, only Unit 27 (Profile B) depicts the sediment and cultural material below the exposed floor. Excavation of all the other analyzed units along the profiles were halted at the base of Stratum 5 or before reaching Stratum 4 .

Unit 27, located at the northern edge of the occupation surface/floor, provides a profile to a depth of 320 cmBD – approximately 40 cm below the base of Stratum 5 (approximately 280 cmBD). According to the level notes for Unit 27, sediment is “yellow-brown [with] some dark brown blotches ” between 240-250 cmBD and contains only three flakes (debitage). Levels below 250 cmBD are apparently sterile. At 260 cmBD, bedrock was exposed in a portion of the unit. Between 260 cmBD and the bottom of the unit at 320 cmBD, sediments graded from yellowish brown to gray and were mottled with iron-oxide staining. Though not excavated below Strata 4 and 5, the level notes for Units 42, 29, and 31 (Profile B) indicate that excavation of Strata 4 and 5 deposits ceased at the transition to a yellowish gray and/or gray substrate lacking the charcoal and mottled orange and black coloration of the occupation surface/floor. Three additional units – Units 69, 20 and 50 (Profiles A and B) -- adjoining the occupation surface/floor layer were excavated to depths minimally equivalent to the base of Stratum 5. Culturally sterile, yellowish gray or brownish gray sandy sediment predominated in these units at depths equivalent to or slightly below the base of Stratum 5.

Units 13 and 34, not covered by the profiles (see Figure 5), were excavated to minimal depths of 300 cmBD, or at least 20 cm below Stratum 5. Unit 34, located within the horizontal limits of the floor, contained only culturally sterile, loosely compacted gray sand between 280 cmBD and the unit bottom at 300 cmBD – except for a Stratum 4 associated pit

feature. Unit 13, located adjacent to the floor but within the bench area (see Figure 5), contained only yellowish gray sediment between 235 cmBD and the unit bottom at 313 cmBD. Only three flakes (debitage) were found between 235-290 cmBD, and no archaeological material was identified below 290 cmBD. A gray lens capping the yellowish gray sediment at 235 cmBD represents the last substantial artifact-bearing facies in this unit.

The sediments into which Strata 4 and 5 intrude appear to be devoid of cultural material. The floor deposit is described as being contained within a gray sandy sediment, a portion of which directly overlays bedrock. The description of this sediment matches the natural C horizon discussed earlier. Basal cultural deposits are generally coincident with the B-C horizon transition between roughly 235-240 cmBD. The floor layer appears to be intrusive into the archaeologically sterile C horizon. While a sub-occupation surface/floor cultural component cannot positively be ruled out, there is *no evidence* in the existing data set to suggest that:

- a cultural component was present within the sediment into which Strata 4 and 5 intrude
- an earlier, underlying cultural deposit exists below Stratum 5

Thus, mixture of artifacts from previous cultural occupation(s) and the Strata 4 and 5 deposit does not appear to be a taphonomic factor affecting the Maurer feature.

### **3.15 Interpretive Summary - Profiles A and B**

Analysis of stratigraphy and artifact frequencies along Profiles A and B provides only a portion of the data required in testing the 'structural' assertion presented in this section. From the above analysis, evidence was presented that supports a number of preliminary conclusions:

- two major cultural components are present in the area of the Maurer feature
- the lower cultural component is directly associated with an anomalous (that is, unnatural) stratigraphic layer (Strata 4 and 5)
- the anomalous layer represents an occupation surface or structural floor
- the occupation surface/floor is recessed 30-40 cm below what is either a surrounding bench feature or the associated ground surface
- the black, linear band at the lateral margins of the occupation/floor surface represent the remains (either decayed or carbonized) of a wooden retaining wall which extends vertically to the surrounding bench/associated ground surface
- the fire-cracked and thermally altered rock-filled pit directly associated with Stratum 4 represents a hearth feature
- the occupation surface/floor has been oxidized – resultant from either burning or natural pedogenic processes – as indicated by sediment oxidation and charcoal mottling across its surface, and blackened organic remains at its lateral margins
- only one occupation surface/floor zone is observable in the *stratigraphic* profile

These conclusions indicate only the presence of a subterranean floor or occupation surface. Little evidence of structural elements associated with this occupation surface/floor can be identified in Profiles A and B, except a hearth and remnants of a retaining wall. While there does appear to be an exterior surface with which the occupation surface/floor is associated, it remains unclear whether this is the prehistoric ground surface or the structural bench feature reported by LeClair (1976:35). Additional data are required to clarify these ambiguities. To address such issues, the following section presents additional data from the plan diagrams of the excavated feature. For simplicity, Strata 4 and 5 – the occupation

surface/floor zone -- will be referred to as an 'occupation surface' in the following sections.

### **3.16 Plan Diagram Analysis**

Plan view depictions of the Maurer feature are available from three main sources:

- field photographs of the exposed occupation surface and surrounding bench
- plan drawings from the 1973 excavation
- plan view reconstructions produced for the present study

Detailed photographs of several features and a number of original plan drawings accompany the 1973 excavation documents. The feature plans are somewhat variable and appear to represent different stages of analysis, from preliminary to finalized versions. Post-hole patterning is particularly variable between these plans, diminishing from 58 to 24 post-holes between preliminary and finalized plan versions. None of these counts match the "25 post-moulds" in LeClair's published description (1976:35). In the following section, LeClair's finalized plan will be presented and compared with a reconstructed plan drawing based on information from excavation unit notes and photographic evidence. A reliable plan will be developed from this comparison. Lastly, structural elements observable in this array of evidence will be investigated.

### **3.17 Finalized Plan Diagram - 1973 Excavation**

LeClair's finalized plan diagram of the exposed feature (Figure 17) closely matches his description of the structure (1976). Evidence is provided for a recessed, central occupation surface depression associated with an elongated hearth, a surrounding bench, a

number of post-holes, and an entrance in the east wall. While this plan accounts for all the basic elements of LeClair's rectangular structure, the observed post-hole pattern is inconsistent with his description (1976). Post-hole patterning is difficult to discern -- two types of post-holes (angled and vertical) are present, post-hole diameters are variable and evidence of deliberate alignment is generally lacking. The association between post-holes and other structural elements is less obvious than was originally reported. The variation in the depicted post-hole pattern (Figure 17) increases substantially when post-holes from all three of LeClair's plan drawings are cumulatively considered.

Floor and bench representations are generally consistent between all three versions of the plan. With a total of 58 post-holes, the pattern observed in Figure 17 becomes more complex and somewhat less apparent. Twenty-three small posts (possibly stakes) only indicated on what appears to be the most preliminary of the three plans, precisely surround the bench, about a meter from the edge of the recessed occupation surface. Thirty-five larger, vertical and angled post-holes are distributed as depicted in Figure 17. "Rock" clusters are distributed across the bench, which is variably described as having "slight" to "no" charcoal associated with it (LeClair, plan drawing notes, 1974). Importantly, depths below datum are provided for the tops of most of the post-holes, a number of points on the bench surface, a number of points on the recessed occupation surface, and the vertical extent of the hearth. Bench (230-240 cmBD) and occupation surface depths (260-280 cmBD) are consistent with Profile A and B measurements.

Post-hole (top) depths were evaluated to establish their vertical association with either the occupation surface or the bench. Post-holes with depths less than 220 cmBD were considered to lack either occupation surface or bench association. All the angled post-holes, ranging in depth between 120-180 cmBD, are associated with the upper rather than the lower cultural component previously identified. The arrangement of the angled posts is reminiscent of A-frame, pole-constructed, fish drying racks, ethnographically documented in the upper

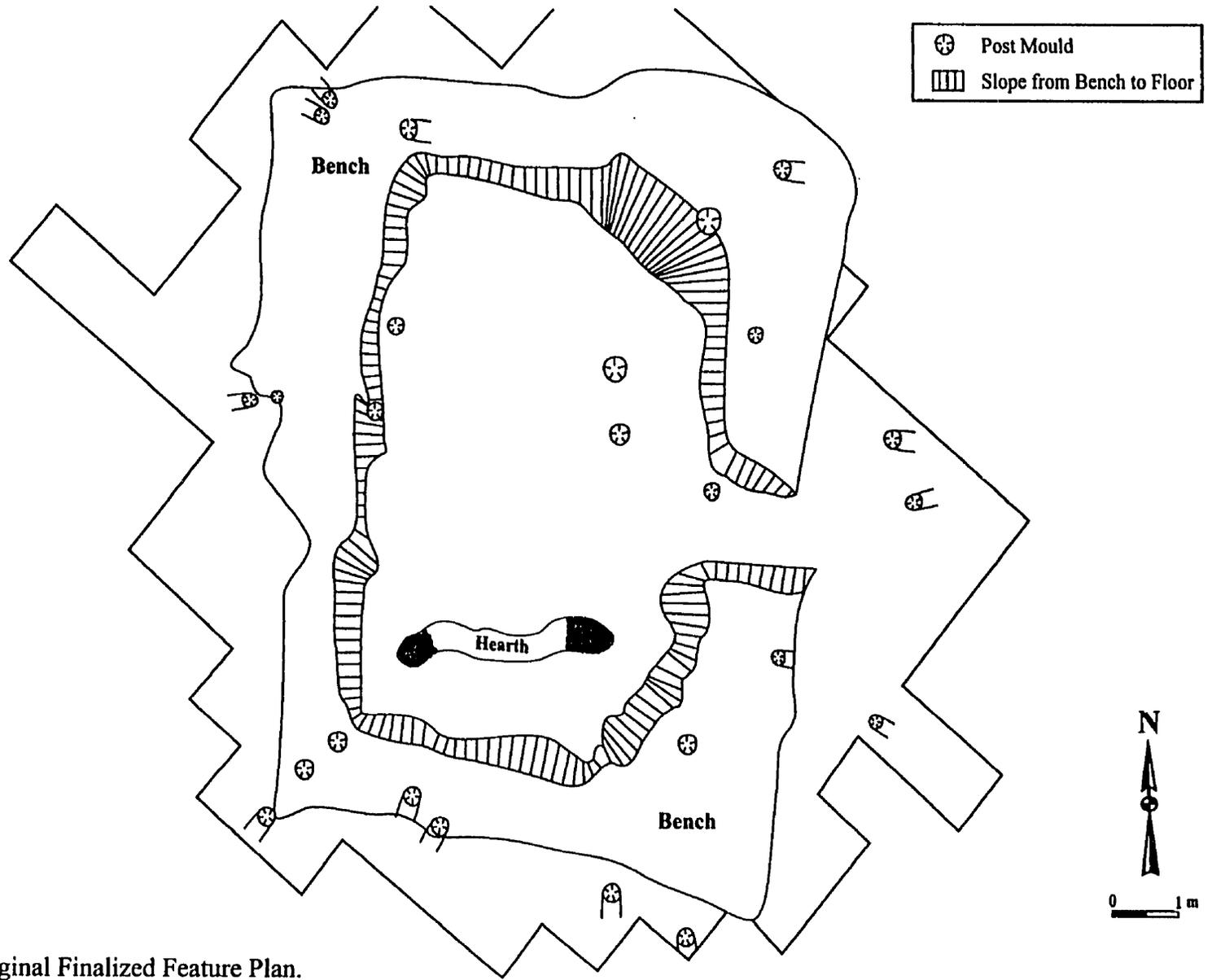


Figure 17. Original Finalized Feature Plan.

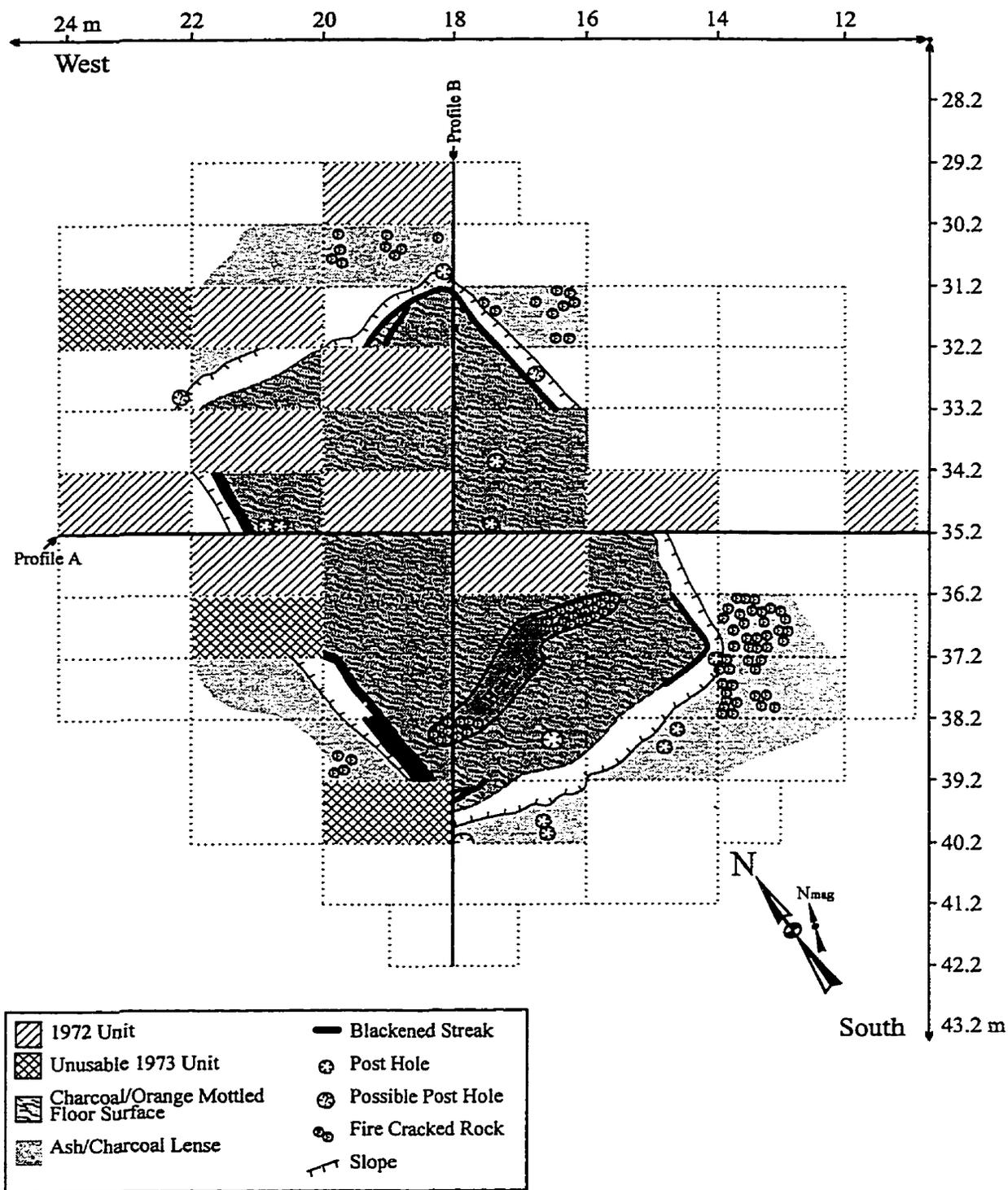


Figure 18. Reconstructed Feature Plan.

Fraser Valley and Fraser Canyon. Their presence suggests that such a structure(s) may have been constructed in association with the upper cultural occupation. Thus, the angled post-holes cannot be considered elements of the structure under investigation, and are deleted from the revised plan.

### 3.18 Plan Reliability

A reconstruction of the feature plan (Figure 18) was prepared to provide a basis for assessing the reliability of the LeClair's original structural plans. This reconstruction was based on available forms of information, including excavation unit notes, photographs and artifact catalogue entries. Similar to the profile reliability tests, degrees of similarity and dissimilarity are discernible between original and reconstructed diagrams. *Differences* (that is, irreproducible elements of LeClair's plans) are summarized (as follows):

- the depicted post-hole patterns are not consistent between the reconstructed and original versions of the plan — only fourteen post-holes from LeClair's plan are reproducible
- none of the 23 small post-holes outlining the bench in the original plan(s) were reproducible
- the hearth feature differs slightly in position between the two diagrams
- definite evidence for a structural entrance is lacking
- the reconstructed occupation surface shape is more regular and complete than in LeClair's plans

*Similarities* (that is, reconstructible elements of LeClair's plans) include:

- a generally rectangular shape of the occupation surface
- the depth of the recessed occupation surface

- dark, organic streaks defining the margins of the occupation surface
- notation of the vertical position of the dark perimeter streaks between the occupation surface and the bench surface approximately 30 cm higher
- fire-cracked and thermally altered rock (FCR) distributed over the bench surface
- thin ash and/or charcoal lenses distributed over portions of the bench surface, particularly the south end
- the position of some post-holes around the rim of the occupation surface depression

In the following section, I present reproducible plan elements as a reliable feature plan diagram.

### **3.19 Reliable Plan Interpretation**

The reconstructed plan depicted in Figure 18, based on reproducible elements, is considered to represent a reliable feature plan diagram and will be referenced as such in the following text. Positions of the hearth and the post-holes in the northwest corner and center of the floor, as depicted, are observable in photographs taken of the exposed feature (see Plates 5-11). The reliable plan differs from LeClair's plans in two significant ways:

- post-holes in the reliable plan surrounding *only* the recessed floor (that is, do not encompass a bench)
- in the reliable plan, the bench lacks peripheral definition and is primarily associated with fire-cracked and thermally altered rock debris (as became apparent through inventorying the bench level material)

These differences are significant for two reasons:

- the occupation surface appears to have been enclosed by a wall constructed around the immediate margin of the depression rim, as indicated by the identified post-hole locations
- the bench may alternately be interpreted as the original ground surface outside the wall, upon which refuse (hearth contents such as fire-cracked and thermally altered rock, ash and charcoal; debitage; etc.) accumulated

This midden should have a sharply defined 'inside' margin where it accumulated against and abutted the proposed wall. The 'outside' margin of the midden deposit, where it was not retained by the wall, should be less well defined and have a more diffuse edge than the 'inside' margin . This is the basic pattern identifiable in the reliable plan.

A second argument against the existence of a discrete sub-structural bench feature is based on the distribution of proposed super-structural remnants. If the bench were contained within a walled structure, as implied by LeClair, evidence of the remains of the encompassing super-structure, whether subject to rapid combustion or slow pedogenic decomposition/carbonization, should be apparent on portions of the occupation surface *and* bench surface. However, evidence of super-structural remains were not apparent on the bench surface. Oxidized and carbon and ash mottled sediments on the bench surface are minimal and appear only as sporadic lenses, apart from the wall edge. The occupation surface, alternately, is moderately to heavily carbon mottled and consistently oxidized. No identifiable features, such as post-holes, indicate the inclusion of this 'bench' surface within the super-structure. Therefore, the presumed bench does not appear to have been contained within the super-structure. More explicitly, the bench is not considered to be a part of the sub-structure but represents, rather, the original ground surface into which the occupation surface was excavated and on the lip of which the proposed super-structure was constructed. Post-construction midden development accounts for the cultural material located on this ground surface, outside of and surrounding the proposed structure.



Plate 5. Exposed feature surface (oblique view from SW corner). Photo: R. LeClair

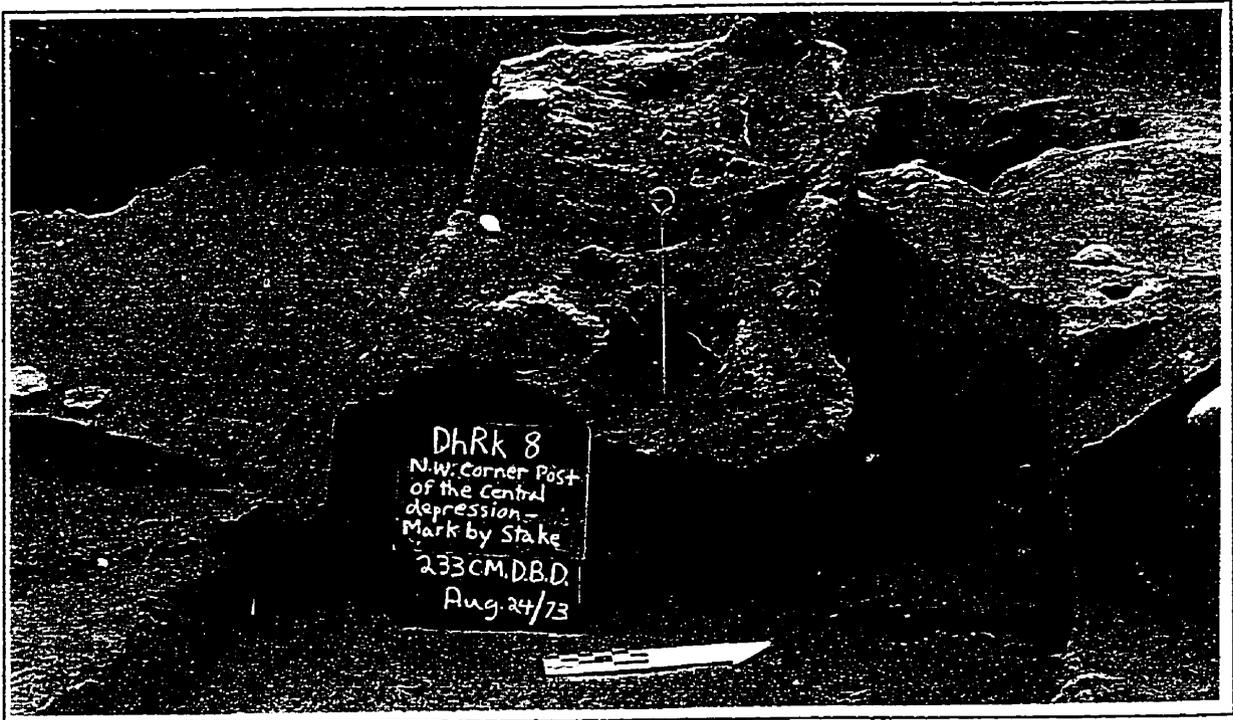


Plate 6. NW corner-post mould.

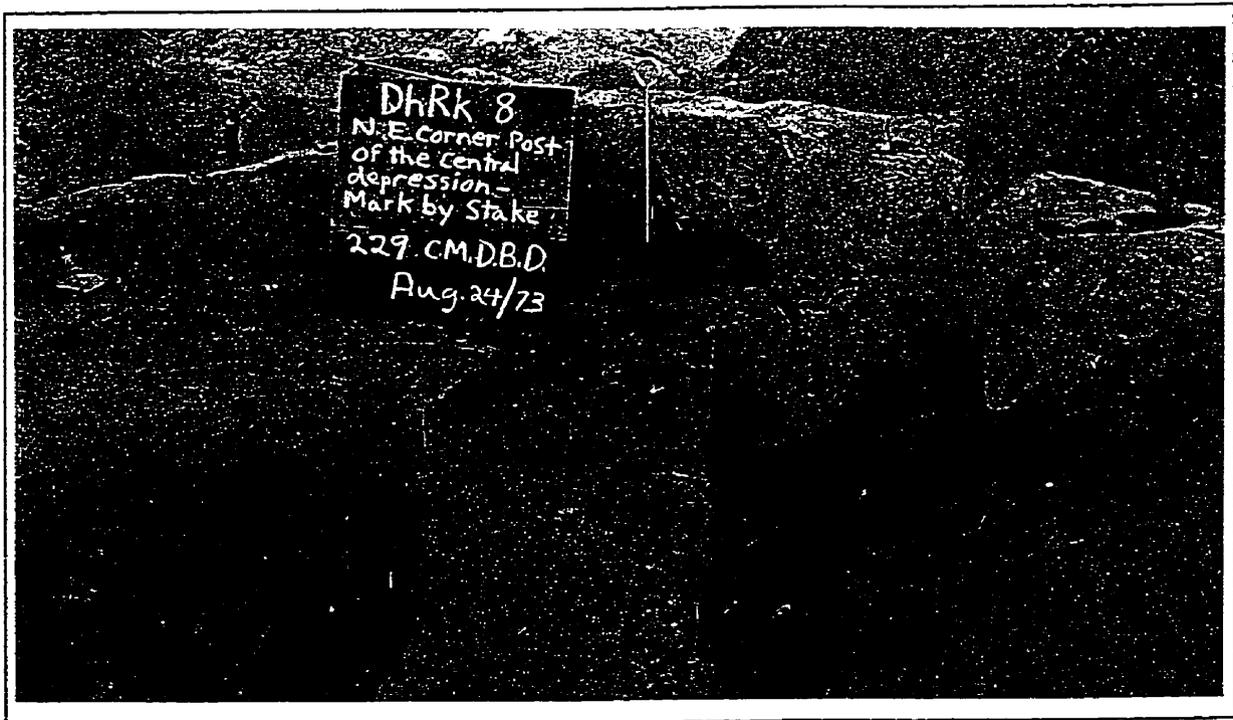


Plate 7. NE corner-post mould.

(Photos: R. LeClair)

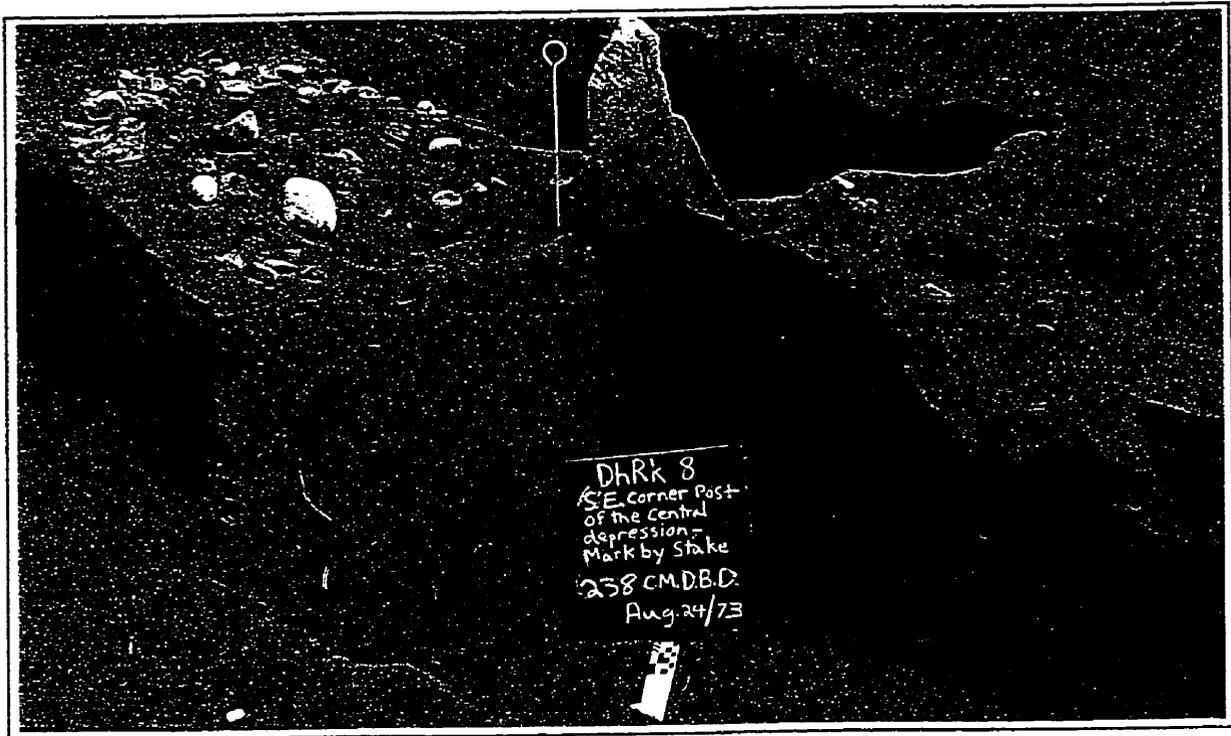


Plate 8. SE corner-post mould.

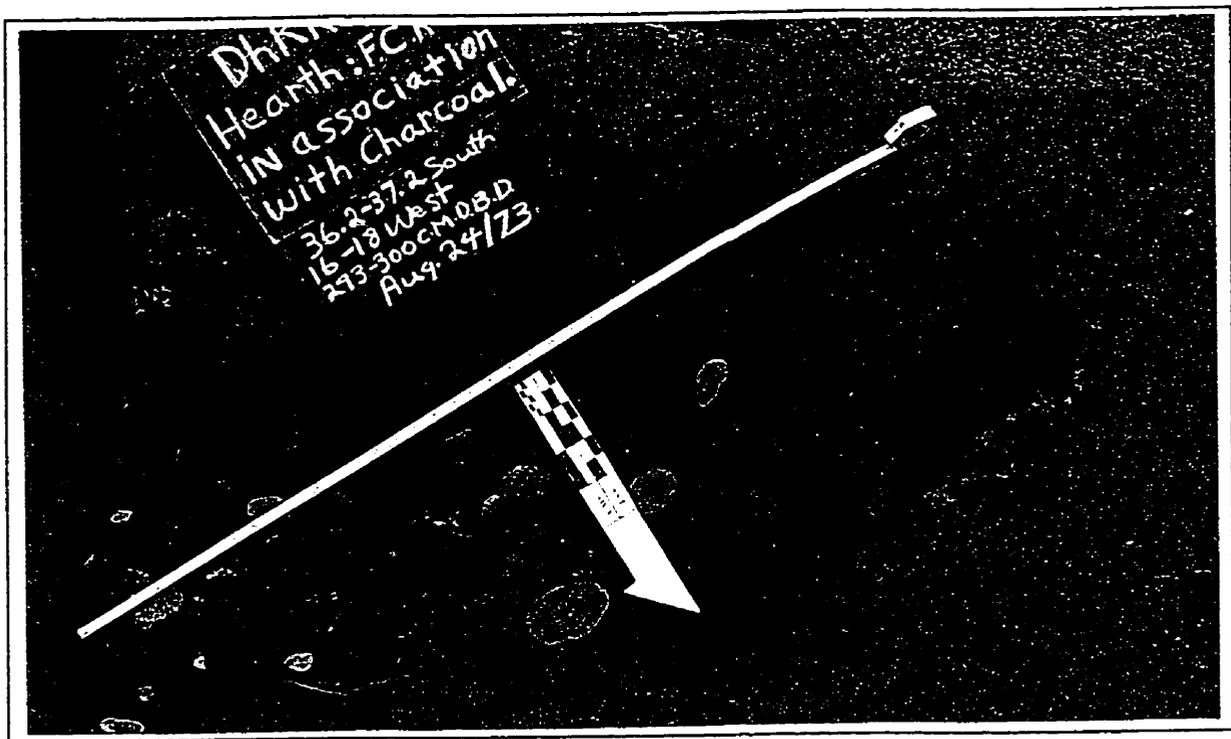


Plate 9. Hearth feature.

(Photos: R. LeClair)

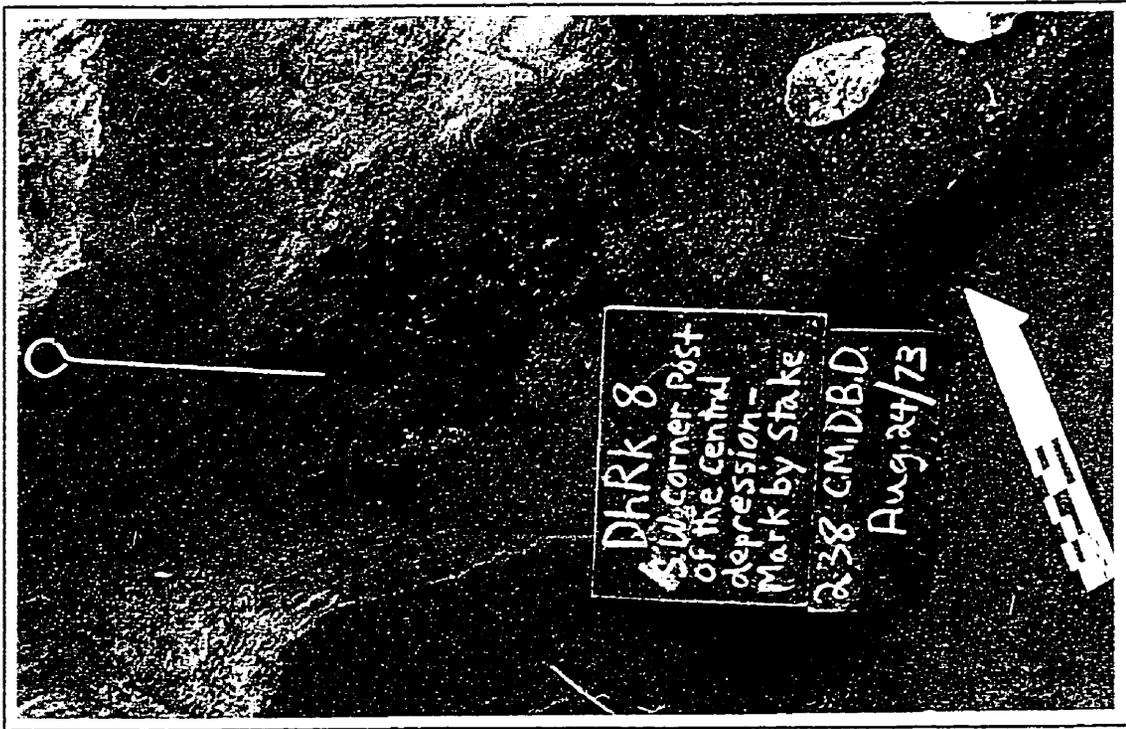


Plate 10. SW corner-post mould.

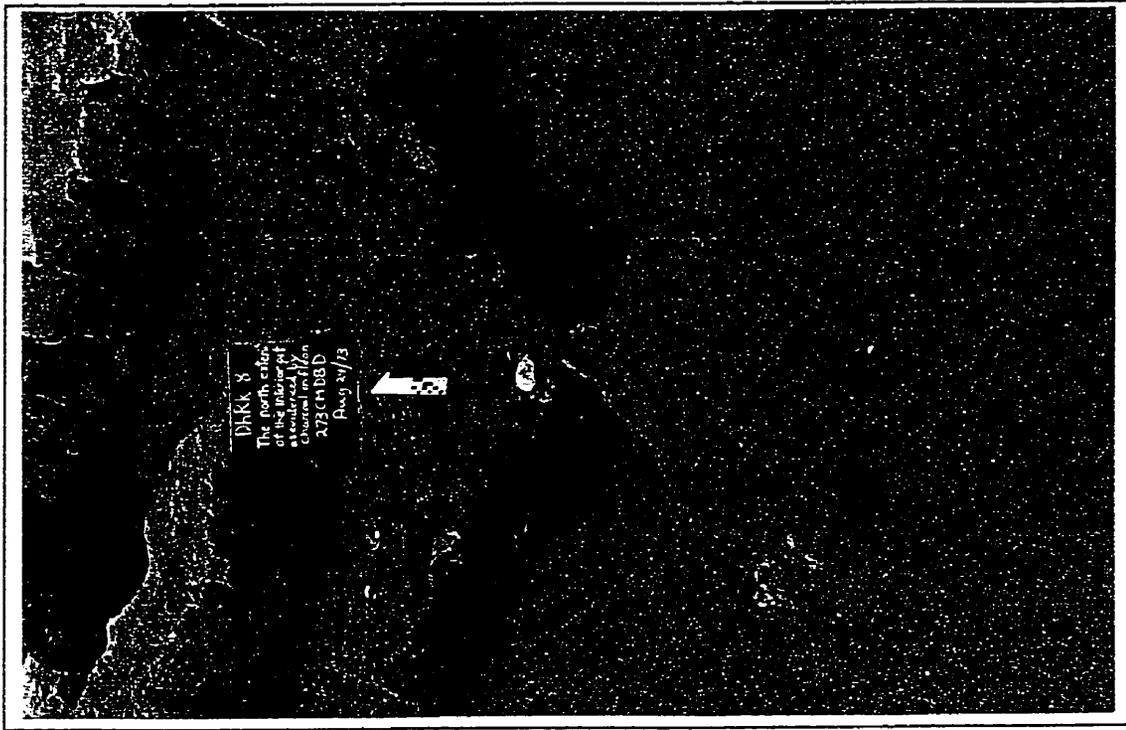


Plate 11. Northern edge of expose feature surface.  
(Photos: R. I.eClair)

### 3.20 Plan Summary

Reliable evidence verifying portions of the sub-structure, sub-structural features and super-structure, defined at the beginning of this chapter, can be presented. Primarily, the *sub-structure* consists of a floor – previously identified as an occupation surface which, provided definite association with super-structural elements (described below), can now be verified as a structural floor surface. The *sub-structural floor*, in plan view, is:

- subterranean, excavated 30-40 cm below the original ground surface
- 7.5 m long by 5.0 m wide
- rectangular in shape
- oriented N-S

The floor surface, which is relatively level (falls slightly to the NW), is generally oxidized with an apparent carbon mottled matrix. Floor surface depths range from 259-275 cmBD. The margin of the floor is partially defined by 5 to 8 cm wide linear streaks (described as “burnt timber(s)” - Unit 58, 270-280 cmBD Level Notes). These linear streaks are similar to the description of the edges of wooden planks and plank outlines, documented at the Ozette (Mauger 1978:183-185) and Scowlitz sites (Sandra Morrison, pers. comm., 1997).

Such streaks extend vertically from the floor to the edge of the ancient ground surface 30-40 cm above. From this description, it appears that horizontal planks were laid on-edge to form a subterranean retaining wall at the perimeter of the recessed floor. Though incomplete, the putative plank remnants conform with the edge of the floor matrix and form a regular rectangular outline. Additionally, evidence for stakes abutting and presumably providing vertical support for the retaining wall is shown by the small post-holes in Unit 58, and possibly in Unit 29.

According to analyses of local pollen spectra western red cedar (*Thuja plicata*) became established in the upper Fraser River valley region nearly 6000 years ago (Hebda

1996:64; Mathewes 1973:2100). Thus, by the period represented by the earliest date reported for the Maurer site, some western red cedar would have been available as a usable resource. It is, therefore, possible that the described outlines are the decomposed or carbonized remnants of cedar planks.

Carbonization of wood due to exposure to fire is one explanation for the preservation of the plank remnants as linear streaks of blackened organic matter. Presumed plank remnants are minimal in the south end of the house, nearest the hearth — where exposed wood would have been a likely fire-hazard. If the hearth were the source of an accidental fire, wooden material nearest the hearth may have been more completely burned than that farther away. Earthen insulation of the plank retaining wall may have acted as a fire retardant, preventing complete consumption of the wood and stabilizing the charred remnants. Uninsulated wooden walls, stakes and posts may either have burned completely or been partially burned and scavenged as fire-wood, charcoal or still usable construction material, potentially accounting for their absence. Charcoal flecks and orange oxidized sediments within the floor matrix, particularly at the surface, provide supportive evidence of a burning event within the presumed structure.

Alternately, the preservation of the putative plank remnants may be due to in situ pedogenic processes. As previously noted, slow decay of wood in acid rich sediment can resemble the effects of rapid combustion and result in the blackening of such remnants. Sediment oxidation through long-term soil-forming processes can also simulate the appearance of burned sediments. Whether through combustion or pedogenic decay, portions of the wooden sub-structure were preserved as remnant, black linear streaks and an orange oxidized and charcoal flecked floor surface. The excavation documents contain insufficient data to definitively determine which process affected these organic remains.

*Sub-structural features* include a hearth and a number of post-holes and stakes. The hearth, excavated into the southern end of the floor (see Profile B), is approximately 3.5 m

long by 0.3 to 0.4 m wide and 0.3 m deep. Charcoal and fire-cracked and thermally altered rock are located at both ends of the hearth and charcoal impregnated fill lines the feature between these clusters. Additionally, four probable post-holes, (see Appendix II for post hole diameters) are located in the northern half of the floor.

*Super-structural* features include seven post-holes located around the rim of the floor depression. These include four large posts, one located at each of the floor pit corners, and three smaller diameter posts or stakes, situated in a line between the SE and SW corners. All of these pits are associated with the ground surface between 230-240 cmBD. There is no indication of the type of wall or roof material supported by these posts. Super-structural wall and roof materials appear to have completely deteriorated.

### **3.21 Structural Taphonomy Reconsidered**

Patterns in the stratigraphy and vertical distributions of artifacts presented above provide a basis from which to identify taphonomic agents which have affected the Maurer feature. A number of the factors, per the taphonomy list presented earlier, can be addressed. Summary assessments of these factors are presented below.

A subterranean floor, excavated 30-40 cm into the surrounding ground surface is the dominant representation of a structure at this site. Available data suggest this floor was excavated into a sterile substrate. If underlying cultural deposits are present, they are located below the basal level of the floor and floor features. Mixing of artifacts from an earlier cultural component with the floor assemblage does not appear to have occurred. Collapse of the structure appears to have occurred rapidly, as indicated by a lack of siltation between the floor matrix and any overlying decomposed or carbonized structural remnants. Resultant deposition of artifacts from a possible roof assemblage onto the floor surface does not appear

to be a factor due to the rather abrupt transition in artifact frequencies between Stratum 4 (the upper floor zone) and the immediately overlying 10 cm -- Stratum 3. Limited slumpage of the floor depression sidewalls is apparent . However, structural collapse appears to have preceded post-abandonment slumping. The transition between the charcoal and oxidized sediment capped floor and the overlaying slumpage around the edge of the floor is abrupt and easily identifiable in the stratigraphic profiles. Noticeable effects from slumping are limited to a slight obscuring of the floor perimeter.

Slow, natural size-sorted filtering of artifacts onto the floor has not yet been addressed in this study. In an attempt to identify natural sorting, the relative proportions of different-sized artifacts by depth below surface (DBS) were investigated. Figure 20 presents the relative proportions of size-graded debitage by DBS, based on cumulative debitage frequencies from the sampled profile units. Debitage size grades correspond with Ahler's mass analysis technique (1986) and are the result of sorting by 1", 1/2" and 1/4" screens. If size-sorting is a factor affecting the vertical distribution of artifacts within the Maurer feature, an inverse correlation in the proportions of small and large debitage, increasing by depth, should be evident. This pattern should be most clearly represented in the G2 and G3 debitage proportions, given their similar frequencies (G1 = 178, G2 = 1255, G3 = 1066). Analysis of the data plotted on Figure 20 shows no such correlation between any of the debitage size grades. Proportional fluctuations occur throughout the vertical extent of the profiled area. It is concluded that natural size-sorting has not affected the integrity of this portion of the site.

In relation to episodes of abandonment and reoccupation, profile analysis indicates the presence of a vertically undifferentiated floor layer between 10 and 15 cm thick. While the depth of the accumulated floor deposit indicates use of the floor over an extended period of time, specific occupation episodes are not definable. Occupation of this floor surface appears to have continued without identifiable floor reconstruction. Floor features are all associated with the floor *surface*, indicating continual structural maintenance and repair

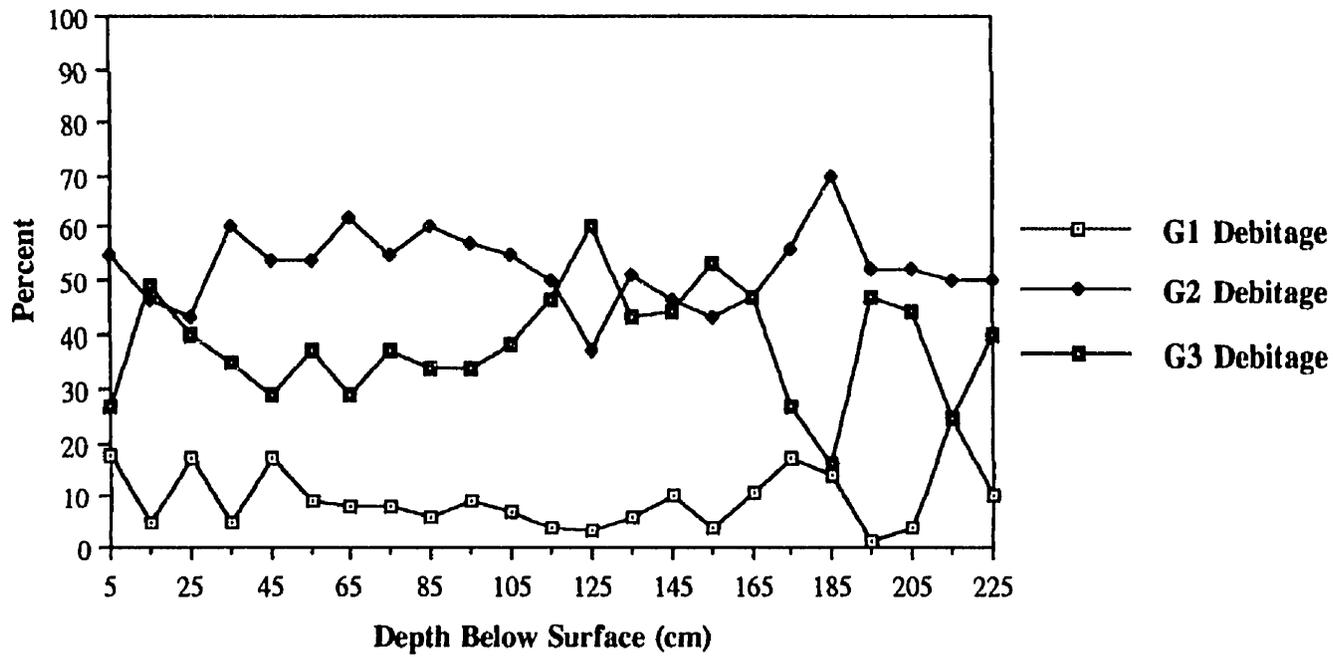


Figure 19. Proportions of Size-Graded Debitage by Depth Below Surface (cm).

during the course of the structure's occupation. In relation to the super-structure, post-holes are relatively few in number, indicating relatively static structural supports which either lasted the lifetime of the structure or were repaired and/or replaced using the same post-hole locations. While the floor appears to have been either continuously or periodically occupied, there is no available evidence to indicate significant reconstruction of the sub-structure or super-structure.

Final abandonment of this structure appears to have been coincident with the apparent collapse of its super-structure, possibly due to partial or complete burning. Overlying sediments are comprised of silt deposits with low frequencies of artifacts. The profile of these deposits indicate that they accumulated on a concave surface, formed by the slumping depression. Approximately 30 to 60 cm above the floor, an accumulation of cultural material from a second cultural occupation accounts for roughly 50 to 60 cm of continuous deposition of cultural material. Angled post-holes originating within the vertical range of this deposit suggest light-framed structure(s) – possibly A-frame racks – associated with this younger cultural component. Approximately 15 cm of insubstantial cultural deposits accumulated above the second component, and represent the deposits exposed in the contemporary ground surface.

Evidence of post-contact use of the site is provided by green glass shards and machine-cut, wire nails, restricted to Stratum 1. Additional recent surface remains are identifiable in photographs of the Maurer site taken at the beginning of the 1973 excavation. As mentioned previously, a wooden bin and a post (depicted in the original Profile A) were located at the edge of the depression. Evidence of significant recent disturbance of the site is limited to the 10 excavation units dug in 1972. Seven of these excavation units directly impacted structural elements under investigation.

Tree roots and other bioturbation agents are additional factors to be considered in this study. Visible tree root disturbances are depicted in a number of reconstructed unit profiles,

though not in Profiles A or B. Moreover, these either did not reach the floor zone, or were no longer visible at the time of excavation. LeClair's Profile A provides possible evidence of rodent burrow disturbance within Unit 46. This apparent burrow extends from the upper portion of the site deposit to the floor at approximately 35.2 m South and 19 m West. Thus, artifacts may have been displaced by rodent burrowing and will be further examined in the following chapter.

In summary, relatively few taphonomic agents appear to have been actively involved in the disturbance of identified structural remains. Mixing of artifacts between floor and surrounding deposits is not observable to any significant degree. With the exception of super-structural elements, the remains uncovered during the 1973 excavation appear to have good overall integrity.

### **3.22 Evaluating Assertion One**

The preceding portion of this chapter provides the framework for evaluating Assertion One – that the remains uncovered during the 1973 excavation of the Maurer site are those of a structural feature. I used available data to evaluate a set of expectations developed in support of this assertion. Multiple lines of evidence (floor plans, stratigraphic profiles, artifact distributions, field records) substantiated the presence of directly associated sub-structural (including sub-structural features) and super-structural elements. Taphonomic factors discussed in this chapter cannot be considered responsible for the formation of the observed patterns. At a general level, these attributes meet the explicit expectations required to verify this structural feature. Thus, the assertion that the feature excavated at DhRk 8 represents the remains of a structure is accepted.

However, while Assertion One can be accepted at a general level, there is some

divergence between the demonstrable pattern of structural remains and those described by LeClair. A number of expectations derived from LeClair's (1976:35-36) description of the Maurer structure were not entirely verified, resulting in three significant alterations. As a result of the analyses presented in this chapter, I determined that:

- the internal bench feature originally thought to part of the structure's architecture was, rather, an external midden -- significantly reducing the floor area and altering the perception of the structure's architecture
- all of the small diameter, angled post-holes previously thought to define the bench perimeter were associated with a younger, overlying cultural component rather than the structure, itself -- also changing the perception of the structure's architecture
- the feature was a plank-walled structure, a previously unspecified detail

A revised structural description, incorporating these differences, is presented below.

### **3.23 Revised Structural Description**

Taking into account the architectural changes resultant from this study, a revised description of the Maurer structure can now be presented. The Maurer structure can be confidently described as a north-south oriented, 7.5 m by 5.0 m, semi-subterranean (0.3 - 0.4 m deep), rectangular structure with a floor surface area of 37.5 square meters. In the absence of angled post-holes, extrapolation of its roof height is not possible, as no interpretation of this sort can be made from the observed structural features. Post-holes believed to be associated with this structure all appear to be vertical in cross-section, so perimeter walls were more likely vertical rather than angled. An interesting post-hole pattern is suggested by the position of large post-holes at the corners of the structure, with smaller

post-holes placed in-between. This pattern was observed along the south edge of the floor pit and resembles that of the 'rafter support post/wall pole' systems associated with plank-walled structures at the Ozette site (Mauger 1978:142-143, 151-152). Large corner posts function as weight-bearing supports, while planks are lashed to smaller, intermediate retaining posts or stakes. The post-hole pattern at Maurer suggests a similar scenario.

Apparent plank retaining walls, lining floor pit side-walls, extended vertically between 30 to 40 cm from the floor surface to the prehistoric ground surface into which the floor was recessed. Small interior posts (stakes) abutting the retaining wall appear to have acted as reinforcements, preventing the retaining wall from collapsing inward. A 3.00 m long by 0.35 m wide by 0.30 m deep hearth, with fire-cracked and thermally altered rock concentrations at its extremities is located in the southern third of the structure. Four possible post-holes are located in the northern half of the floor. No substantial evidence exists for the location of an entrance. Refuse appears to have been deposited around most of the outside perimeter of the structure, forming a midden. Accumulation of an approximate 10 to 15 cm thick floor deposit, confined within the floor depression, indicates extended use of the structure.

It should be explicitly stated that the Maurer structure represents a *quasi-permanent* structure – while elements of the structure were likely transportable, such as the above ground wall and/or roof elements (possibly planks), portions of the structure were permanently set, non-transportable features, such as the recessed floor and large corner-posts. While the architecture of the Maurer structure has been analyzed, the function of this quasi-permanent structure remains to be assessed. Analyses of the types and patterns of artifacts associated with the floor, conducted in the following chapter, should substantiate this description of the Maurer structure.

## CHAPTER 4

### Evaluating Function - Is the Maurer Structure a House?

#### 4.1 Objectives

Evaluating the function of the Maurer structure forms the basis of the evaluation in this chapter. LeClair's assertion that the Maurer structure functioned as a house is the focus of this examination. As a basis for testing this assertion, I develop expectations of house associated artifact and feature assemblages. I assess taphonomic factors possibly affecting the floor assemblage. I investigate frequencies, spatial distributions and functions of artifacts associated with the floor and floor features. Finally, I develop and present behavioral inferences based on identifiable artifact patterns.

#### 4.2 Assertion Two

*Assertion Two* states that the Maurer structure functioned as a *house* — that is, a domestic residence. Thus, the possibility of previously discussed functional alternatives, such as a fort or a refuge, needs to be assessed and ruled out if this assertion is to be accepted. I evaluate *Assertion Two* in the following analyses.

#### 4.3 Expectations

As a means of testing the asserted house function of the Maurer structure, I developed

a set of archaeological expectations generally associated with houses, and which accommodated the limited comparative data from the Maurer structure -- that is, only lithic artifacts and a few structural features. Developing a comparable set of testable expectations was hindered by the lack of precedent for functional tests of this sort on the Northwest Coast. Identified structures in archaeological sites have generally been assumed to be houses without critical evaluation. Alternate functions are rarely considered even though this actuality is documented in both the ethnographic and prehistoric records (Moss and Erlandson 1992). While a number of apparent prehistoric houses have been excavated in the upper Fraser Valley (e.g., Hanson 1973; von Krogh 1976), more useful descriptions result from relatively recent excavations on the Interior Plateau. Useful descriptions of prehistoric house assemblages are provided by pithouse analyses at the Keatley Creek site in the Fraser Canyon (e.g., Spafford 1991; Hayden and Spafford 1993). The identification of houses at this site was facilitated by strong analogic association with ethnographically documented residences. Despite the lack of comparable data for Maurer, hypothetical expectations of house associated assemblages may be developed -- provided guiding assumptions are explicitly stated.

Before developing material expectations, the premise upon which these expectations are based must be clearly stated. The expectations I developed in support of a house function for the Maurer structure, specifically, are based upon the notion that the *household* is the center of production and the basic socio-economic unit of society, as documented for the Northwest Coast (Mitchell and Donald 1988:313). Thus, such a household group carries out a wide range of activities, material correlates of which should be associated with the structure that they inhabit(ed). Again, the Keatley Creek site, while located in the Interior Plateau, offers a number of parallels to the Maurer site. There, floor-associated artifact distributions were analyzed with respect to defining activity areas -- that is, defining the way house space was functionally appropriated. Spafford's (1991) analysis of artifact distributions on

housepit floors at that pithouse village revealed cooking and storage features, and artifactual evidence of flintknapping, hide processing and food preparation activity areas. The functional analyses and types of structures from Keatley Creek provide a scenario similar to that of the Maurer site. However, because of significant cultural and temporal differences, modeling of house function at Maurer based on analogies to Keatley Creek is necessarily limited to the most general comparisons.

As the residence of a household group, a house functions as an inhabitable shelter. Within this shelter, space is usually provided for *consumption, production* and *living* – three broad categories of activities. **Consumption** activities include:

- food preparation
- cooking
- eating

**Production** activities include:

- tool production
- tool maintenance
- the production and maintenance of various non-food items

**Living** activities include:

- sleeping
- socializing
- entering and exiting the structure

These three activity sets, heretofore cumulatively referred to as *household activities*, are wide ranging and, together, are presumed to correlate with house function. Material remnants of such household activities are possibly preserved in the forms of structural features, botanical and faunal remains, chemical signatures and artifacts. Given the poor faunal preservation and the absence of bulk sediment samples for palaeobotanical and soil chemistry studies at Maurer, such material evidence is limited to lithic artifacts and structural features.

A basic premise for the functional evaluation of the Maurer structure can be presented. If the Maurer structure functioned as a house, floor features and artifacts from the floor deposit should be associated with consumption, production and living related activities.

*Floor features* should include:

- a hearth for cooking, heat and light
- storage pits (possibly)

The *artifact assemblage* from the floor should include:

- tool types indicative of a variety of functions, such as -
  - cutting
  - scraping
  - incising
  - piercing
  - grinding
  - hammering

Additionally, debris from household activity, that is the floor deposit, is expected to reflect extended occupation of the structure, either continuously or intermittently. *Intensive and/or extended occupation* of the structure should be indicated by:

- hearth(s) with a high degree of use
- a rich, possibly thick organic floor deposit
- possibly numerous and varied artifacts

These qualities, reflecting intensive use of the structure for consumption and production activities are proposed as being indicative of house assemblages. Variations in predicted patterns might indicate alternative functions for the structure. Evidence of less intense occupation and/or the prevalence of artifacts associated with *either* consumption *or* production activities might indicate a specialized use – fort, refuge, resource processing or ceremonial. These expectations are believed to be valid for house assemblages in which the

household unit represents the basic means and mode of production. Though simplistic, this set of expectations can be tested against the material remains from the Maurer structure.

#### **4.4 Taphonomy**

Beyond the problems related to developing testable expectations, other factors interfere with the ability to test Assertion Two. Using data derived from excavation methods which were not explicitly designed to test this hypothesis represents one such confounding factor. The 'coarse' excavation methods employed at Maurer in 1973 (that is, arbitrary 10 cm levels, not providing floor-associated artifacts with three-dimensional provenience, vague descriptions of features) also compromise our ability to adequately test Assertion Two. The concentration of the excavation on the area within the structural feature also limits this study to the analysis of the floor-specific assemblage. It should be noted that the entire range of household activities may not be performed inside the house, and floor assemblages are potentially subject to a number of taphonomic factors. While the former limitation represents an unavoidable deficit to this study, its effects identifiably reduce the level of resolution of the ensuing analyses. The latter limitation -- floor taphonomy -- must be considered in greater detail before its associated effects may be likewise identified.

In Chapter 3, taphonomic processes were considered in relation to the general integrity of the structural feature. The conclusion that the floor, as a structural feature, appeared to be relatively intact, is not necessarily transferable to all portable, floor-associated artifacts. A number of taphonomic agents possibly affecting the position of artifacts recovered from the floor must be investigated prior to interpreting floor assemblage distributions as anthropogenic. Inter-component mixing, one taphonomic agent previously examined, does not appear to have affected the development of the floor assemblage.

However, additional taphonomic agents which must be considered include:

- periodic cleaning of all or part of the floor
- post-abandonment recycling and scavenging of tools and raw material
- post-abandonment bio- and cryo-turbation (that is, rodent burrowing, animal scavenging, frost heaving) of the floor surface
- post-abandonment discard of artifacts of non-occupation associated artifacts in the structure

These taphonomic factors potentially could have affected the original floor assemblage composition, as well as disturbed primary spatial patterning.

As a subtractive mechanism, periodic floor cleaning is likely to have had the most profound effect. Any reasonably systematic and thorough house cleaning is apt to remove considerable evidence indicative of the activities performed within the structure. In living areas, cleaning was most likely a continuous practice responsible for removal of most of the debris which would have accumulated otherwise. In areas where consumption and production activities took place, cleaning may have been less frequently and/or thoroughly practiced. From an archaeological perspective, floor cleaning is likely to maintain artifact-clear living areas, while debris is more likely to accumulate around consumption and/or production activity areas. Debitage and broken tools are most likely to be reduced in number by cleaning practices. Functioning tools and usable raw materials would not be expected to be removed in this manner. Cleaning is therefore considered to be only partially effective in disrupting floor assemblage patterns. Conversely, cleaning may maintain clear floor areas indicative of living spaces.

Post-abandonment scavenging or recycling of artifacts remaining on a floor surface is more likely to result in the removal of usable raw materials and tools. I hypothesize that broken tools, expedient tools lacking labor-added value,debitage and commonly available raw materials represent unlikely targets of scavenging. Exotic raw materials, complete

formed tools -- particularly those whose manufacture is labor intensive, such as bifaces and ground stone tools -- prepared cores and ornamental goods are considered to represent items more likely to retain value and, therefore, be scavenged. As such, the extent of scavenging may be related to the nature of the floor assemblage itself. Floor assemblages containing valuable items are logically more prone to scavenging or recycling than those lacking such items. Scavenging is not likely to remove all such artifacts, particularly those accumulated within deposits *below* the floor surface and not readily visible. Theoretically, the possible extent of scavenging can be inferred from the artifact proportions in the remnant floor and sub-floor assemblages.

Of the taphonomic agents listed above, bioturbation is considered to have been minimally disruptive to the Maurer structure floor assemblage. Such processes are perceived as not responsible for the complete removal of artifacts, but rather the shifting of artifact patterns within an affected area. Artifact positions can shift considerably as a result of bio- and cryoturbation. In the context of the Maurer feature, Profiles A and B indicate that only minimal buckling of the floor may have resulted from ground movement, such as frost heaving. Identifiable bioturbation is restricted to minimal evidence of rodent burrowing in LeClair's Profile B. Bioturbation, therefore, does not appear to be a significant taphonomic agent affecting the floor assemblage.

Additive taphonomic processes may also be considered. Though slim, the possibility that artifacts were secondarily added to the floor assemblage does exist. Mixing from over- or underlying cultural deposits has been ruled out as a significant additive factor. Use of the floor for purposes besides its principle function, such as dumping refuse, may have occurred during intermittent periods of disuse separating transitory occupations of the structure, if such periods existed. While there is no clear evidence of intermittent occupation of the Maurer structure (such as, waterlaid silt or humified lenses, and floor reconstruction), such a scenario is possible. However, it is likely that any material deposited in the structure during periods of

disuse would have been removed upon reoccupation. The probability of such material remaining on the floor of the structure, mixed with the actual household deposits, is largely dependent upon the nature of the structure's abandonment and rapidity of its collapse. Given that the abandonment of the Maurer structure and the ensuing collapse and decomposition of its super-structure appears to have occurred rapidly -- possibly resultant from a burning episode -- post-abandonment deposits would likely lay above the floor, separated by the super-structural remnants which apparently cap the floor. The abrupt transition both stratigraphically and in artifact (particularly debitage) frequencies between Strata 3 and 4 is considered to illustrate this situation. Therefore, as artifacts directly associated with Stratum 4 -- the floor surface -- appear to be isolated from overlying, post-abandonment accumulated deposits, additive taphonomic processes are not considered to be significant factors affecting the floor deposit at Maurer.

The effects of taphonomic agents presented in this chapter are generally more difficult to identify than those discussed previously. Taphonomically, human cleaning and scavenging/recycling of the house floor remain potentially significant factors. I investigate the possible effects of these factors in the following section.

#### **4.5 Methods**

The artifact frequencies I present in this section represent the entire Maurer floor assemblage. I derived data for this stage of the analysis from portions of 20 excavation units comprising the majority of the floor area. Data from a number of excavation units (from both the 1972 and 1973 excavations), which affected part of the floor area, were not available. The available data represents approximately 75% of the total floor area, with the missing portions primarily confined to the central and northern portions of the structure (see

Figure 18).

Data for floor associated (Strata 4 and 5) artifacts were easily isolated from excavation units adjoining the profile which I fully analyzed. Retrieving similar data from partially analyzed floor units (that is, units for which only the floor layer -- Strata 4 and 5 -- material was analyzed) was more difficult. Referring to excavation plans, stratigraphic profiles and level notes, I located level bags containing cultural material associated with the floor. I classified such material according to the tool and debitage typologies which I established for the fully analyzed excavation units. The entire, undifferentiated (though labeled with discrete artifact numbers) tool assemblage from both DhRk 8 and DhRk 8A was found to have been removed from their provenienced level bags and mixed together. I initially separated artifacts labeled with a 'DhRk 8A' designation from the DhRk 8 collection. I classified the remaining tool assemblage according to the typology presented in Appendix I. Discrete proveniences for remaining artifacts from DhRk 8 were then re-established by cross-referencing labeled artifact numbers with the proveniences recorded in LeClair's artifact catalogue, and with artifact descriptions and locations provided in level notes. A significant number of tools from the floor could be referenced to specific level note descriptions. Excluding a few tools and tool fragments discovered in the level bags (which were not physically reincorporated with the tool assemblage), I, thus, re-established the entire assemblage of tools from the floor of the Maurer structure.

#### **4.6 Artifact Frequencies - Floor Assemblage**

Table 3 presents the frequencies and proportions of artifacts in the Maurer structure floor assemblage. *Floor 1* (Stratum 4) was distributed across the entire sampled floor area, therefore, *Floor 1* totals are derivative of the complete floor sample. Because of the uneven

ARTIFACT TYPES	Floor 1		Floor 2		Total Floor		Feats	Tot. Ass mb.		
	(n)	(%)	(n)	(%)	(n)	(%)		(n)	(%)	
<b>CORES</b>										
Cores	12	6	3	8	15	7	1	16	6	
Core Fragments	20	10	7	18	27	12	6	33	12	
Bipolar Cores	3	2	0	N/A	3	1	0	3	1	
Microblade Cores	1	<1	0	N/A	1	<1	0	1	<1	
Pressure-Flake Cores	1	<1	1	3	2	1	0	2	<1	
<b>TOOLS</b>										
<b>Pebble Core-Tools</b>										
Uniface Pebble Core-Tool - Acute	2	1	0	N/A	2	1	0	2	<1	
Uniface Pebble Core-Tool - Obtuse	1	<1	0	N/A	1	<1	0	1	<1	
Biface Pebble Core-Tool - Obtuse	0	N/A	0	N/A	0	N/A	1	1	<1	
<b>Utilized Flakes/Spalls</b>										
Utilized Flake - Acute	41	21	9	23	50	22	7	57	21	
Utilized Flake Fragment - Acute	50	26	9	23	59	26	9	68	25	
Utilized Flake - Obtuse	1	<1	1	3	2	1	0	2	<1	
Utilized Flake Fragment - Obtuse	3	2	0	N/A	3	1	0	3	1	
Spall (unmodified)	6	3	1	3	7	3	2	9	3	
Utilized Spall - Acute	1	<1	0	N/A	1	<1	0	1	<1	
<b>Expedient Unifaces</b>										
Expedient Uniface - Acute	11	6	1	3	12	5	3	15	5	
Expedient Uniface Fragment - Acute	6	3	1	3	7	3	2	9	3	
Expedient Uniface - Obtuse	2	1	0	N/A	2	1	2	4	1	
Expedient Uniface Fragment - Obtuse	3	2	0	N/A	3	1	0	3	1	
Notch - Acute	4	2	1	3	5	2	0	5	2	
Notch Fragment - Acute	0	N/A	0	N/A	0	N/A	1	1	<1	
Uniface Spall - Acute	0	N/A	0	N/A	0	N/A	1	1	<1	
Uniface Spall - Obtuse	0	N/A	0	N/A	0	N/A	1	1	<1	
<b>Scrapers</b>										
Scraper	1	<1	0	N/A	1	<1	0	1	<1	
Scraper Fragment	1	<1	0	N/A	1	<1	1	2	<1	
<b>Expedient Bifaces</b>										
Biface Spall - Obtuse	1	<1	0	N/A	1	<1	0	1	<1	
Expedient Biface Fragment - Acute	3	2	0	N/A	3	1	1	4	1	
Expedient Biface Fragment - Obtuse	1	<1	0	N/A	1	<1	0	1	<1	
<b>Bifaces</b>										
Leaf-Shaped Biface	0	N/A	2	5	2	1	0	2	<1	
Leaf-Shaped Biface Fragment	1	<1	0	N/A	1	<1	0	1	<1	
Lanceolate Biface	1	<1	0	N/A	1	<1	0	1	<1	
Triangular Biface	0	N/A	0	N/A	0	N/A	1	1	<1	
Leaf-Shaped Preform	1	<1	0	N/A	1	<1	0	1	<1	
Miscellaneous Point Fragment	3	2	1	3	4	2	0	4	1	
Miscellaneous Biface Fragment	1	<1	0	N/A	1	<1	0	1	<1	
<b>Blade Tools</b>										
Blade-Like Flake	1	<1	1	3	2	1	1	3	1	
<b>Misc. Chipped Stone Tools</b>										
Graver	1	<1	1	3	2	1	0	2	<1	
Drill Fragment	1	<1	0	N/A	1	<1	0	1	<1	
Burin	1	<1	0	N/A	1	<1	0	1	<1	
<b>Misc. Ground/Battered Stone Tools</b>										
Miscellaneous Ground Stone	1	<1	0	N/A	1	<1	0	1	<1	
Misc. Pecked/Battered Pebble	0	N/A	0	N/A	0	N/A	1	1	<1	
Hammerstone	1	<1	0	N/A	1	<1	1	2	<1	
Anvilstone	0	N/A	0	N/A	0	N/A	1	1	<1	
Edge/End Battered Pebble	1	<1	0	N/A	1	<1	1	2	<1	
Tabular Palette - Pecked	0	N/A	0	N/A	0	N/A	1	1	<1	
Misc. Tabular Palette Fragment	2	1	0	N/A	2	1	0	2	<1	
<b>Total - Tools &amp; Cores</b>	<b>191</b>	<b>100</b>	<b>39</b>	<b>100</b>	<b>230</b>	<b>100</b>	<b>45</b>	<b>275</b>	<b>100</b>	
<b>Total - Tools</b>	<b>156</b>	<b>82</b>	<b>28</b>	<b>72</b>	<b>184</b>	<b>80</b>	<b>36</b>	<b>220</b>	<b>80</b>	
<b>COMBINED TOOL CATEGORIES</b>										
Cores & Core Fragments	35	18	11	28	46	20	9	55	20	
Pebble Core-Tools	3	2	0	N/A	3	1	1	4	1	
Expedient Tool Fragments - Acute	58	30	10	26	68	30	12	80	26	
Complete Expedient Tools - Acute	54	28	10	26	64	28	10	74	27	
Expedient Tools - Acute	112	59	20	51	132	57	22	154	56	
Spalls	8	4	1	3	9	4	4	13	5	
Expedient Tool Fragments - Obtuse	7	4	0	N/A	7	3	0	7	3	
Complete Expedient Tools - Obtuse	4	2	1	3	5	2	1	6	2	
Expedient Tools - Obtuse	11	6	1	3	12	5	1	13	5	
Bifaces	7	4	3	8	10	4	1	11	4	
Biface Points	6	3	3	8	9	4	1	10	4	
Notches, Drills, Gravers, Burins	8	4	1	3	9	4	1	10	4	
<b>DEBITAGE</b>										
Debitage - Size Grade 1	26	3	13	4	39	3	14	53	4	
Debitage - Size Grade 2	393	46	121	36	514	43	77	591	42	
Debitage - Size Grade 3	438	51	198	60	636	54	133	769	54	
<b>Total - Debitage</b>	<b>857</b>	<b>100</b>	<b>332</b>	<b>100</b>	<b>1189</b>	<b>100</b>	<b>224</b>	<b>1413</b>	<b>100</b>	

Table 3. Floor assemblage artifact frequencies and proportions.

thickness of the floor deposit, the *Floor 2* (Stratum 5) deposit existed in less than 50 percent of the sampled floor area and, thus, represents an incomplete floor area sample. Floor 1 and 2 totals are, therefore, not directly comparable. Because of the indirect association between feature contents -- artifacts located within floor features, such as the hearth -- and the surrounding floor assemblage, Floor Feature totals were isolated from those of Floor 1.

The proportions of artifacts found in the floor deposit are comparatively consistent across each of the defined floor categories (e.g., Floor 1, Floor 2 and Total Floor) as exemplified by the Total Floor figures. For simplicity of discussion, reference to 'tools' will include cores. Debitage will be referenced separately.

Table 3 shows that a total of 230 tools and 1189 pieces ofdebitage are associated with the floor deposit. An additional 45 tools and 224 pieces ofdebitage were located within floor features, primarily the hearth. Three of the tool classes in the Total Floor assemblage have high relative proportions:

- acute-edged utilized flake fragments (26%)
- acute-edged utilized flakes (22%)
- core fragments (12%)

Proportions of the remaining 32 tool categories fall, individually, below 3%. While 59% of the identified tools are represented in only three categories, the variety of tools comprising the remaining 41% of the assemblage is significant. Microblade and 'pressure-flake'<sup>1</sup> cores, pebble core tools, spalls, leaf-shaped and lanceolate bifaces, blade-like flakes, notches, graters, a burin, a drill fragment, ground and battered stone tools, tabular palette fragments and a few miscellaneous types are present in low frequencies.

Categories of individual tool types combined into groups of related items, as presented in Table 4, results in a slightly more distinctive pattern of relative tool proportions. While 'Cores and Core Fragments,' 'Biface Points' and 'Burins, Drills, Gravers, Notches'

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<sup>1</sup> 'Pressure-flake cores' are micro-cores from which micro-flakes, versus microblades, have been removed through the application of pressure.

<b>Table 4. Combined tool category data - Total Floor</b>		
<b>Combined Tool Category</b>	<b>Total Floor</b>	
	<b>(n)</b>	<b>(%)</b>
Cores and Core Fragments	46	20
Expedient Acute-edged Tools	132	57
Spalls	9	4
Expedient Obtuse-edged Tools	12	5
Biface Points	9	4
Burins, Drills, Gravers, Notches	9	4
Misc. Tools	13	6
<b>Total</b>	<b>230</b>	<b>100</b>

categories are self-evident, the composition of the remaining combined tool categories require explicit definition. ‘Expedient Acute-edged Tools’ include utilized and unifacial flake tools and fragments, ‘Spalls’ include unmodified, unifacial and bifacial spalls, and ‘Expedient Obtuse-edged Tools’ include utilized and unifacial flake tools and fragments. From the figures presented in Table 4, it is possible to conclude that an expedient tool technology -- tools requiring little or no modification for use -- dominates this assemblage.

#### **4.7 Functional Variation - Floor Assemblage**

Based on macroscopic morphological attributes, the floor assemblage tools represent a number of broad functional types. Scraping, cutting, sawing, perforating, drilling, incising,

abrading, and battering represent some functions with well established and generally accepted macroscopic morphological correlates in stone tools (e.g., Hayden 1979, Keeley 1980, Semenov 1970). In order to investigate evidence of macroscopic use-wear, I examined the floor assemblage tools under 16x magnification. Though few in number, tools with multiple attributes, such as acute *and* obtuse edges, were identified. I classified these tools according to their predominant (that is, most well used) morphological feature. Such analysis accounts for the functional classifications of tools presented in this research. Table 5 summarizes the conventional tool/function correlates employed here.

Based on the these correlates, tools in the Total Floor assemblage functionally represent:

- light to heavy cutting
- light to heavy scraping
- perforating
- incising
- drilling
- chopping
- grinding
- percussing

Table 4 demonstrates that expedient cutting tools are, by far, the most numerous type in the Maurer floor assemblage. In both individual and combined tool categories, tools with other functions range proportionally below 5%. It is obvious that while this assemblage is comprised of a diverse array of tool types, its proportions are heavily weighed toward tools with cutting functions. This extreme contrast in proportions of tools is explainable in a number of ways. As reported by Hayden, Franco and Spafford (1996), raw materials, and task, social, technological and ideological constraints act as limiting factors in tool

Table 5. Artifact/Tool function and worked material correlates.

<b>Artifact Type</b>	<b>Conventional Function</b>	<b>Worked Material</b>
Core	Raw material for stone tool and flake manufacture	Lithic
Microblade Core	Raw material for microblade manufacture	Lithic
Microblade/Blade-Like Flake	Precision cutting	Meat, Plant
Pebble Core-Tool	Heavy chopping	Wood, Meat, Miscellaneous
Expedient Tool - Acute Edge	Light to moderate cutting	Plant, Meat, Hide, Miscellaneous
Expedient Tool - Obtuse Edge	Light to moderate scraping	Wood, Bone, Hide, Miscellaneous
Spall	Moderate to heavy scraping	Hide, Miscellaneous
Biface Point/Knife	Light to heavy cutting; Weaponry	Meat, Miscellaneous
Notch	Scraping and shaving	Wood, Bone, Antler
Graver	Incising	Wood, Bone, Antler; Soft Stone
Drill	Perforating	Wood, Bone, Antler; Soft Stone
Burin	Incising	Wood, Bone, Antler, Soft Stone
Tabular Palette	Platform for chopping, mashing and grinding	Plant, Meat, Mineral
Edge-/End-Battered Pebble	Mashing and pounding/percussing	Plant, Mineral, Miscellaneous
Debitage	Debris from stone tool manufacture and maintenance; potential expedient tool stock	Lithic

assemblage variability. Variable frequencies of tools in a diverse assemblage, as in the present case, may result from the influence of one or more of these constraints. While one functional type predominates in the Total Floor assemblage, task specialization is not considered to be an appropriate interpretation of this pattern, particularly given the nonspecialized nature of expedient cutting tools. A wide range of possible activities – including those defining *consumption* and *production* activities – is inherent in the expedient acute-edged tools dominating the floor assemblage of the Maurer structure.

In the absence of residue and high-magnification use-wear analyses, determining the types of material worked by these tools is not directly possible. Hide- and wood-working may, however, be inferred. Notches and cobble core tools traditionally have been described as woodworking tools (Eldridge 1982:43; Haley 1987:39). Spalls have been linked with hide-working (Hayden 1990a:96). Given the presence of a variety of cutting implements (unmodified flakes, unifaces, bifaces), it is possible that bone/antler, meat and vegetal materials were also processed. Thus, this inferential evidence indicates that the Total Floor assemblage tools may have been used to work a variety of materials.

#### 4.8 Floor Features

As described in the previous chapter, several post-hole and hearth features are associated with Floor 1 (Stratum 4) of the Maurer structure. The hearth -- because it is the only floor feature which is not a post-hole -- is of primary importance to this investigation. As verified, the hearth was located in the south end of the floor. Oxidized sediments, carbonized material and fire-cracked and thermally altered rock (FCR) comprised the majority of the hearth contents. Variable amounts of lithic debitage and small numbers of stone tools, apparently not fire-altered, were found within the matrix of this material.

As recorded in the level notes for Units 21, 33, 34 and 35, abundant FCR was present throughout the length of the hearth. This description contrasts with LeClair's original floor plan drawings and excavation photographs which show FCR absent from the center of the hearth. This gap is largely coincident with Unit 34, the level notes for which do indicate the presence of FCR. During analysis, however, no FCR was recovered from the Unit 34 'hearth'-level bags. It is possible that if FCR were originally present in Unit 34, it might have been excavated and discarded without being recorded. Collection of FCR during the 1973 excavation appears to have been unsystematic and dependent upon individual excavators' initiatives. Review of the level notes indicates that the excavation of Unit 34 was undertaken early in the field season, prior to the excavation of the other units in which the hearth was present. Thus, the practice of leaving feature deposits *in situ* may not yet have been established.

A notably large amount of lithic debitage (n = 183) was recovered from the hearth matrix in Unit 34. This debitage frequency is significantly higher than was recovered in the other portions of the hearth and on the surrounding floor, and could indicate the infilling of the central portion of the hearth with refuse. When this might have occurred, and whether the hearth was subsequently re-used, is indeterminate. While the hearth pit and some evidence of its use are documented in the Unit 34 level notes, a general lack of information frustrates the reconstruction of hearth-use history.

Except for Unit 34, it is possible to define the composition of the east and west ends of the hearth. These extremities are defined by FCR concentrations associated with a small number of tools and debitage. The FCR accumulations overlay charcoal rich sediments, which defined the base of the feature (see Plate 9). The sides of the hearth and its base are further defined by oxidized sediments which, in profile, formed a U-shaped pit intrusive into the sterile gray layer below the floor (see Profile B - Figure 8b). Tools and debitage within the hearth contents may have resulted from primary deposition, or secondary deposition from

slumping floor deposits or infilling events, specific to the hearth pit itself. Given the available data, it is not possible to determine the factor(s) responsible for the deposition of these artifacts within the hearth. While the hearth contents may be somewhat mixed, these materials likely originate from the surrounding floor deposits. Because the origin of these artifacts is not certain, their separation from the floor deposits is maintained both in Tables 3 and 4, and the spatial analysis of the floor assemblage. Though questions concerning the integrity of the hearth contents exist, the underlying charcoal-rich sediments constitute primary deposits forming the bottom of the hearth.

In evaluating hearth integrity, I determined that cultural materials accumulated within this feature are possibly of mixed origin. Insufficient data made it impossible to assess the integrity of the hearth section covered by Unit 34. Additionally, it was not possible to establish whether the hearth trench functioned as a single elongated feature or two separate features when the Maurer structure was abandoned. The presence of at least one hearth feature is not in doubt; however, documentation of the hearth lacked the detail necessary to assess its general intensity of use. Cross-sections and descriptions of the extent of oxidation and the amount of charcoal and carbon accumulations were not provided. Although significant amounts of FCR occur in both ends, collection of FCR from the entire hearth trench appears to have been unsystematic. Notwithstanding the above, the hearth feature, including its carbon-impregnated base, appears to be relatively intact.

In functional terms, remains from the hearth indicate its use as, minimally, a place for building fires and heating stones. Functional implications may be extended to include:

- heating the space within the structure
- lighting
- cooking
- heat-treating lithic material
- the possible smoked or dried preservation of organic material

Lacking sediment samples from the hearth fill, it is not possible to identify micro-botanical or faunal remains indicative of more specific cooking and other practices. Conducting chemical residue analysis of the surrounding floor sediments is also impossible.

#### **4.9 Summary - Artifacts and Features**

Lithic raw materials, tools and debitage were recovered from the floor deposit of the Maurer structure. The identified patterns of tools in this assemblage, while best exemplified by the Total Floor figures, are recognizable in the Floor 1 deposit as well. The Floor 2 sample does not represent the entire floor area and therefore was not discussed. Though expedient, utilized flake tools predominate, a wide range of tool types, cores and debitage comprises this assemblage. Minimally, 11 functional classes of artifacts occur, representing a wide range of inherent potential activities. At least one hearth feature is associated with Floor 1. Carbonized material and heated rocks in it suggest general heating, lighting and cooking functions, but the intensity of use of this feature could not be established.

#### **4.10 Artifact Distributions - Spatial Patterning on Floor 1**

Given the composition and functional range of tool types and features from the Maurer structure floor, it should be possible to identify areas within the structure where specific activities took place. To accomplish this, it is necessary to analyze the spatial distribution of artifacts across the floor surface, which may provide insight into the use of space and technological order within the structure. Four basic types of distribution patterns may be identified (Carr 1984:135):

- positively clustered distribution(s) – artifact rich
- ‘negatively’ clustered distribution(s), representing the space(s) between positive clusters— artifact poor
- uniform distribution -- equal amounts of artifacts
- random distribution – no specific pattern of artifacts

The artifacts from different portions of the floor may represent various combinations of these distribution patterns. Analysis of spatially clustered artifacts, whether hetero- or homogeneous, may provide insight into the location and identification of activity areas (Carr 1984:116). The identification of portions of the floor with distinct absences of artifacts (that is, negative clusters) may, likewise, provide insight into the locations of living areas and/or passageways. Alternately, little useful information can be gained from the identification of uniform or random distributions of artifacts across the floor surface. Dependent upon the type(s) of identified distribution(s), and provided relative freedom from effects of taphonomic factors, it may be possible to derive behavioral implications from the patterning of artifacts.

#### **4.11 Methods**

The Maurer structure floor assemblage -- comprising data from roughly 75% of the floor surface -- represents one of the most completely sampled prehistoric structural floors on the Northwest Coast. While analyses of artifact distributions can be conducted using data from *any* amount of exposed floor area, an ‘adequate’ proportion of floor area is required for *valid* interpretations to be made. Logically, the larger the quantity of data missing at the outset of such analysis, the greater the inherent degree of speculation required in identifying spatial patterns, and the less valid the resultant interpretations. Conversely, analytic validity

increases as sample proportions increase.

Determining patterns in the spatial arrangement of floor assemblages is dependent on the availability of detailed provenience information. For both maximum resolution and analytic flexibility, three-dimensional (that is, *point*) provenience for each artifact in the assemblage is required. Analytic resolution diminishes with decreasingly specific artifact provenience data (Whallon 1984:245). Lacking point-proveniences, grid cell proveniences may be used.

Unfortunately, at Maurer, neither the grid layout nor the artifact proveniencing were established with the intention of performing spatial analyses, resulting in large, inconsistent cell sizes. Limited to such data, the range of applicable intra-site spatial analytic methods is drastically reduced and resolution of artifact distributions is lost. Reduced resolution does not invalidate such analysis, but limits its potential for identifying weak or limited spatial patterns. I conducted the ensuing analysis at the level of identifying artifact distributions ascertained through relative grid cell frequencies.

To define a floor assemblage with the tightest possible temporal limits, I used only Floor 1 artifacts (that is, from the top 10 cm of the floor) in the following analysis. This assemblage is restricted to artifacts *directly associated* with Floor 1, and excludes cultural material from post-hole and hearth fill. Figure 20 represents the floor grid cells (that is, excavation units) included in the analysis. Approximate center-point proveniences corresponding to the site grid (X, Y-axes) were established for each cell. A total of 20 points were established across the floor surface. Artifacts were provided associated cell-specific provenience. Artifact frequencies for each of the categories in Table 3 were then determined for each cell. With artifact frequencies representing the Z-axis, it is possible to make contour maps of the floor surface with artifact frequencies determining the vertical variation. As Whallon states, “the use of smoothing procedures applied to grid counts to produce density contour maps may produce a clearer picture of areal trends in the data than the raw grid

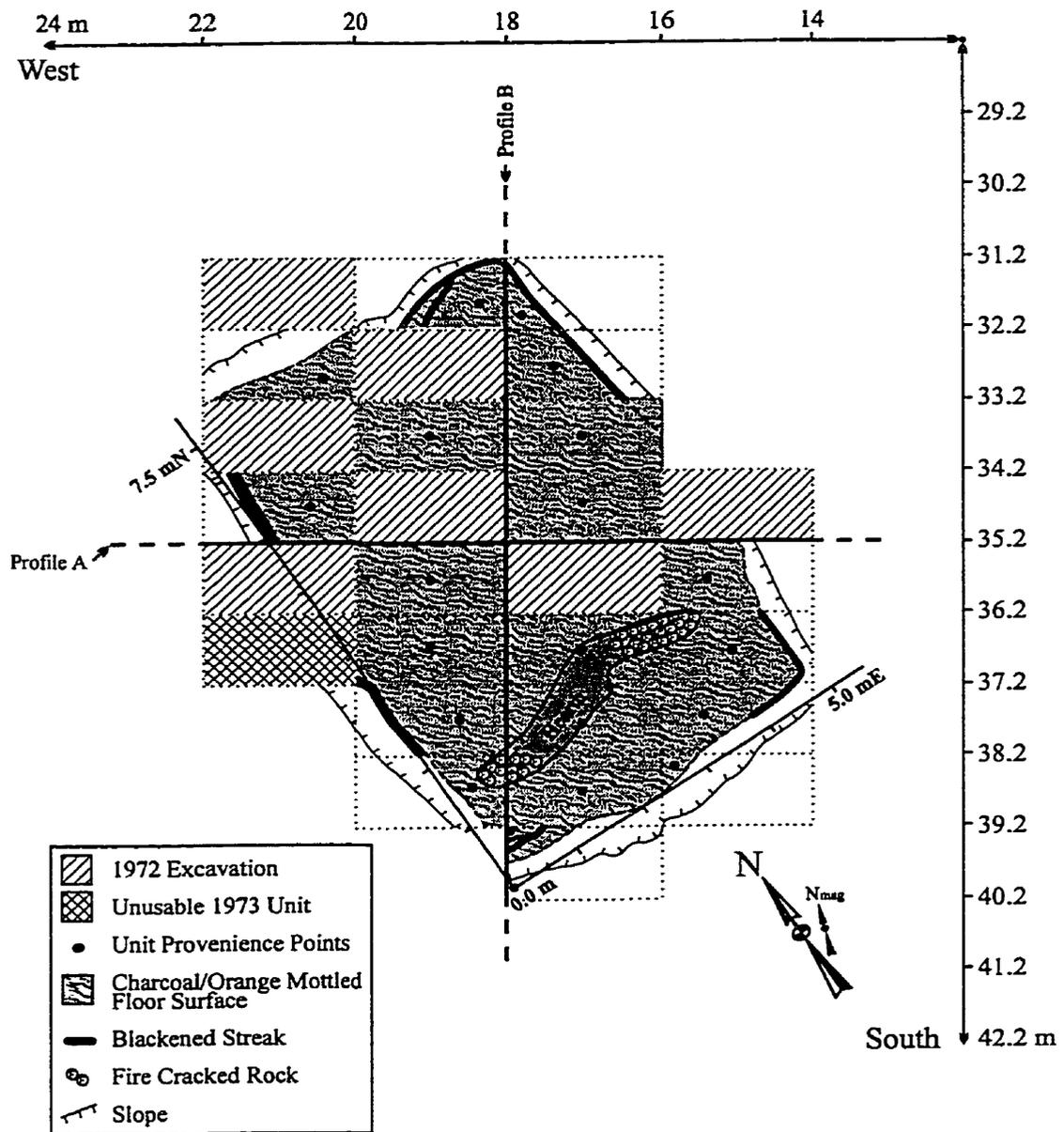


Figure 20. Floor Cell Provenience Points.





counts alone“ (ibid.). SYSTAT 5.2.1 was used for this purpose.

Using SYSTAT, shaded contour maps (that is, *distribution plan maps*) were produced for most of the artifact categories. Contour lines are fit to the Z variables of each cell (Lodwick and Whittle 1970). ‘Reading’ these distribution plans is simple. Shading increases with frequency. Dark areas indicate high frequencies and light areas indicate low frequencies of artifacts. To compensate for missing values from unusable units or units lacking data, an *inverse squared distance* (that is, Shepard’s method) smoothing function was incorporated in the map production process. This type of smoothing function takes into account weighted averages per data point with weights being a function of the Euclidean distance to the surrounding points (Wilkinson 1992:436). Extrapolated data are ‘fit’ across units for which no ‘real’ data exist. In this manner, distribution plans of the complete floor surface were produced based on the available data from 75% of the total area.

To limit smoothing to locations within the floor area, which was off-set from the excavation grid orientation, the axis of the floor required adjusting. An arbitrary datum (0 m N, 0 m E) was established in the SW corner of the exposed floor. Maximum ‘X’ variable values were set at 5 m E. Maximum ‘Y’ variable values were set at 7.5 m N. These variable limits reflect the actual floor dimensions and restrict the operation of the smoothing function to within this area. Cell proveniences were assigned corresponding northing and easting values. Cell specific proveniences (original and adjusted) and artifact frequencies are provided in Table 6.

The resolution of the contouring is specific to each distribution plan. The number of contours is indicated by the number of cells in the shading key to the right of each map. Frequency values accompany the shading key and indicate the number of items per shade. In most cases, the maximum frequency value (Z limit) corresponds with the largest of the cell values per graph. The only exception to this is the Biface Point distribution plan, in which the Z limit is slightly greater than the maximum cell value. Comparative total values are

provided in Table 6.

At a purely visual level of interpretation, these distribution plans may be somewhat misleading. Implementing the process described above, artifact clusters will nearly *always* be manufactured from input data. Because of the methodology employed in limiting the Z value, the number of items comprising apparent clusters always corresponds to the maximum depicted Z value. Cluster locations correspond closely with the cell containing the maximum number of items, although they may be affected by the smoothing function. Cluster legitimacy, however, is related to the frequency of artifacts being represented. Cluster validity increases with increasing artifact frequencies.

Probability coefficients, as per *Poisson probability distributions*, can be used to assess the relative significance of identified artifact clusters, both negative and positive. In comparison to an evenly distributed pattern of artifacts, probability coefficients decrease as cell specific artifact proportions either increase *or* decrease. Low probability coefficients are used to indicate occurrences of clustered items. High artifact proportions indicate positive clusters. Low artifact proportions indicate negative clusters. While probability coefficients may be use to provide an idea of the significance of artifact clustering, their use here was considered unnecessary due to the fairly obvious nature of the resultant analysis.

#### **4.12 Artifact Distribution Plan Maps - Floor 1**

Artifact distribution plan maps are presented below (Figures 21-29), representing the complete range of distribution patterns associated with Floor 1. Included, in the order presented, are:

- the complete artifact assemblage, including cores but excluding debitage
- cores

- core fragments
- combined cores and core fragments
- combined biface points and biface fragments
- combined acute-edged expedient tools and tool fragments
- combined obtuse-edged expedient tools and tool fragments
- combined notches, gravers, drills and burins
- combined spalls
- debitage

Because the aim of this part of the study is to identify activity areas, these tool categories were employed as representing relatively discrete functional units as discussed above. Combined tool categories were utilized for three reasons: (1) they provide a means of increasing frequency values in an attempt to delineate valid clusters; (2) they maximize data per functional class and; (3) they potentially compensate for some of the subjectivity involved in making functional distinctions between complete and fragmentary items of the same class (such as, at what point does an acute-edged expedient flake fragment become unusable?). When viewing these distribution plans, it must be remembered that the hearth, a significant functional element, is not depicted in association with the artifact distributions on the representative floor plan.

As portrayed in the Complete Tool Assemblage distribution plan (Figure 21), it is clear that the majority of tools are located in the northeast corner of the floor. A number of the more discrete, functional categories replicate this pattern. Core fragments, and combined acute- and obtuse-edged expedient tools and tool fragments cluster in this area. To a relatively limited extent, acute-edged expedient tools are also present near the hearth in the southwest corner. Together, these two categories comprise approximately 74% of the Floor 1 tool assemblage. Tools from the remaining categories, though less numerous, present somewhat different patterns. Cores, biface points and biface fragments are mainly located in

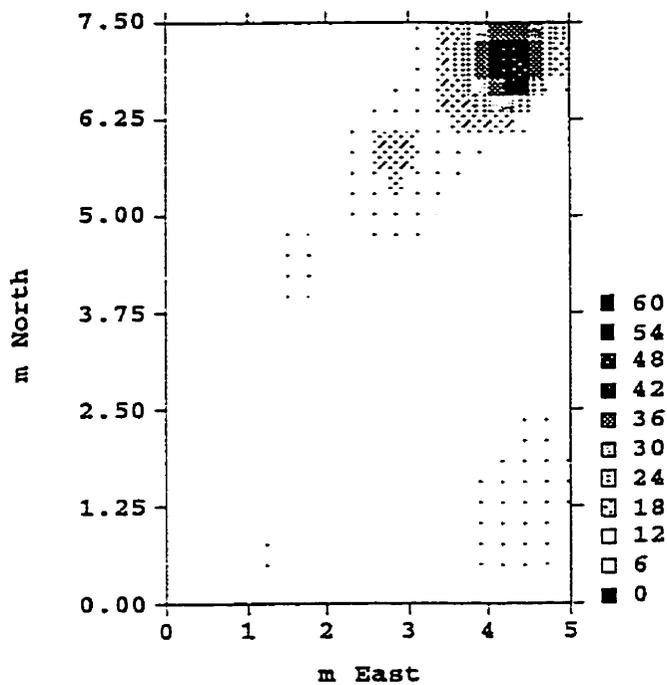


Figure 21. Complete Tool Assemblage Distribution (Floor 1).

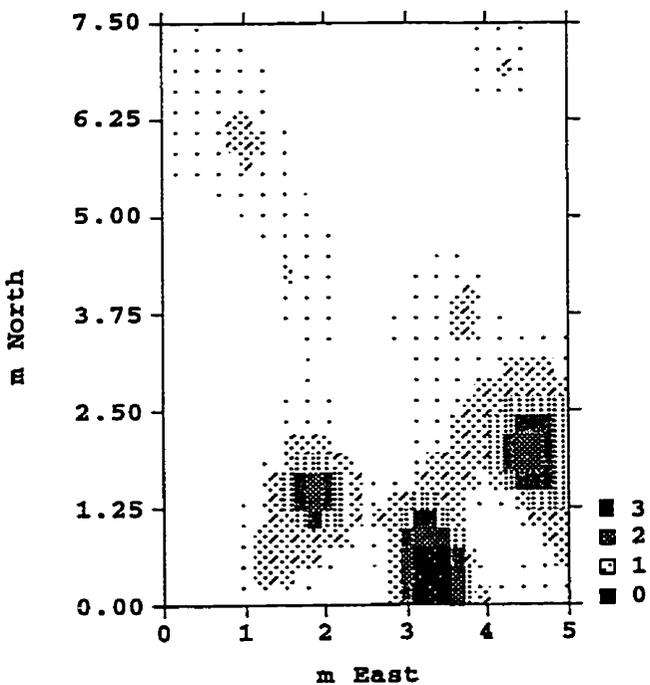


Figure 22. Core Distribution (Floor 1).

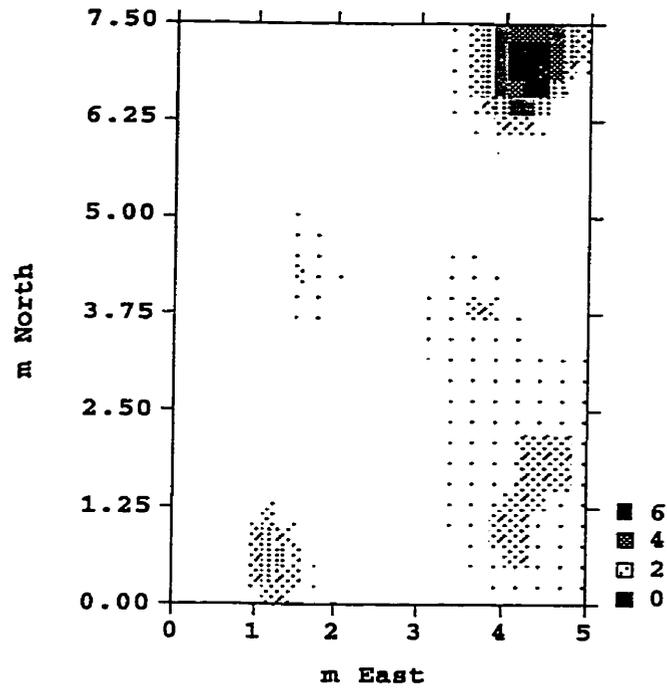


Figure 23. Core Fragment Distribution (Floor 1).

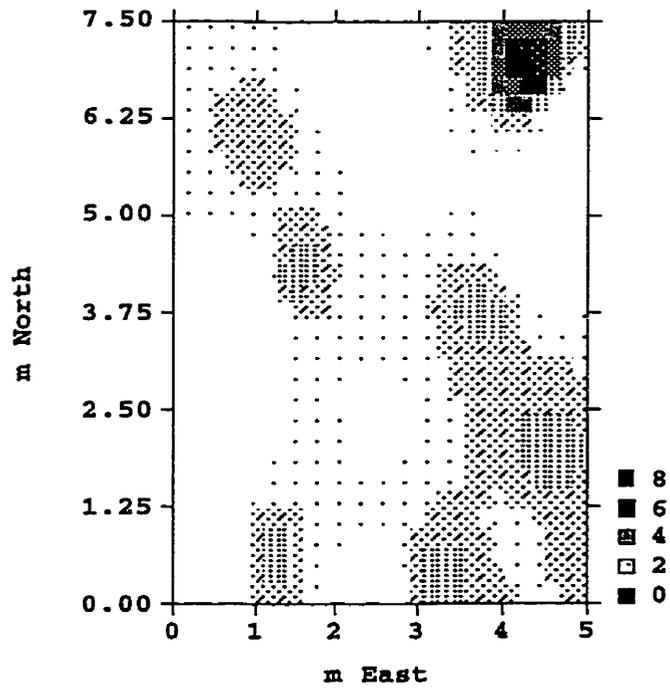


Figure 24. Core and Core Fragment Distribution (Floor 1).

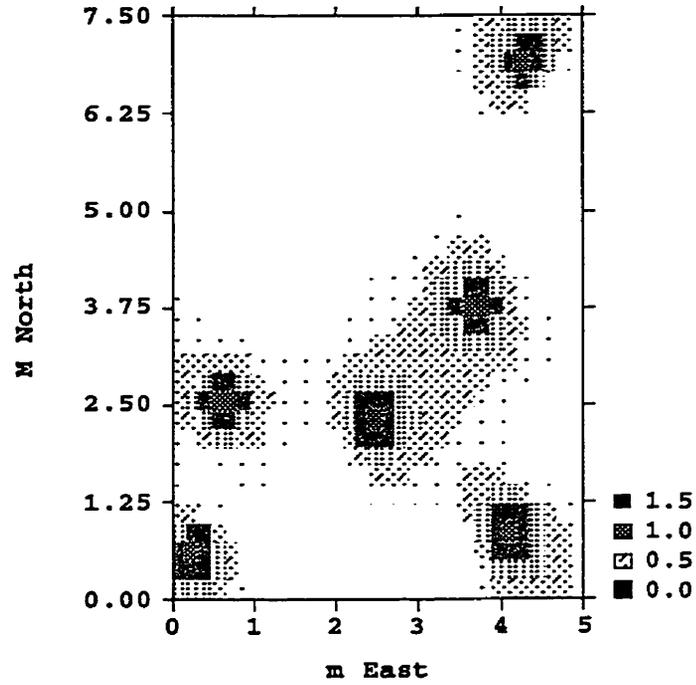


Figure 25. Biface Point and Point Fragment Distribution (Floor 1).

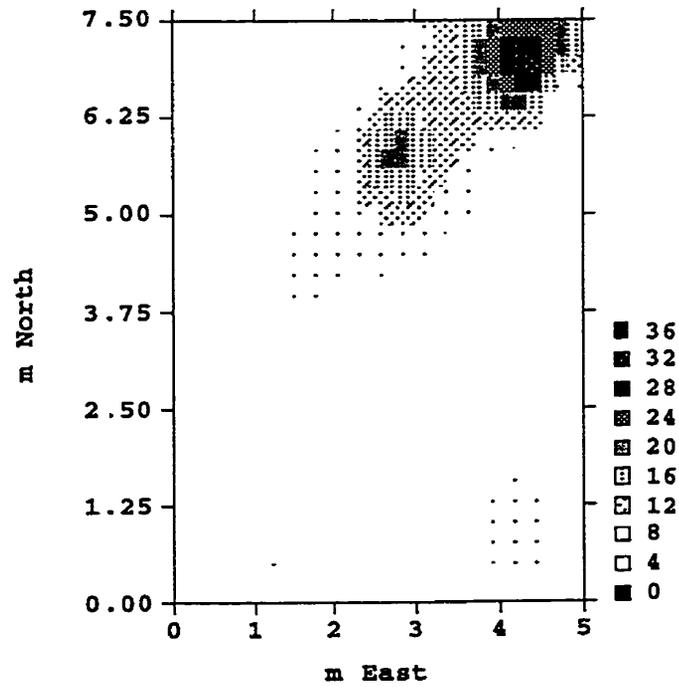


Figure 26. Acute-Edged Expedient Tool and Fragment Distribution (Floor 1).

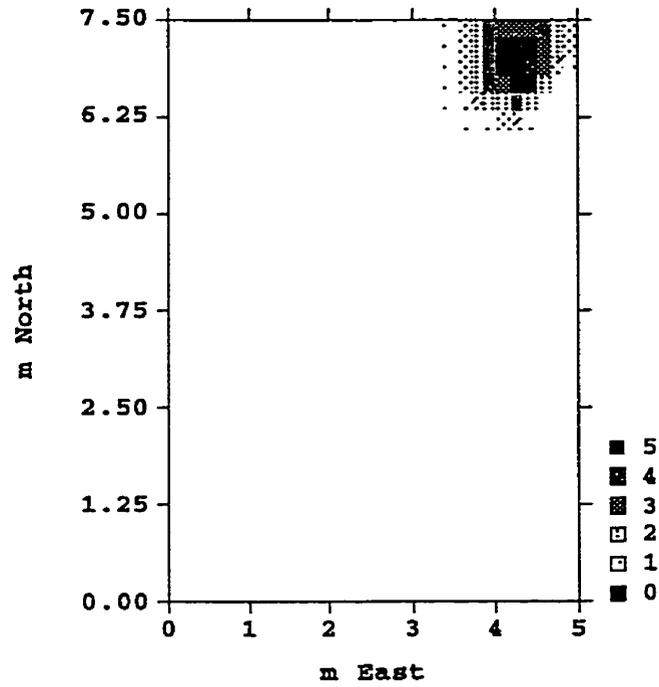


Figure 27. Obtuse-Edged Expedient Tool and Fragment Distribution (Floor 1).

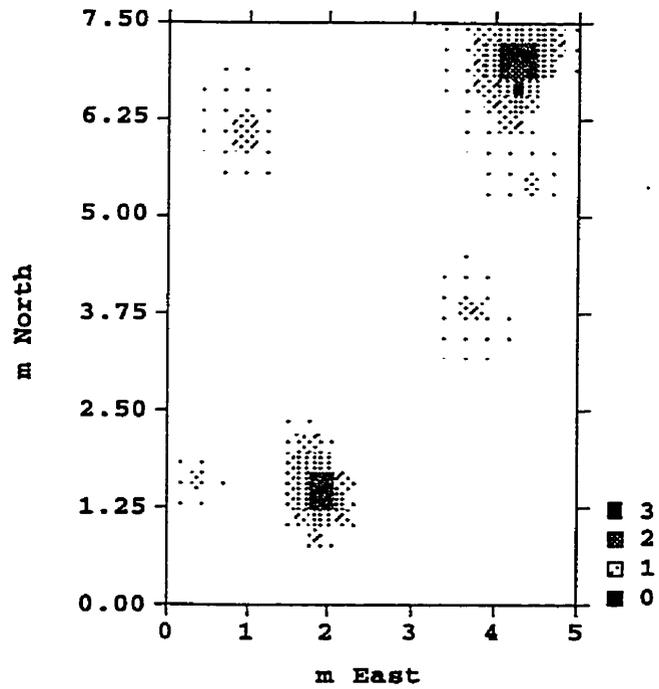


Figure 28. Notch, Graver, Drill, Burin Distribution (Floor 1).

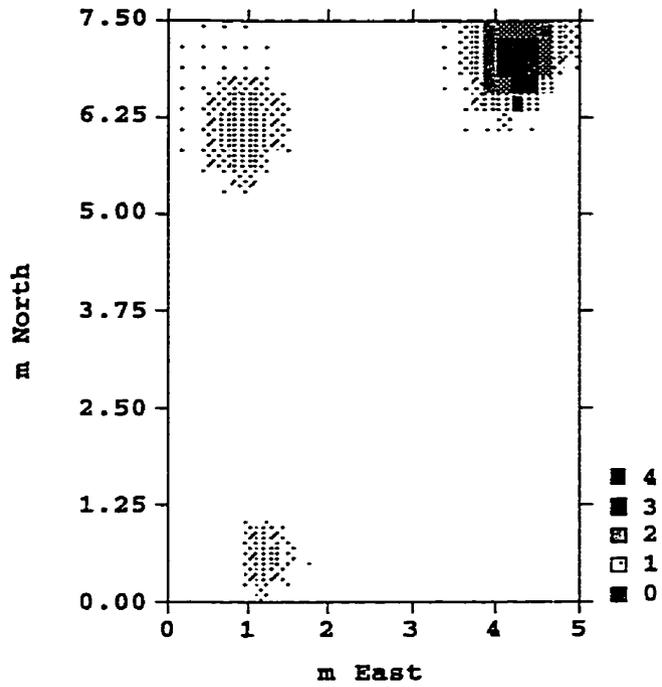


Figure 29. Complete Spall Assemblage Distribution (Floor 1).

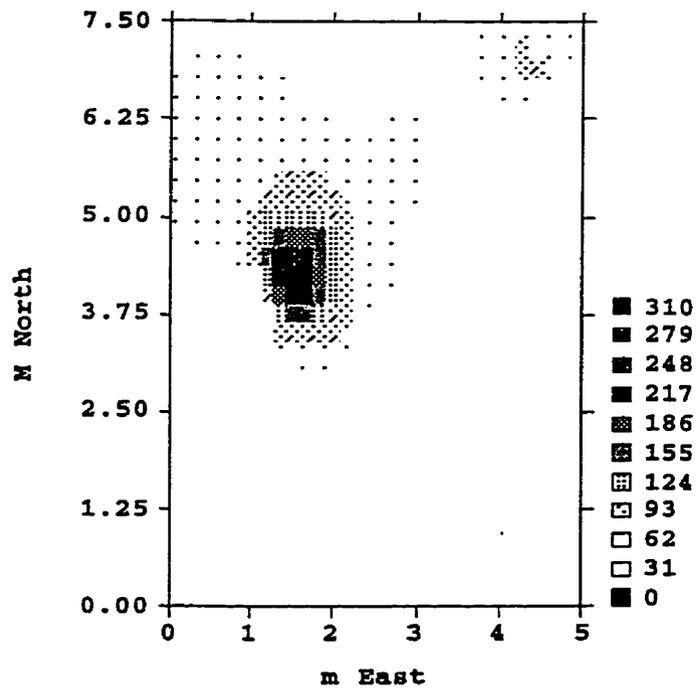


Figure 30. Debitage Assemblage Distribution (Floor 1).

the vicinity of the hearth, on the southern third of the floor. The distribution of these items is slightly skewed toward the southwest corner. Two categories, combined spalls and combined notches, gravers, drills and burins, are of mixed distribution -- scattered throughout the northeast, south, and northwest portions of the floor. Combined cores and core fragments display a similar pattern. Debitage, interestingly, presents a unique pattern. Unlike the other categories,debitage clusters strongly in the west-central portion of the floor, slightly skewed to the northwest.

#### **4.13 Definition of Artifact Distribution Zones**

Given the above distribution patterns, it is possible to divide the floor into five general *distribution zones* based on the presence or absence of artifacts (Figure 31). Within each zone, it is possible to define the composition of the tool assemblage and make inferences about the types of materials which may have been worked. Functional divisions of the floor area may be determined through interzonal comparison.

*Zone 1*, representing the northeast corner of the Maurer structure floor, has by far the highest frequency of tools. While acute-edged expedient tools are most abundant, tools from each of the analyzed categories are present in this zone. However, biface points, biface fragments and complete cores occur in low frequencies. Comprised of cutting, scraping and incising tools, and cores anddebitage (that is, debris from the production and/or maintenance of stone tools), the *Zone 1* assemblage incorporates a number of functionally mixed categories. The range of activities represented by these tools is varied.

*Zone 2*, located on the northwest corner of the floor, has a low tool frequency, with an assemblage comprised of spalls, a notch,debitage and cores, including the sole microblade core on Floor 1. Associated functions are primarily limited to scraping and stone tool

production and maintenance. The types of tools found here are likely associated with hide and wood working.

*Zone 3*, located on the west-central portion of the floor, contains acute-edged expedient tools, cores and a large amount of debitage. The debitage cluster in this location is nearly divided between G2 and G3 size-grade flakes, indicating a significant frequency of debris from early stage stone tool manufacturing. The *Zone 3* assemblage is somewhat unique in that it is dominated by lithic reduction debris -- cores, core fragments and debitage. While some cutting implements are found here, the primary function associated with this area appears to be stone tool manufacturing.

*Zone 4*, represents the area surrounding and immediately south of the hearth. An assemblage of mixed tool types, in low frequencies, is located in this zone. Notably, a relative abundance of bifaces (including biface points, preforms and fragments) and complete cores differentiates *Zone 4* from the rest of the floor. All of the blade-like flakes (n=2) from Floor 1 are located in this zone, one near the hearth and the other within the hearth fill. Cutting, scraping and incising tools, projectile points/knives, and cores and debitage characterize *Zone 4*. The association of bifaces and/or complete cores in this zone may have resulted from its use for the storage of raw material and valuable, labor-intensive tools, or the use of the hearth for rehafting bifaces (Keeley 1982:802). Of all the zones on the Maurer structure floor, *Zone 4* represents the most functionally varied and diverse assemblage and the widest variety of implied uses of its space.

*Zone 5* is located in the east-central portion of the floor, extending both west and northeast toward the floor margins. A relative absence of artifacts sets *Zone 5* apart from the surrounding artifact clusters which indicate Zones 1-4. Lacking the same indications of positive artifact clusters, *Zone 5* would appear to be marginal to the other parts of the floor.

In addition to the combined artifact categories described above, it is interesting to note the distribution of a number of individual artifact types. These include pecked tabular

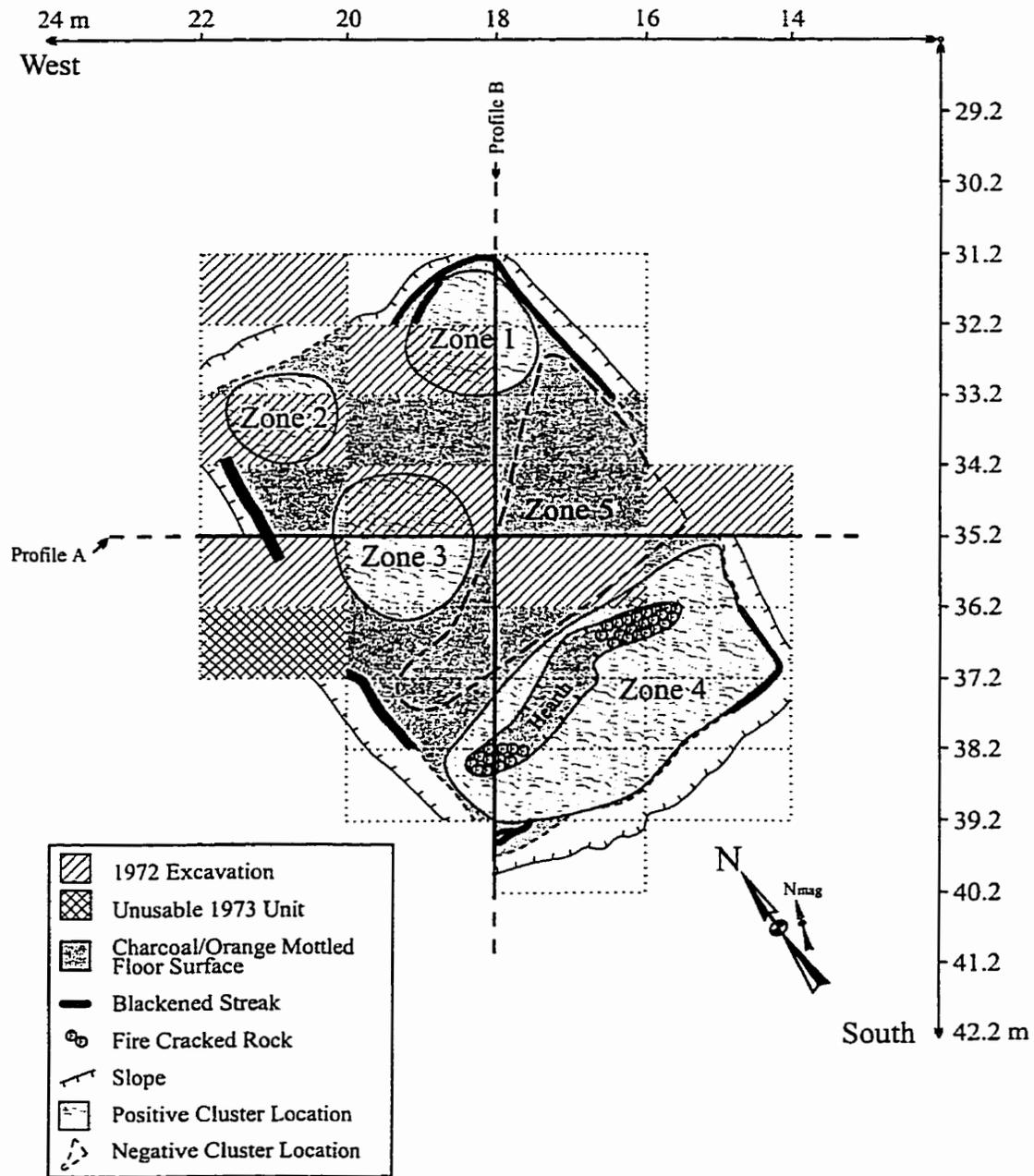


Figure 31. Floor Assemblage Distribution Zones.

palettes, tabular palette fragments and edge- and end-battered pebbles – none of which occur in sufficient frequencies to create valid distribution plans. Both tabular palette fragments (slate) are located at the east end of the hearth, in Unit 20. These fragments, when refit, form a complete, slightly concave palette approximately 20 cm by 13 cm. One edge- and end-battered pebble comes from Unit 33, adjoining the hearth. A second edge- and end-battered pebble and the pecked tabular palette were located in the hearth matrix. The association between the hearth and the assemblage of edge- and end-battered stones and palettes is very strong. Five of six such artifacts from the Floor 1 assemblage are located either within the hearth or in its general vicinity. Similar in nature to mortars and pestles, items linked with food – particularly root – preparation (Ruscavage-Barz 1994:2), these artifacts support the proposed cooking function of the hearth. Thus, Zone 4 is partially composed of a cluster of ‘consumptive’ type items.

Approached inductively, spatial patterning of artifacts is apparent amongst the Floor 1 artifact assemblage. The nature of this patterning appears to be based on the presence/absence of artifacts, artifact function and association of artifacts with the hearth. Broadly definable functional patterns are identifiable in the distribution of the Floor 1-associated artifacts. The functional patterns associated with Zones 1-5 form the basis for inference of Floor 1 activity areas.

#### **4.14 Taphonomy Reconsidered**

Before making behavioral inferences about what activities might have been performed on different portions of the Maurer structure floor, it is necessary to address the question of whether or not the observed artifact distribution patterns are the intact result of human activity. Active taphonomic agents must be identified and their effects on the

integrity of the floor assemblage evaluated. Thus, using the above artifact distribution data, I investigate the effects of 'cleaning' and 'scavenging/recycling'.

#### 4.15 Floor-Cleaning Activities

Anthropogenic floor-cleaning is the first taphonomic factor to be considered. Based on the distribution and relative densities of artifacts across Floor 1, floor cleaning<sup>2</sup> appears to have affected portions of the floor assemblage. Assuming that floor-cleaning activity was a factor, Zone 5 appears to have suffered the greatest impact. The average artifact density per square meter in Zone 5 is remarkably low, compared to the rest of the floor area. Most of the area of five units (# 29, 30, 31, 47 and 48), equaling roughly nine square meters, comprises Zone 5. Only 12 tools and 93 pieces of debitage are located within this area, averaging roughly 1.3 tools and 10.3 pieces of debitage (11.6 artifacts) per square meter. Additionally, 52% of the debitage is of the relatively small, G3 size grade (1/4-1/2"). Comparatively, the remaining 13 floor units (excluding Units 23 and 36, which had negligible areas within the structure) average approximately 10.2 tools and 41.6 pieces of debitage (51.8 artifacts) per square meter. While densities of both tools and debitage are significantly lower in Zone 5, the comparative tool density is particularly low. Even the units comprising Zone 4 (#20, 21, 22, 33, 34, 35 and 49), which also have relatively low artifact frequencies, average nearly 5.5 tools per square meter. Debitage densities are roughly comparable between Zones 4 and 5. It should be kept in mind that these densities occur within a 10 cm thick deposit.

The differences in artifact densities, particularly tools, between Zone 5 and the remaining floor area suggest three possible scenarios: (1) without invoking a floor-cleaning

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<sup>2</sup> The use of temporary floor coverings, such as mats and hides, is also a possibility in this context. Such coverings - if regularly moved and/or shaken outside -- may have had the same taphonomic effect(s) and appearance as floor cleaning.

scenario, tools were infrequently used in this portion of the floor, resulting in a low artifact density; (2) if tools were used in Zone 5, they and associated debris were routinely removed; or (3) routine cleaning of this portion of the floor was performed regardless of the use of tools. In any case, it is clear that Zone 5 represents an area with minimal debris. If floor-cleaning is an active taphonomic agent, it appears that its effects were generally limited to this artifactually marginal zone. The general lack of artifacts in Zone 5, whether or not it is the result of cleaning, may be related to the function of this section of the floor. If floor-cleaning was the factor which resulted in the observed spatial pattern, it did not effect the analysis of floor assemblage distributions. Such activities increase definition in floor patterning, and possibly aid in the identification of functional floor zones.

#### **4.16 Scavenging and Recycling**

The possible removal of floor artifacts by persons engaged in 'scavenging' or 'recycling' activities is more difficult to detect. Given the expectations developed for what types of tools and materials were likely preferred for scavenging, it is theoretically possible to investigate disturbance of this nature. In relation to raw materials, the Floor 1 assemblage is comprised primarily of basalt, although metasediment, chert, and miscellaneous igneous and metamorphic lithic raw materials are also present in varying frequencies (Table 7). These materials are generally locally available in abundance near the Maurer site. High quality and/or exotic lithic materials, such as obsidian, high quality crypto-crystalline silicates, quartz-crystal and nephrite are completely absent from the floor assemblage. However, scavenging does not account for the complete absence of such material. Assuming active scavenging of a disused or abandoned structure, some valued material should still be present, particularly in the form of small size debitage. Such material is unlikely to be considered

usable and would also be difficult to locate. That such raw materials were never present in the floor assemblage is a simpler explanation. This explanation is supported by the expedient nature of the tool assemblage, which is unsophisticated and did not require high quality materials to manufacture.

Material Type	Total Floor Assemblage - Debitage -		Total Floor Assemblage - Tools -		Floor 1 - Debitage -		Floor 1 - Tools -	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
Basalt (coarse)	145	10	43	16	80	9	32	17
Basalt (fine)	788	55	133	48	472	54	95	50
Misc. Igneous	160	11	19	7	124	14	10	5
Chert	158	11	41	15	76	9	28	15
Misc. Metasediment	147	10	24	9	100	11	18	9
Misc. Metamorphic	16	1	9	3	8	1	5	2
Unidentified	31	2	6	2	15	2	3	2
<b>Total</b>	<b>1445</b>	<b>100</b>	<b>275</b>	<b>100</b>	<b>875</b>	<b>100</b>	<b>191</b>	<b>100</b>

As for the scavenging of tools, a similar argument may be made. Valuable, labor-intensive items are rare, with bifaces representing the only items likely to retain such value. While a few biface points and point fragments are present, they comprise a very small percentage of the complete assemblage. Scavenging may have affected biface frequency. Within the biface assemblage, the ratio of complete points and preforms to point fragments is 1:1.3. Hypothetically, if scavenging had reduced an initially larger biface assemblage, the ratio of fragments might be expected to be higher. This expectation is based upon two assumptions: (1) complete bifaces are more likely to be considered valuable items for salvaging than biface fragments; and (2) the frequency of biface fragments is generally

related to the intensity of biface use. Given these assumptions, a large number of biface fragments should occur in an intensively used biface assemblage. Salvaging of complete (that is, valuable) bifaces would leave behind an even larger frequency of associated fragments. In relative terms, fragments would considerably outnumber complete bifaces in the remnant assemblage. Based on the calculated ratio, this is not the case on Floor 1. Additionally, if the floor assemblage were more susceptible to scavenging after final structural abandonment, as opposed to periods of intermittent occupation, a larger frequency of valuable goods should have been recovered from the basal floor deposits. Again, this was not the case. Biface points and preforms are more numerous on Floor 1 than Floor 2. While the two floor areas are not equal, this comparison provides some indication of the likelihood and/or intensity of any scavenging activity. A small biface assemblage is consistent with the generally expedient nature of the floor assemblage tool collection. In accordance with the stated assumptions, significant evidence of scavenging and recycling is not present in the Floor 1 assemblage. It is unlikely that post-depositional scavenging/recycling, or taphonomic agents in general, adversely affected the floor assemblage distribution or constituent elements.

#### **4.17 Floor Assemblage Integrity**

Evaluation of taphonomic factors that may have affected the integrity of the structure failed to find significant indications of floor assemblage disturbance. Some movement of artifacts on the floor is expected to have occurred, particularly over the length of time proposed (LeClair 1976:42) for this site. However, any such movement appears to have been minimal within the Maurer structure. Various taphonomic factors (floor-cleaning, possible burning) may have actually aided in the preservation of the floor pattern. Because the

distribution of artifacts within the structure intrinsically 'makes sense' on a functional level, it appears that the Floor 1 artifact assemblage was relatively intact when excavated. Thus, patterns identifiable in the distribution of artifacts across Floor 1 were likely the undisturbed result of past human activity.

#### **4.18 Defining Activity Areas - Floor 1**

In the spatial analysis above, I divided Floor 1 into five distinct zones. Based on the inventory of associated artifacts, I observed that these zones represent relatively discrete units -- each with a particular functional 'identity.' Analysis of these 'identities' should allow the inference of activity areas and the use of space on Floor 1.

At the broadest scale, the functions of the tools associated with Floor 1 represent a wide range of activities related to:

- the production and maintenance of stone tools
- cutting
- scraping
- incising
- pecking/percussing
- grinding/mashing

Tools in the Floor 1 assemblage were used in working lithic material, and likely hide and wood, as well. 'Living' activities -- socializing, sleeping, entering and exiting the structure -- may also be associated with the absence of artifacts, particularly tools, in Zone 5. Identification of social or 'traffic' areas by other authorities have been based on similar observations (Hayden and Spafford 1993:128; Leroi-Gourhan and Brezillion 1972:254). Thus, Floor 1 may be divided into a number of activity areas as depicted in Figure 32. The

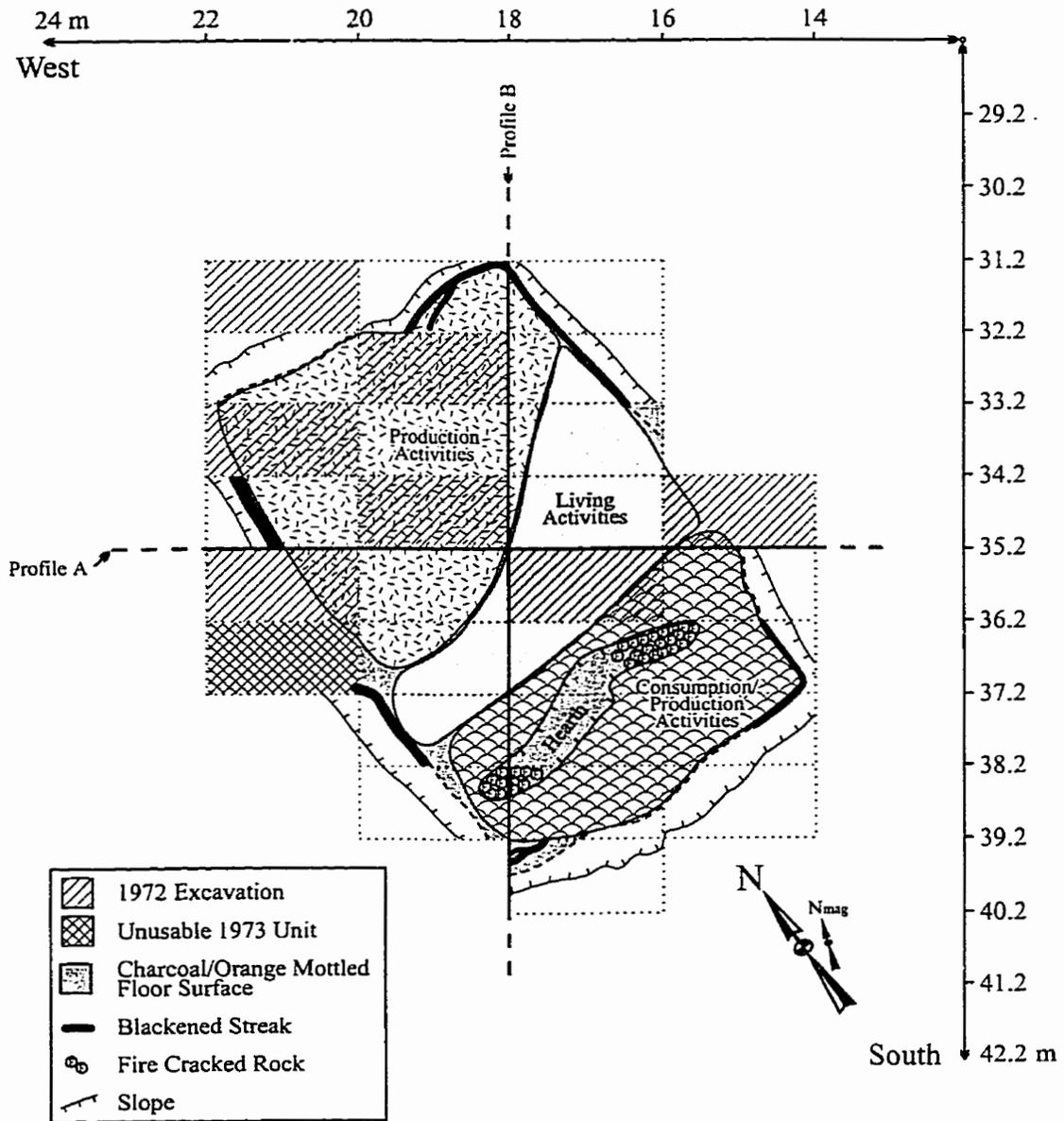


Figure 32. Inferred Activity Areas.

functions of the tools in Zones 1, 2 and 3 imply that this area was used for *production* related activities – generally related to the production and maintenance of non-food items. Tools representative of diverse activities define the northeast corner. Tools representative of hide and/or wood working activities define the northwest corner. Lastly, remains of stone tool-production activities define the northwest-central portion of the floor.

Because the Floor 1 tool assemblage is dominated by multi-purpose artifacts, it is not possible to specify that they were used solely for non-food productive (that is, non-*consumptive*) purposes. However, no tools (such as, edge- and/or end-battered pebbles, palettes) or cultural features (hearths) normally associated with food preparation are found among the artifacts in Zones 1-3 (on the north half of the floor). Lacking these associations, there is no direct evidence that food preparation or consumption took place in these zones.

The tool and feature assemblage in Zone 4, the southern third of the floor, is associated with both *consumption* and *production* types of activities. As mentioned above, this portion of the floor contains the most functionally diverse set of tools on Floor 1, and it is apparent that several types of activities took place in this location. In addition, edge- and end-battered cobbles, palettes and the hearth are almost entirely located here. Thus, Zone 4 contains the only direct evidence of *consumption* activities – food preparation, cooking and eating. Additional evidence (cores, debitage) suggest that *production* activities were also practiced in the southern (particularly south-eastern corner) portion of the floor, which generally represents a mixed *consumption/production* activity area.

Zone 5, which extends across the southwest-central, east-central and northwest-central portions of the floor and flaring out toward the east wall of the structure (see Figure 31), is interpreted as a *living area*. Tools were either not extensively used, or were routinely removed from this area of the floor, which appears to have been kept deliberately free of debris. The low frequency of artifacts in Zone 5 suggests that this portion of the floor may have served a number of ‘living’ capacities, including, a corridor for movement, and a

general gathering place for such eating, sleeping and/or socializing. As well, the eastward flare of Zone 5 might be indicative of the intensity of 'traffic flow' across this portion of the floor. In consideration of this, the spatial arrangement of Zone 5 indicates that an entrance was centrally located along the eastern wall of the Maurer structure.

The composition and spatial distribution of artifacts on Floor 1 suggests the types of activities which may have occurred within this structure. The patterning of functional items allows insight into where particular types of activities took place. At a low level of resolution, three discrete activity areas related to *production*, mixed *consumption/ production*, and *living* activities are discernible on Floor 1. Insight is provided into the function and internal use of space within the structure.

#### **4.19 Testing Assertion Two**

Having analyzed the composition, distribution and taphonomy of the Maurer structure floor assemblage, it is possible to test Assertion Two -- that the structure functioned as a house. In comparison, the observed results of this analysis compare favorably with the expectations developed for testing Assertion Two. A variety of tool types and at least one functioning hearth represent a diverse range of possible functions amongst the floor assemblage. Spatially, the distribution of artifacts and their association with the hearth appears to be patterned along functional lines. Human actions, rather than taphonomic agents, appears to be principally responsible for these patterns, from which three general activity areas can be inferred:

- (1) production activities - on the northern portion of the floor
- (2) mixed consumption/production activities - on the southern portion of the floor
- (3) living activities - on the central portion of the floor

These activities are representative of the wide range of activities expected of a household group, comprising the basic socio-economic unit of organization and means of production. The observed floor assemblage composition and spatial patterning satisfied the expectations for a domestic structure, as developed in this study . Evidence supports the inference that this structure functioned as the location for a variety of activities. While insufficient data does not permit assessment of the intensity of the hearth, available evidence (in the form of FCR and charcoal) indicates that the hearth was utilized up until the final abandonment of the structure. The thickness and rich organic nature of the floor deposits infer an extended and generally intensive use of the structure. Given the positive outcome of the above comparison, Assertion Two is accepted. It is concluded that the Maurer structure was a house.

## CHAPTER 5

### Evaluating the Age of the Maurer House

#### 5.1 Objective

In this chapter, I focus on investigating the age of the Maurer house. Assertion Three – representing the reported age of this house (LeClair 1976:42) – is presented, and expectations supporting this assertion are developed and tested. I assess the reliability of the data on which LeClair's age estimates were based. As means of determining its relative age, I compare the Maurer house assemblage to cultural material typifying a range of time periods in the upper Fraser Valley. In addition, I compare this assemblage to those of four representative 'Charles Culture' sites from the Gulf of Georgia region.

#### 5.2 Assertion Three

*Assertion Three* states that the Maurer house represents a 3500-5500 years old, Eayem Phase structure (LeClair 1976:42). While both assemblage composition and radiocarbon dates support this assertion, neither set of data has been comprehensively reported. Thus, Assertion Three provides a useful focus for developing expectations for testing the age of the Maurer house.

#### 5.3 Expectations

As stated above, two forms of data – radiocarbon dates and assemblage composition – are expected to support Assertion Three. Some, if not all, of the reported DhRk 8

radiocarbon dates (uncalibrated) ranging between 3860 and 4780 BP<sup>1</sup> (LeClair 1976:42) should relate directly to the Maurer structure. If valid, processed radiocarbon samples should have three-dimensional proveniences directly associated with elements of the house remains, and represent undisturbed primary deposits of material of appropriate type and adequate quantity for radiocarbon dating. Sample locations and materials should be replicable, that is, adequately referenced in the 1973 excavation notes. Field collection and radiocarbon dating methods should have followed acceptable standards, minimally of 1973 and ideally of the present. A consistent range of dates should be represented by radiocarbon samples from the house remains.

Additionally, the Maurer house assemblage composition is expected to resemble other upper Fraser Valley, Eayem phase and possibly Charles Culture sites -- the proposed homogenous culture represented by the 3500-5500 BP sites in the Gulf of Georgia, Fraser Delta and Lower/Upper Fraser River Valley regions (Pratt 1992). Such assemblages should be consistent in terms of the general presence or absence of artifact types and/or specific artifact proportions. The only other site in the upper Fraser Valley with an apparently similar function and age, Hatzic Rock (Occupation III, ca. 4800 BP) is the most suitable for comparison with the Maurer house. While likely functionally different, the St. Mungo, Crescent Beach and Glenrose Cannery sites from the Fraser Delta region also represent reported Charles Culture age assemblages comparable to the Maurer house.

#### **5.4 Radiocarbon Dates**

Determining which reported radiocarbon dates (LeClair 1976:42) actually are

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<sup>1</sup> Again, these figures were derived, in order to standardize date reporting, by adding an amount of 1950 to the 1910 and 2830 B.C. uncalibrated dates originally presented by LeClair. Additionally, all presented dates are *uncalibrated*, unless otherwise noted.

representative of the Maurer house is an immediately relevant problem. Referencing field notes documenting the locations of sample material for each of the seven reported dates, it was possible to determine date associations. I found that only five of the seven dates actually are associated with DhRk 8, while the remaining two relate to material from DhRk 8A. Data for the DhRk 8-associated radiocarbon dates, including both uncalibrated and calibrated<sup>2</sup> dates, are presented in Table 8. Additionally, radiocarbon sample locations, as identified in LeClair's field notes, are depicted on the house floor plan in Figure 33.

As Figure 33 illustrates, three of the five radiocarbon samples from DhRk 8 appear to have been collected from the area *within* the Maurer house. Samples 2 (GaK-4919) and 9 (GaK-4922) represent carbonized organic matter from the bottom of the hearth trench in Unit 34 and Unit 33, respectively. Sample 8 (GaK-4921) consists of a charcoal fragment apparently located on the surface of the house floor. Both uncalibrated and calibrated (in parentheses) radiocarbon dates for these three samples are presented, as 'BP' values, below. Thus, Sample 2 dates to  $4220 \pm 100$  BP and Sample 9 dates to  $4240 \pm 380$  BP, representing consistent dates from the hearth feature. Alternately, Sample 8 provides an anomalous age of  $1410 \pm 90$  BP. These dates will be discussed in greater detail below.

The two remaining radiocarbon samples from DhRk 8, Samples 10 (GaK 4923) and 13 (GaK-4927), are not directly associated with the Maurer house. Sample 10, which dates to  $4720 \pm 380$  BP, was apparently collected from the basal cultural deposit 4.5 m west of the structure. Of greater importance, Sample 13 is associated with what may be a second structure. This sample was collected from a dark layer of organic sediment located in the north side of the road cutbank approximately 20 m northeast of the Maurer house feature. A photograph taken of this feature in 1973 (Plate 12) depicts this layer — an apparent floor

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<sup>2</sup> Radiocarbon age calibrations were based on the radiocarbon time scale calibration curves derived by Stuiver and Becker (1993).

Table 8. Dated radiocarbon sample data (DhRk 8).						
Sample No.	GaK No.	Provenience	Sample Material (per Gakushuin)	Matrix Description (per LeClair)	Association (per LeClair)	Radiocarbon Date (calibrated)
2	4919	37.55 mS/17.10 mW; 286 cmBD (Unit 34)	humic soil	greasy black charcoal matrix; burned soil and organic matter	central hearth area	4220 ± 100  (4850)
8	4921	34.40 mS/16.00 mW; 272 cmBD (Unit 31)	charcoal	greasy black material; burned soil and organic matter	taken from the east side of the house floor and represents the burned organic material common over the floor; burned timber fragment laying on the house floor	1410 ± 90  (1310)
9	4922	36.25 mS/16.00 mW; 300 cmBD (Unit 33)	peat	greasy black burned soil and organic matter	NE corner of the hearth; 15-20 cm below the house floor - in direct association with fire-cracked rock	4240 ± 380  (4870)
10	4923	38.20 mS/24.79- 24.92 mW; 79 cmBD (Unit 74)	soil	slightly greasy, black with organic matter and soil	basal cultural deposit west of house; division between the yellow brown and olive brown (deposit); immediately above sterile	4720 ± 380  (5460)
13	4927	10.00 mS/11.74 mW; (not w/in excavation)	soil	burned soil and organic matter	possible structure profile in road cut @ 20 m NE of house	4780 ± 340  (5510)

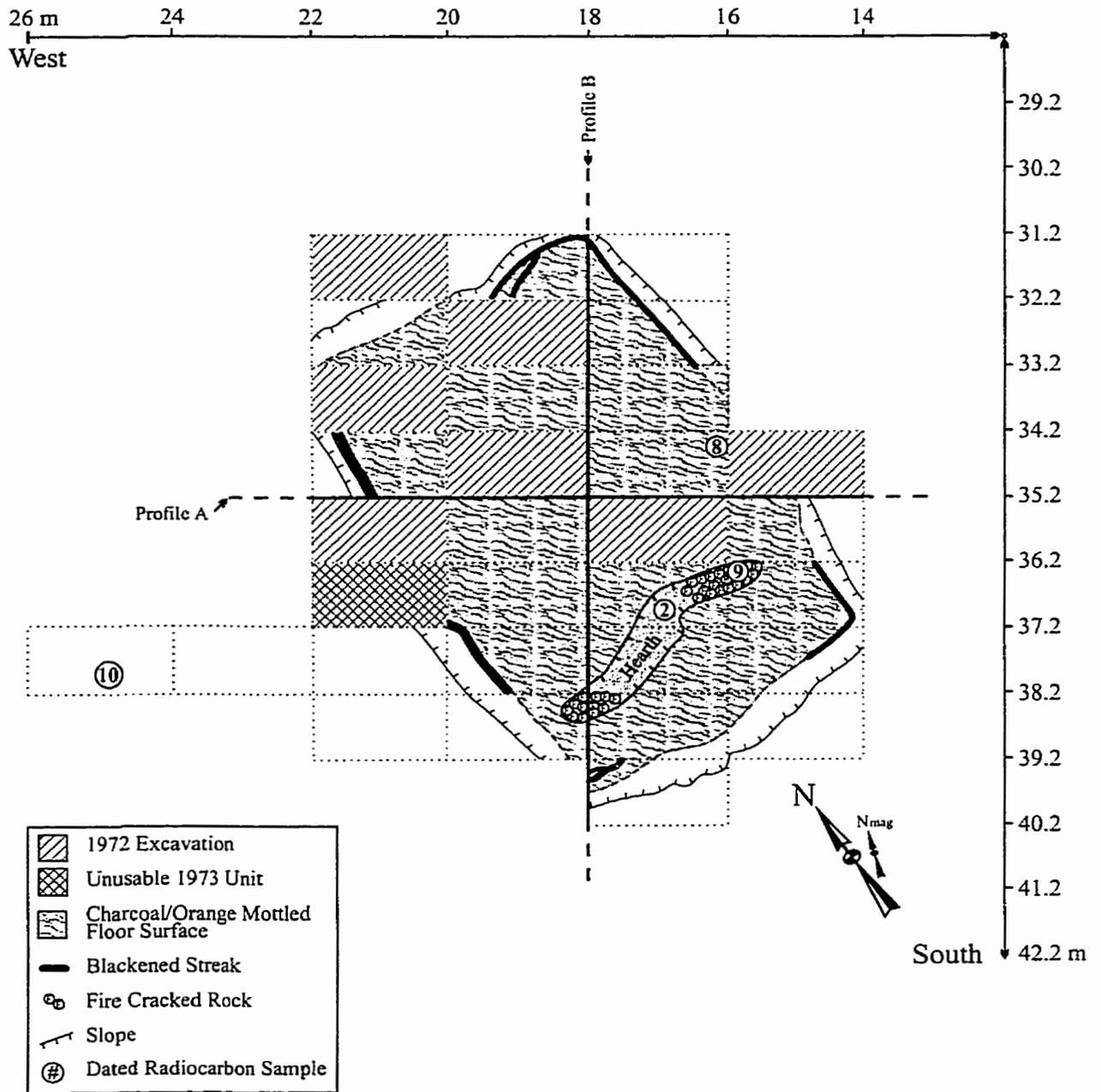


Figure 33. Dated Radiocarbon Sample Locations (DhRk 8).



Plate 12. Profile of feature in road cutbank.

(Photo: R. LeClair)

deposit -- with an associated pit feature. The length of the exposed portion of this possible floor layer is roughly the same as the east-west axis of the Maurer house. LeClair notes (C14 notes) that the depth (1.3 m below ground surface) and stratigraphic location (associated with the terminal B horizon) of the cutbank feature are similar to the Maurer house. Sample 13 provided an age of  $4780 \pm 340$  BP.

### **5.5 Assessing Radiocarbon Sample Reliability**

Verification of radiocarbon sample locations from the house feature and immediate vicinity was only partially successful. The degree of correlation between the three-dimensional proveniences, material and matrix descriptions (LeClair, C14 notes) for Samples 2, 8, 9 and 10 was investigated as a means of establishing radiocarbon sample reliability. Of these, only the hearth-associated Samples 2 and 9 had reconstructible location, material and matrix descriptions. Such data for Sample 9 were documented in excavation unit notes as well as a detailed photograph of the hearth (see Plate 9). Unit 34 excavation notes confirm these data for Sample 2. Thus, Samples 2 and 9 both represent reliable radiocarbon samples.

Alternately, Sample 10 is noted as being located "immediately above cultural sterile" (LeClair, C14 notes) at 79 cmBS. Cross-referencing this depth with corresponding excavation notes for Unit 79, neither the reported stratigraphic position nor the absence of cultural material underlying this sample could be verified. Contextually unreliable, the association of the radiocarbon date derived from Sample 10 remains unclear.

The anomalous date derived from Sample 8 requires explanation. Sample 8, described as a "burned timber fragment laying on the house floor" (LeClair, C14 notes), should provide a charcoal based, structurally associated date. The sample material (that is, a burned timber fragment at 121 cmBS, Unit 31) should represent a fairly obvious specimen

laying on the floor surface. However, after having assessed the reliability of this sample, a number of discrepancies emerged. The noted provenience of Sample 8, provided above, corresponds with the *bottom* of the floor deposit rather than the surface. Unit 31 excavation notes nowhere indicate burned timber remains, and describe only the general charcoal and orange mottled deposit consistent across the floor. Charcoal “spots” are identified in the unit notes at 230-240 cmBD and 240-250 cmBD, located above the floor surface by a *minimum* of 16 cm. Thus, the context of Sample 8 was unable to be verified.

Further investigation of Sample 8 revealed that it may have been misprovenienced. LeClair’s ‘vertical distribution notes’ and excavation unit notes both identify a carbonized log 120 cmBS in Unit 10, two meters east of Unit 31, *outside* the floor area. Further, LeClair’s C14 notebook entry describes Sample 8 as being “taken from the east side of the floor and [*does not*] represents the burned organic material common over the floor...” ‘*Does not*’ was added -- apparently by LeClair, judging from the handwriting -- as an amendment to this description, adding to the ambiguity of this sample. Whether or not Sample 8 was misprovenienced, it lacks a reliable context within the Maurer site and cannot be verified as associated with the house remains. Therefore, Sample 8 lacks utility in determining the age of the Maurer house.

The contexts of Samples 2 and 9, the two reliable radiocarbon samples with direct structural association, must be investigated for evidence of disturbance. As previously determined, the integrity of the hearth feature appears to be intact. While the post-abandonment deposition of materials from the surrounding floor deposit -- such as, charcoal, FCR and artifacts -- and collapsed super-structural remains into the hearth are possible sources of radiocarbon sample contamination, such materials are structurally associated and would not invalidate the dates derived from Samples 2 and 9. Effects of such contamination are considered to be negligible.

A more pertinent issue is the effects of the possible infilling of the central portion of

the hearth trench, in Unit 34, on hearth-associated radiocarbon dates. Such infilling represents differentially discontinued hearth-use. Even so, carbonized deposits located throughout the hearth trench would result from hearth-use associated with the house occupation. Central hearth deposits would be comprised of somewhat older material than that in the lateral portions of the hearth trench, which appear to have been continually used until final abandonment of the structure. Dates derived from central hearth material should reflect the age of the house occupation, sometime prior to final abandonment. The 4220 and 4240 BP dates from Samples 2 and 9 reflect the consistency expected of radiocarbon samples from similar contexts, and indicate a tight temporal association of material from the hearth.

## 5.6 Methods

Very little can be said about how radiocarbon samples from the Maurer site were collected, the quantity of materials collected or how they were processed. In these regards, all that can be surmised is that Samples 2 and 9 were collected and submitted to Gakushuin University radiocarbon laboratory for dating in 1973. In 1974, Gakushuin laboratory successfully processed these samples, identifying their material composition as *humic soil* (Sample 2) and *peat* (Sample 9). While radiometric methods have significantly changed since 1974, dates produced during this era – including those from Gakushuin – are still generally considered valid.

The state of collected but unprocessed radiocarbon samples in the DhRk 8 and DhRk 8A collections indicate that acceptable packing and storage procedures (that is, wrapped in tin-foil and individually stored in glass containers) were implemented. Although provenienced, such samples were considered to lack precise associations. As such, they were considered to be unreliable and were not submitted for dating as part of this study.

Thus, only two of the reported seven radiocarbon dates were determined to have direct and reliable association with structural remains from the Maurer house. Samples 2 and 9, both collected from carbonized material in the bottom of the hearth, provided respective dates of 4220 BP and 4240 BP. A third reliable sample (Sample 13), which provided a date of 4780 BP was collected from the profile of what appears to be the exposed floor layer of a second structure in the vicinity of the Maurer house.

### **5.7 Comparative Assemblage Composition**

Using data compiled by Pratt (1992) and Mason (1994) it is possible to compare tool proportions from the Maurer house assemblage to representative Charles Culture (3500-5500 BP) assemblages from Hatzic Rock, St. Mungo, Crescent Beach and Glenrose Cannery. While a thorough comparison of these sites is beyond the scope of this study, a broad and preliminary comparison was performed as a means of determining the general degree of inter-assemblage variability. Of these sites, Maurer is expected to be most similar to Hatzic Rock -- given the similarity of its location, age and proposed function. Results from comparison with the remaining sites may provide insight into the relationship between upper Fraser Valley and Fraser Delta region 'Charles Culture' assemblages.

### **5.8 Comparison with the Hatzic Rock Site - Occupation III**

Table 9 presents selected combined tool frequencies and proportions from Occupation III at Hatzic Rock and the Maurer Total Floor (that is, Floor 1 and 2, not including

feature fill artifacts) assemblage<sup>3</sup>. These two assemblages are most similar at the presented level of the comparison, that is, of broad categories of tool types. Conforming to traits considered typical of the proposed Charles Culture (Pratt 1992:289-292), both assemblages

Table 9. Comparative tool proportions from the Hatzic Rock (Occupation III) and Maurer (Total Floor Assemblage) sites.		
Tool Type	Hatzic Rock Occupation III (%)	Maurer Total Floor Assemblage (%)
Expedient Tools	41.0	62.0
Cores/Pebble Tools	29.2	21.0
Blade-Like Tools	0.0	1.0
Projectile Points/Bifaces	17.9	4.0
Misc. Ground/Battered/Pecked Stone	5.4	2.0
Misc. Tools	6.9	10.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

are comprised largely (roughly 80 %) of cores, expedient tools and chipped stone bifaces. While comparative tool proportions vary, it is apparent that the types of tools comprising these two assemblages are relatively similar. Only a few tool types are present exclusively in one assemblage, including microblades and microblade cores at Maurer, and stemmed bifaces, pièces esquillée, paint stones and a number of ground stone artifacts at Hatzic Rock. Comprising small relative proportions (individually < 5%), the differences associated with these artifacts are not significant in overall assemblage comparisons.

At the analytic level of simple *presences/absences*, a relatively high degree of similarity exists between the types of artifacts comprising the Hatzic Rock Occupation III and

<sup>3</sup> Hatzic Rock data was compiled from Mason's Table 4.2 - Tool Counts and Percentages from Occupation Zones I/II and III (Mason 1994:54).

Maurer house assemblages. However, some degree of dissimilarity is apparent in the relative proportions of generalized tool categories. At present, these differences, possibly related to functional differences between sites, are considered to be insignificant to the purpose of this analysis.

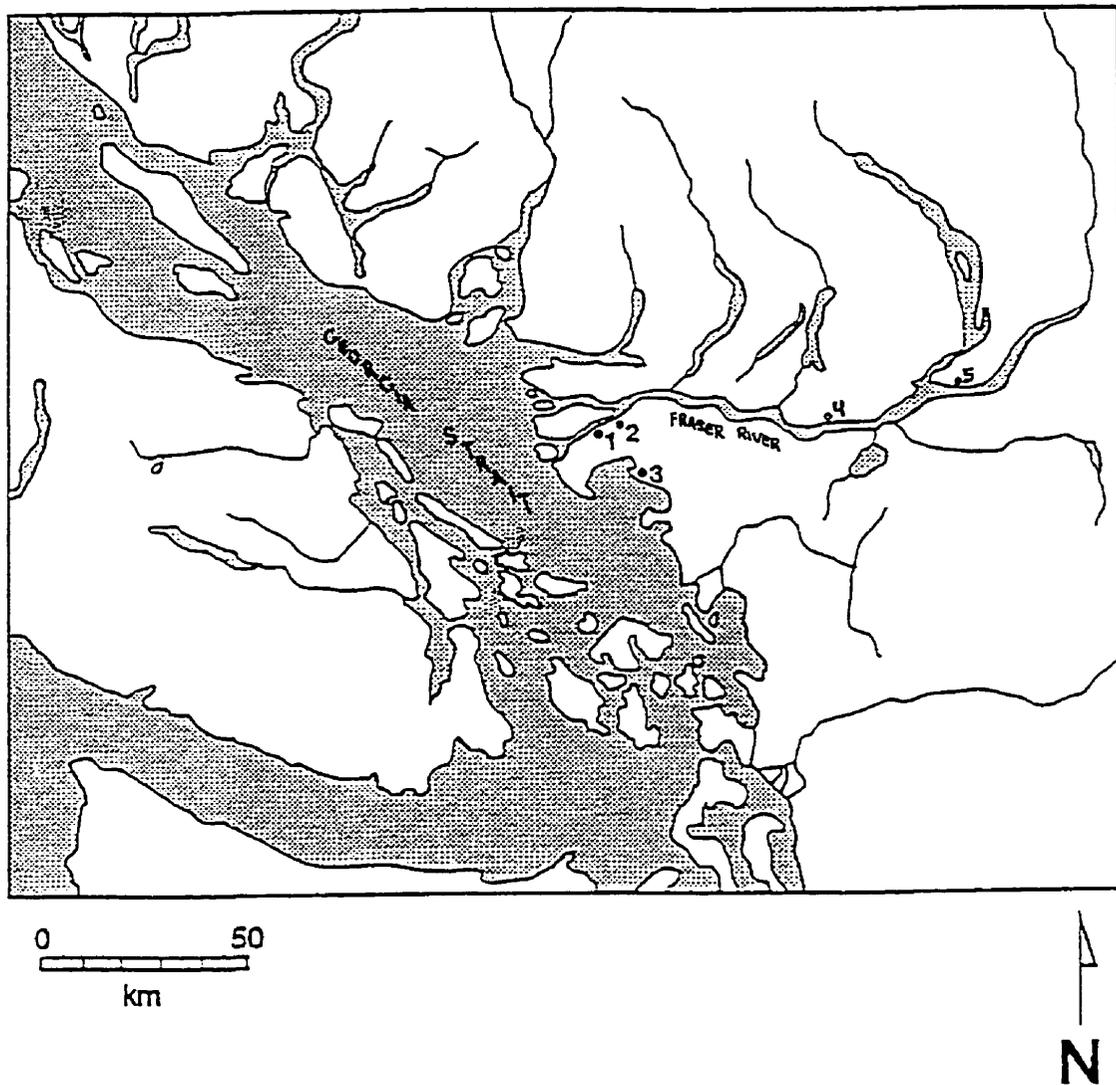
Also significant are the similarities of the structures located at both the Maurer and Hatzic Rock sites. As described by Mason (1994), the Hatzic Rock structure is semi-subterranean, excavated 30-40 cm below original ground surface. While a clear outline of the building is obscured by a multitude of undifferentiated post-holes (Mason 1994:92), Mason concludes that it is basically square. Excluding the purported gravel bench feature – which has an ambiguous identity as a structural feature – from Mason’s structural plan (Mason 1994:104), a rectangular to sub-rectangular shape is discernible. Based on the extrapolated outline of post-holes, the ‘interior’ portion of the Hatzic structure measures approximately 9.0 m by 6.5 m and is oriented north-south along its long axis. It has not been determined if planks were used in the construction of the Hatzic Rock structure. Mason states that this structure served a residential function, although this conclusion is not specifically tested.

## **5.9 Comparison With Fraser Delta Charles Culture Sites**

Table 10 adds the Maurer house Total Floor assemblage to data originally presented by Pratt (1992:90) Mason (1994:82-83)<sup>4</sup>, in relation to the Charles Culture components of the Glenrose Cannery, St. Mungo and Crescent Beach sites from the Fraser Delta (Figure 34). To maintain comparability between these assemblages, as variously analyzed, it was

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<sup>4</sup> Differences between the Hatzic Rock artifact proportions presented in Tables 9 and 10 are accounted for by Mason’s inclusion of data from Occupations I-III in the determination of proportions reproduced in Table 10, even though Charles Culture-age artifacts are only associated with Occupation III.



- 1. St. Mungo (DgRr 2)
- 2. Glenrose Cannery (DgRr 6)
- 3. Crescent Beach (DgRr 1)

- 4. Hatzic Rock (DgRn 23)
- 5. Maurer (DhRk 8)

Figure 34. Location map of Charles Culture-age sites discussed in this study (adapted from Mason 1994:5).

Table 10. Comparative tool frequencies and proportions from the Glenrose Cannery, St. Mungo, Crescent Beach, Hatzic Rock and Maurer site Charles Culture-age occupations.										
Tool Type	Glenrose Cannery		St. Mungo		Crescent Beach		Hatzic Rock		Maurer	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
<b>Bifacial Tools</b>										
Leaf-Shaped Biface	19	4.0	7	2.1	7	1.9	8	2.5	4	2.0
Stemmed Biface	4	0.8	13	3.8	6	1.6	13	4.1	0	0.0
Lanceolate Biface	0	0.0	0	0.0	0	0.0	1	0.3	1	<1.0
Drill	1	0.2	0	0.0	0	0.0	0	0.0	1	<1.0
Misc. Formed Biface	0	0.0	0	0.0	1	0.3	0	0.0	0	0.0
Biface Fragment	29	6.1	27	7.9	14	3.8	21	6.6	5	2.0
Total	53	11.2	47	13.8	28	7.7	43	13.5	11	5.5
<b>Blade-Like Tools</b>										
Microlith/Linear Flake	4	0.8	0	0.0	2	0.6	1	0.3	2	0.1
<b>Flake Tools</b>										
Graver	2	0.2	0	0.0	0	0.0	1	0.3	3	1.0
Pièce Esquillée	4	0.8	26	7.6	49	13.4	4	1.3	0	0.0
Formed Uniface	40	8.4	20	5.9	3	0.8	1	0.3	2	0.1
Bifacially Retouched Flake	12	2.5	14	4.1	2	0.6	8	2.5	4	0.2
Unifacially Retouched Flake	133	28.1	74	21.7	47	12.8	57	17.9	29	13.0
Utilized Flake	82	17.3	44	12.9	118	32.2	77	24.1	114	50.0
Cortex Spall	11	2.3	3	0.9	14	3.8	2	0.6	9	4.0
Total	284	59.9	181	53.1	233	63.7	150	47.0	161	71.0
<b>Cores/Pebble Tools</b>										
Core	54	11.4	49	14.4	55	15.0	69	21.6	46	20.0
Pebble Tool	23	4.9	19	5.6	19	5.2	19	6.0	3	<1.0
Hammerstone	13	2.7	14	4.1	5	1.4	7	2.2	3	1.0
Anvil Stone	1	0.2	1	0.3	4	1.1	3	0.9	0	0.0
Total	91	19.2	83	24.3	83	22.7	98	30.7	52	21.5
<b>Ground Stone</b>										
Disc Bead	5	1.1	4	1.2	508	58.1	2	0.6	0	0.0
Ground Stone Biface	2	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Ground Stone Biface Frag.	1	0.2	1	0.3	0	0.0	5	1.6	0	0.0
Decorated Ground Stone	6	1.3	4	1.2	1	0.3	0	0.0	0	0.0
Abrasive Stone	18	3.8	12	3.5	18	4.9	10	3.1	0	0.0
Misc. Ground Stone	8	1.7	5	1.5	1	0.3	1	0.3	1	<1.0
Total	40	8.5	26	7.6	20	5.5	18	5.6	1	<1.0
					528	60.4				

Tool Type	Glenrose Cannery		St. Mungo		Crescent Beach		Hatzic Rock		Maurer	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
<b>Chipped and Ground Stone</b>										
Chipped/Ground Biface (Leaf-Shaped)	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Chipped/Ground Biface Medial Fragment	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0
Chipped/Ground Biface Medial Fragment	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0
Chipped/Ground Stone Frag.	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0
Total	1	0.2	3	0.9	0	0.0	0	0.0	0	0.0
<b>Ground and Pecked Stone</b>										
Misc. Pecked and Ground Stone	1	0.2	1	0.3	0	0.0	2	0.6	5	2.0
<b>Miscellaneous</b>										
Paint Stone	0	0.0	0	0.0	0	0.0	7	2.2	0	0.0
<b>Grand Total</b>	474	100	341	100	366	100	319	100	230	100

necessary to make a number of minor changes between the grouping of artifact types presented in Chapter 4 and those presented here. These changes included:

- combining leaf-shaped preforms, fragments and bifaces under 'Leaf-shaped Bifaces'
- combining graters and burins under 'Graters'
- substituting scrapers for 'Formed Unifaces'
- combining all spall types under 'Cortex Spalls'
- combining palettes and edge- /end-battered pebbles under 'Misc. Pecked and Ground Stone'

The objective of this comparison is, again, to judge the basic degree of variability between the Maurer house and representative Charles Culture assemblages from outside the upper Fraser Valley.

These data in Table 10 substantiate Mason's conclusion that "substantial differences"

(Mason 1994:88) typify the relationship between these upper Fraser Valley and Fraser Delta Charles Culture assemblages. Maurer generally contrasts with the St. Mungo, Crescent Beach and Glenrose Cannery site assemblages in the proportions of pièces esquillée, formed unifaces, uniaxially retouched flakes, utilized flakes, cores and pebble tools. Additionally, the percentage of ground stone tools at Maurer is much smaller than in any of the other assemblages. This comparison broadly confirms that, of the presented Charles Culture site assemblages, the Maurer house assemblage is most closely related to that of Hatzic Rock. Based on the distribution of known rectangular, semi-subterranean structures and the differences in assemblage composition identified in this analysis, it is apparent that the upper Fraser River Valley constitutes a somewhat unique cultural region, different from that of the Fraser Delta. The inclusion of sites from the upper Fraser Valley in the Charles Culture is, therefore, questionable and warrants further investigation (see Chapter 6 for further discussion of the Charles Culture). The detailed results of the Maurer house assemblage analysis presented in this study may add to the ability to refine the Charles Culture concept.

#### **5.10 Comparison with Upper Fraser Valley Cultural Phases/Types**

Temporally, it is informative to note the absence, in the Maurer house assemblage, of artifacts which typify later upper Fraser Valley cultural phases/culture types. From Borden's Fraser Canyon cultural sequence (1975:62), Mitchell (1990) has derived the Baldwin (3700-2500 BP), Skamel (2500-1500 BP) and Canyon (1500-200 BP) culture types, whose material characteristics differ considerably from those typifying the Maurer house assemblage. Maurer lacks the characteristic 'ornamental,' carved stone items – carvings, labrets, pendants – and ground slate knives, ground stone celts and quartz microliths associated with the Baldwin culture type. Maurer additionally lacks the corner and basally notched flaked stone

points, ground slate knives, ground stone celts, slate disk beads and circular pit houses typical of Skamel type assemblages. Maurer house assemblage traits are even more divergent in comparison with typical Canyon type artifacts, which includes flaked stone basal, corner and side-notched points, ground slate knives, an elaborate carved soft stone industry, stone mauls, nephrite objects and circular pithouses. Lacking adequate definition of assemblages from preceding cultural phases (Eayem, Mazama, Milliken), it can be maintained that the Maurer house assemblage does not contain artifact types typical of Baldwin or later cultural phases/types. Thus, the Maurer house assemblage must pre-date the Baldwin Phase (3700-2500 BP).

### **5.11 Summary**

In summary, I assessed the age of the Maurer house by radiocarbon dating and comparative assemblage analyses. Two reliable, radiocarbon dates of 4220 BP and 4240 BP were derived from samples directly associated with the Floor 1-associated hearth feature. A relatively high degree of similarity was found to exist between the general composition of the Maurer and Hatzic Rock Occupation III assemblages. Both sites additionally contain similar types of structures. Artifacts typical of later Baldwin, Skamel and Canyon culture types of the upper Fraser Valley/lower Fraser Canyon are absent from the Maurer house assemblage. Generally significant differences were observed in the comparison of the Maurer house assemblage to three Charles Culture assemblages from the Fraser Delta. This lack of similarity is apparently due to inter-regional cultural, rather than age-related, differences. In conclusion, general agreement between the results of reliable radiocarbon dates and the comparison of the Maurer house assemblage to artifact sets typical of Borden's Fraser Canyon cultural phase assemblages, supports the inference of an Eayem Phase age for the

Maurer house.

### **5.12 Testing Assertion Three**

Results of the above analyses can be compared to expectations developed in support of Assertion Three. The results of these analyses satisfy such expectations, as presented above. Therefore, Assertion Three – that the Maurer house is between 3500-5500 years old – is accepted. Analyses in this chapter resulted in the ability to further refine the estimated age of the Maurer house to approximately 4230 BP (4860 BP calibrated average).

## CHAPTER 6

### House and Household Inferences from the Maurer Site - Their Relevance within the Upper Fraser Valley, Gulf of Georgia and Northwest Coast

#### 6.1 Objective

From data presented in the preceding chapters, I make a number of household inferences and discuss them in terms of their relevance to the reconstruction of prehistoric society specific to the Maurer house. This discussion focuses primarily on implications within the upper Fraser River valley. I also discuss the relevance of such inferences in relation to the encompassing Gulf of Georgia region and on the Northwest Coast, in general .

#### 6.2 Household Inferences

While household analysis was not a stated objective of the 1973 investigation of the Maurer house, it remains possible to conduct such analysis from the resultant data. The results of analyses conducted for this study permit the estimation of household group size and description of household composition, and socio-economic and technological organization. The seasonality of use of the Maurer house and the degree of residential permanence may also be inferred. Due to the lack of other comparative house and household data from this site, the scope of possible household inferences is necessarily limited to the *singular context of the Maurer house*. However, a number of related topics, such as, house form and structural permanence, may be discussed on broader levels.

### 6.3 Household Mobility

Approximately 4800 years old<sup>1</sup>, the Maurer house is the one of oldest known quasi-permanent structures on the Northwest Coast. The degree of permanence of this structure suggests a minimally semi-permanent residential occupation, and minimally, winter season use of the house. The latter proposition is based upon the documented winter season use of ethnographic period, quasi-permanent Coast Salish houses (Duff 1952:46). Winter season use is also attributed to prehistoric pithouses of the Middle Fraser Canyon area (Hayden and Spafford 1993:108). These conclusions are significant in that they support the implication of a *minimally* semi-sedentary, winter season occupation of the Maurer house roughly 4800 years ago.

Long believed to be an oddly solitary structure, the Maurer house is associated with what appears to be a second, contemporaneous structure (see Chapter 5). While the present proportions of the site seem spatially inadequate to accommodate a village, indirect evidence suggests that the terrace on which these features are located was somewhat larger in the past. A large scale mass-wastage event, the Cheam slide, occurred a short distance upstream from the Maurer site between 4500 and 5000 years ago (Fladmark 1992:3). The location of this slide coincides with -- and may have caused -- a sharp northwestward bend in the course of the Fraser River. The shifted flow of the Fraser River, directly toward the Maurer site, likely accelerated deflation of the northern river bank in the site vicinity. As derived from aerial photographs, the current rate of river bank erosion in the Hopyard Mountain vicinity is estimated to be roughly 30 cm per year (Doug Brown, personal communication, 1997). Approximately 10 acres of land associated with DhRk 8A have been lost to the river in the past 15-20 years (Fred Maurer, personal communication, 1996). It is conceivable that a significant portion of the terrace associated with DhRk 8 was consumed by the Fraser River

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<sup>1</sup> This age is based on the *calibrated* dates -- representing actual calendric years -- presented in Chapter 5.

over the period of roughly 4500 years following the Cheam slide. It is plausible that the land area of DhRk 8 could have accommodated a village prior to, and for a limited time following, the Cheam slide. Thus, the Maurer house and the apparent structure in the cut-bank profile may be the remnants of a larger settlement. Given that the Maurer house was minimally a winter residence, DhRk 8 may have been the site of a winter village. It seems plausible that the Cheam slide affected the occupational history of DhRk 8 and may have been responsible for the gap between the occupation of the Maurer house and the overlying cultural component.

#### **6.4 Household Size**

A fundamental aspect of household reconstruction is estimating the actual household group size. The dimensions of the Maurer house provide one parameter for estimating the size of its household. Hayden and Spafford (1993:116-117) estimate a measure of one individual per 2.5 square meters of floor space in pithouses at Keatley Creek. Alternately, Cook and Heizer (1968) formulate 13.92 square meters of floor area for the first six individuals and 9.29 square meters per each additional person. Both of these household size estimators were applied to the Maurer house.

The Maurer house has a gross floor area of 37.5 square meters. Subtracting approximately 1.5 square meters for the hearth area results in a net floor area of 36 square meters. Applying Hayden and Spafford's measure, household size equals 14.4 people. Applying Heizer's formula, household size equals 8.4 individuals. Thus, it is estimated that a household of between 8 and 14 people could have occupied the Maurer house.

## 6.5 Household Composition

From the household size estimates, and the distribution of floor features and activity areas, it is possible to provide some insights into the composition of the Maurer household. Composed of between 8 and 14 people, this household likely represented a single, extended family. In Northwest Coast household contexts, hearth frequency strongly correlates with the number of occupant family groups (Mitchell and Donald 1988:330). Based on the presence of a single hearth in the Maurer house, a single associated family may be proposed. Furthermore, identified activity areas represent a single overall pattern. The presence of duplicate activity areas – comprised of *sets* of production areas, consumption areas, living areas, and so on – which constituted a basis for making multi-family household interpretations at Keatley Creek (Hayden and Spafford 1993:125) is not apparent in the spatial patterning of floor-associated artifacts and features from the Maurer house. Instead, the observed pattern is indicative of a single set of domestic activities, and therefore a single family group.

While the estimated size of the Maurer household indicates a single, extended family group, a large nuclear family may be alternately postulated. While a nuclear family of eight individuals may be possible, such a group consisting of 14 individuals intrinsically seems too large. Ethnographic analogic backing for this postulation is somewhat limited due to the time depth – 4800 years – involved here and the lack of comparative data. Further, hunter-gatherer-fisher family sizes are apt to vary considerably depending on the degree of group mobility. While nuclear family sizes could be quite large in semi- to fully-sedentary hunter-gatherer-fisher societies, the inference of an extended family group is considered to be more plausible in this particular case. More important than determining the nature of the occupant family however, is the determination that a *single* family occupied this house. Thus, examination of the socio-economic structure of the Maurer household is conducted

within the framework of a single family group, regardless of its familial composition.

## 6.6 Social Organization

Some general conclusions regarding household social organization may be proposed. Many of the following propositions are based on the composition and distribution of the Maurer house floor assemblage. This assemblage is partly characterized by an absence of non-utilitarian items and tools, including decorative and/or stylized artifacts which may be associated with status display. Therefore, there is *no* basis for inferring internal household status differentiation. The Maurer floor assemblage provides broadly patterned activity areas as the only apparent manifestation of household social structure. Household socio-economic organization is apparently manifest solely in relation to the division of labor. Ranking within this household group was likely appropriated on the basis of age, gender and achievement.

Without comparable households from this or other local sites<sup>2</sup>, discussion of extra-household ranking is limited to the examination of the theoretical significance of the house structure itself. The Maurer house – a substantial quasi-permanent structure – may have served some symbolic functions beyond the traditional ‘utilitarian’ residential role so far discussed in this study. As a display feature, this structure could have transmitted information about the occupant household to outside observers. As discussed by Wobst (1977) and Wiessner (1983), stylistic elements, potentially of this house, have the potential to actively convey symbolic information. The conveyance of such data can be intentional, and is therefore purposefully manipulated. Stylistic aspects of this house could have displayed information concerning band and clan affiliation, as well as more specific social information. For example, ethnographic Nuu-chah-nulth houses have been demonstrated to serve such

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<sup>2</sup> Household analysis of the Hatzic Rock structure, the only other possibly comparable site, has not yet been fully conducted.

intentionally symbolic purposes (Marshall 1989:18-21). Marshall determined that house form acted to regulate social order through the internal division of ranked families and through the external signaling of household status. It is my intention to emphasize the potential function of the Maurer house as a symbolic mechanism by which the occupant household's socio-economic identity, including rank, may have been transmitted at an extra-household level. The house, itself, may be considered to have been an active element in the negotiation of extra-household social relations and standing.

The strategic location -- in relation to resources and trade routes -- and degree of permanence of this structure also likely indicated ownership of the land (and river section) on which it is situated, either at household or extra-household levels. Although not possible to determine, ownership of land may have been coincident with the ownership and regulation of associated resources. The possibility that this structure functioned to signal resource ownership rights is, however, plausible and theoretically significant. By its very nature, it seems that a (quasi) permanent structure, even unoccupied, would serve a much stronger and more durable territorial signal than a temporary shelter. As one of the first of its kind, the symbolic impact of this structure in this regard may have been substantial.

## **6.7 Economic Organization**

Investigating economic organization, in conjunction with social structure, may provide a more complete description of the Maurer household. Associations may be made between the nature of this house/household and various types of resource procurement strategies and mobility systems. The degree of structural permanence of this dwelling and the (minimally) semi-sedentary nature of this household suggest the employment of a *collector* resource procurement economic strategy (Binford 1980:10) -- in which food

resources would have been gathered at locations away from the home base; processed for transport at temporary field sites and returned back to the residential settlement for final processing and consumption or use. A specialized, *logistic* mobility system -- in which “task groups... of skilled and knowledgeable individuals... leave the residential location, generally moving some distance away to specifically selected locations judged most likely to result in the procurement of specific resources” (ibid.) -- associated with a collecting strategy, was logically employed by the Maurer household.

Located in what could be considered a ‘fringe’ environment, that is, an area at or near the border(s) of a number of eco-systems, the modern environmental setting of DhRk 8 compliments a logistic mobility system which is adapted to the exploitation of heterogeneous, spatially clumped resources (ibid.). A number of eco-systems, with diverse resources, are located within relatively close proximity to this site, both vertically and horizontally. At least two *abundant, predictable, reliable* and *localized* resources -- salmon and wapato -- occur in the Maurer site vicinity. A number of species of fish, primarily salmon, are available year-round in this location (Duff 1962:62). While such resources are associated with the present ecological state of the upper Fraser River valley, palaeo-environmental reconstructions of this area suggest the development of a relatively similar climate and ecology commencing 5000-6000 years ago. Many of the modern local resources were either established or emergent during the occupation of this dwelling (Hebda 1996:64). In obvious reference to salmon, Sto:lo oral history records the name *Lhilkw’elqs*, meaning ‘hooknose rock,’ for the vicinity of Hopyard Mountain where the Maurer site is located (Duff 1952:37, Galloway 1977:16). In relation to an oral tradition which documents the occurrence of the Cheam slide (Wells 1987:15), the oral historical roots of this name may be very old. This name seemingly identifies this location as a prominent fishing ground. Even 5000 years ago, the ecological context of the Maurer site appears to be one of easily available, abundant and diverse resources. Thus, a ‘collecting’ strategy combined with ‘logistic’ mobility are presented as

economic strategies employed by the Maurer household for the procurement of surrounding resources.

The composition of the house assemblage is indicative of the production system -- the division of labor -- associated with this household. The 'generalized' tool kit characteristic of the Maurer house assemblage supports the inference of a *linear production system* (Wilk and Rathje 1982) in which individuals completed the full set of activities associated with a task, rather than specializing in a segment of it. Specialized, that is, functionally limited, tools are not conducive to performing a wide range of activities without the availability of a diversified set of such tools. Given the general, widely functional nature of the house-associated tools, a different approach to performing domestic tasks is apparent -- a limited set of widely versatile tools (Nelson 1991) was employed in performing a generalized range of tasks. While there may have been some specialized use of space within the structure, associated activities were apparently performed in a nonspecialized manner.

Evidence indicative of the household division of labor is minimal. Labor tasks of nearly all types were likely performed by each working member of the household, using the available versatile tool-kit. It is postulated that labor division was limited to gender and age distinctions.

## **6.8 Technological Organization**

Technological organizational theory provides a means of evaluating the socio-economic household inferences presented above. Technological organization is defined as "the selection and integration of strategies for making, using, transporting, and discarding tools and the materials needed for their manufacture and maintenance" (Nelson 1991:57). Both social and economic circumstances affect the selection of technological strategies

(ibid.). Analysts of technological organization have been able to generally associate technological strategies with various types of tool assemblages. This association has been extended to include the socio-economic and socio-environmental contexts from which such strategies were derived. Analysis of the technological organization of the Maurer house assemblage provides an 'independent' means of inferring the socio-economic and socio-environmental contexts associated with this household. Results of this comparison may determine the extent to which such patterns are replicable using different lines of evidence.

In technological organizational terms, tools from the Maurer house assemblage are describable as *versatile* and *maintainable*. Versatile tools are "tools which are maintained in a generalized form to meet a variety of needs" (ibid.:71), and which do not do not require their form to be changed in order to suite the requirements of various tasks. Versatile tools may additionally be described as 'nonspecialized,' that is, lacking a form which restricts their use to a single or limited set of tasks. Maintainable tools (Bleed 1986) are those which if broken or damaged, can be repaired quickly with only minimum effort and/or skill. As defined by Bleed, maintainable tools tend to have simple designs and may be applied to "generalized undertakings" (ibid.:741).

The development of a tool assemblage based upon versatile and maintainable design criteria results in an assemblage with a low degree of diversity, as exemplified by the Maurer house assemblage. Torrence (1989) has identified a direct relationship between resource mobility and tool assemblage diversity. She concludes that as resource mobility (that is, unpredictability) increases, organizational strategies are employed which increase the diversity of tool types, that is, increase the degree of tool specialization. This reaction represents a technological strategy developed to cope with increasing degrees of risk, where the consequences of tool failure are high. Low assemblage diversity, as identified at Maurer, is alternately associated with a cost-, rather than risk-reducing strategy, employed by societies which "are dependent upon non-mobile resources and located in environments

where quantities of primary productivity are available year round” (Myers 1989:85). In this context, the consequences of tool failure, and therefore the potential degree of risk, are low. As Torrence states, “where potential risk is low, technology for handling the resource need only be minimally functional and not specialized or complex” (Torrence 1989:61). This description fits the Maurer house assemblage. Maintainable tool strategies, specifically, have been considered as indicative of low time-stress situations and associated with expedient tool technology (Myers 1989).

Nelson defines *expedient tool technology* as “the minimum technological effort under conditions where time and place of use are highly predictable... expediency anticipates the presence of sufficient materials and time” (Nelson 1991:64). The generalized, minimally retouched and unretouched tools in the Maurer house assemblage are characteristic of the low degree of expended effort in an expedient technology. The Maurer site satisfies other expected conditions of expedient technological behavior, as defined by Nelson (ibid.): (1) an adequate supply of raw material -- locally available from the riverbed near the Maurer site; (2) evidence of stockpiled cores at different stages of reduction having been discarded at their place of use; (3) the long-term use of a site necessary for the effective use of stockpiled materials. The technological as well as behavioral implications of expediency appear to be applicable to the Maurer household.

The analysis of the composition and diversity of tools in the Maurer house assemblage indicates a form of technological organization suited to a context of abundant, predictable and generally non-mobile resources, as well as an essentially sedentary social group. The description of this socio-environmental context replicates that based on the quasi-permanence of the structure and available resources, both known (lithic) and assumed (salmon, wapato). The conclusions reached by this investigation of technological organization duplicate the previously stated inferences of a social group utilizing logistic mobility and collector procurement strategies. Additionally, the analysis of technological

organization provides a basis for concluding that the Maurer household lived in an environment in which minimal degrees of effort and tool specialization procured sufficient supplies of resources. Insights into the decision-making processes of these people, as manifest through their technological organization, is additionally provided.

I should reiterate that the above set of inferences are made in sole relation to the Maurer house and are not transferable necessarily to other residential contexts. It is largely the goal of this discussion to explore the extent to which household inferences may be made at Maurer and to provide a comparative base for subsequent household analyses in the upper Fraser Valley. More refined substantiating arguments and, potentially, a wider range of inferences could be made given a higher resolution analysis of a more complete data-set, including botanical, faunal and chemical samples.

## **6.9 Implications in the Gulf of Georgia Region**

As part of this study, I performed a preliminary comparison of the Maurer house assemblage to Charles Culture assemblages from the upper Fraser Valley and Fraser Delta. The types of artifacts comprising the Maurer house assemblage are similar to those characteristic of the Charles Culture, as defined by Pratt (1992: 291-293). However, substantial differences in the relative proportions of tool types were observed between upper Fraser Valley and Fraser Delta Charles Culture-age site assemblages. Interpreting the implications of such differences must be left to a future, more rigorous, comparative analysis of the Charles Culture concept.

I suggest, however, that *lithic* analysis, singly, may not provide the resolution necessary to differentiate between social groups with similar forms of technological organization. As discussed in the preceding analysis, applied technological strategies are

factors at least partly responsible for determining the types of tools comprising a given artifact assemblage. Homogenous artifact assemblages are likely to be produced by societies with similar technological constraints associated with the availability of lithic raw material, resource procurement strategies and required tool functions. Trade between settlements is also likely to magnify the apparent degree of material homogeneity between them. The general level of homogeneity observed between lithic assemblages of Charles Culture-age upper Fraser Valley and Delta sites (Pratt 1992; Mason 1994) may simply reflect the degree to which these societies were subject to similar technological constraints.

It might be possible to increase the presently achievable degree of comparative resolution and provide greater insight into the nature of cultural relations among Charles Culture-age societies of the Gulf of Georgia. It is suggested that future comparative studies of these societies additionally examine subjects with (1) greater inherent stylistic variation, and (2) different sets of constraints than those associated with lithic technology, such as house architecture. In general, multiple, independent lines of evidence should be used to assess inter-assemblage variability, indicative of social relationships.

Generally, comparison of architectural traits could be used to augment the investigation of cultural affiliations within the Gulf of Georgia. This analysis of the Maurer house has helped construct a foundation of such data, available and applicable to future Charles Culture studies. Both the lithic assemblage and the structural remains from Maurer may now be soundly applied in future comparative endeavors. It is felt, however, that augmentation of the upper Fraser Valley Charles Culture-age sample is required before fully meaningful comparison of such sites can be made. At present, the cultural relationships between areas of the Gulf of Georgia region 3500-5500 years ago remain unclear. However, the observed differences in tool proportions and the uniqueness of the structure type at Maurer (and Hatzic Rock) lead to some uncertainty about the inclusion of the 4800 year old Maurer component in the Charles Culture. It is suggested that the early, ca. 4800 BP,

societies at the Maurer and Hatzic Rock sites of the upper Fraser Valley may represent a unique cultural type – an *archaeological locality* – distinct from those of the adjoining Gulf of Georgia region.

## 6.10 Implications for the overall Northwest Coast

On a broader scale, results of the Maurer house assessment have a number of implications relating to general theoretical arguments inclusive of the overall Northwest Coast culture area. Foremost among these arguments are ongoing debates concerning the development of social complexity and social inequality within this area. *Social complexity*, as I define it, refers to the degree of heterogeneity in the division of labor associated with a particular social group. *Social inequality* refers to the degree of heterogeneity of socio-economic standing within a particular social group. The degree of both social inequality and complexity rises with increasing heterogeneity. Thus, I investigated these two concepts, though often related, as mutually independent social phenomena.

As discussed, the Maurer house assemblage contained no evidence of social inequality beyond that based on age, gender and achievement. Evidence of heterogeneous production systems indicative of complex social structure was, likewise, absent at Maurer. Social complexity within the Maurer household appears to have been limited to a level commonly ascribed to egalitarian societies (e.g., Fried 1967; Hayden 1990b, 1995). While this conclusion derives from inferences based on a single household, the quasi-permanence of the Maurer house structure suggests extensions beyond such limits.

As one of the earliest known ‘permanent’ structures on the Northwest Coast, the Maurer house provides insight into the processes by which social complexity and inequality arose in this area. The concept of *permanence* is significant to this discussion of

developmental social inequality and social complexity. Two social inferences are suggested in direct relation to a significant degree of structural permanence: (1) partial, to full sedentism; and (2) ownership. Both ownership and sedentism have long been considered elements of the 'social inequality equation' as applied to the Northwest Coast (e.g., Ames 1981; Maschner 1991; Matson 1983, 1985; Renouf 1991). Resource control, one of the basic elements of social inequality, is necessarily preceded by resource ownership. Significant structural permanence is considered to signify such ownership. The associated level of resource ownership at Maurer, whether individual, familial, clan or band based is, however, indeterminate. As well, the areal extent and inclusiveness of such ownership is not known. It is proposed, here, that a general claim to the surrounding land, river and resources may have been signaled by the quasi-permanent structure at the Maurer site.

It is possible that the degree of ownership at Maurer did not extend beyond the level of the community group, that is, was not family-specific or individual-based. In this event, resource control would have likely remained constrained by limits imposed by the larger social group (that is, community) as a whole. What potentially liberates Maurer from this scenario is the probable nature of the local resource base. It is commonly accepted that salmon became increasingly abundant during the period 4000-5000 BP (e.g., Burley 1980; Carlson 1983; Fladmark 1975, 1983; Matson 1983; Matson and Coupland 1995). Less well known for this time period is the distribution of wapato (*Sagittaria latifolia*), a tuber commonly found in the back-water sloughs along the upper Fraser River valley, prior to modern urban development (Duff 1952:73). Given the general similarities of environmental conditions in the upper Fraser River valley between 5000 BP and the present, wapato likely grew in the backwater sloughs, ponds and marshes in the vicinity of the Fraser River in that earlier period. The absence of archaeological evidence for wapato likely reflects the lack of emphasis placed on recovering plant remains by many Northwest Coast archaeologists, and the generally poor preservational quality of tuberous plants -- rather than its actual presence.

It is proposed that both wapato and various species of salmon were available to the aboriginal inhabitants of the Maurer house, both of which can be characterized as abundant, predictable, reliable and localized resources. Such is the typical resource base of complex hunter-gatherer societies, often marked by significant degrees of social complexity and inequality. The availability of both large and small mammals, avian species and a wide array of edible plants also undoubtedly enhanced the available food supply of the people inhabiting the Maurer site ca. 4800 BP. The proposition that such abundant and easily procurable resources existed in the context of the Maurer house is supported by the apparent semi- to fully-sedentary lifestyle, and the expedient technological organization inferred for this household (Torrence 1989; Myers 1989; Nelson 1991).

The prospect of abundant, predictable, reliable and localized resources, coupled with relative permanence, leads to a number of ensuing possibilities. It has been postulated (e.g., Hayden 1990b:35-36, 1995:28-29) that the presence of such resources tends to (1) relax social restrictions prohibiting individual ownership, and (2) fosters competition. Individual ownership of resources, coupled with the impetus to increase production through competition, stimulates a need for development, consolidation, and control over the distribution of surplus resources. Differential access to resources, if unequally divided, could result in increasing degrees of heterogeneity between the socio-economic status of different households, typically resulting in increasing degrees of social inequality. Competitive pressures could result in the need to increase production. Maximizing production from spatio-temporally clustered resources, such as salmon and wapato, lends itself to the development of coordinated procurement efforts, such as simultaneous production systems (Wilk and Rathje 1982:622). Such systems entail the segmentation of production and task specialization, both of which act to increase the degree of heterogeneity in the division of labor. This effect is associated with increasing cultural complexity. These social reactions are viewed as latent possibilities inherent in the socio-environmental context of the Maurer

household. While the inevitability of these reactions at Maurer is not implied, it is suggested that there is a possibility of such manifestations, either singly or combined. It should also be mentioned that the quasi-permanence of the Maurer house, in association with the likely nature of the available resources, represents the beginnings of resource circumscription in the upper Fraser River valley -- another widely acknowledged factor in the development of social complexity and inequality (Ames 1981; Carniero 1970; Croes and Hackenberger 1988).

It is the objective of this discussion to express the significance of the Maurer house in relation to the question of the development of social complexity and inequality on the Northwest Coast. Direct evidence supports the inference of only primary forms of social complexity and inequality among the Maurer household. Indirect evidence, however, based on notions of structural permanence and resource abundance, indicates a potential for the escalation of social complexity and inequality at this site. As one of the earliest examples of such a 'potential' situation on the Northwest Coast, the Maurer house factors significantly into the development of culture-historical scenarios for this culture area. Roughly 4800 years ago, the roots of social inequality and complexity appear to have been developing in the upper Fraser River valley.

## CHAPTER 7

### **The Maurer House: Concluding Remarks and Methodological Suggestions Regarding Household Archaeology on the Northwest Coast**

#### **7.1 Concluding Remarks**

In this study, I examined materials collected and derived by Ronald LeClair during his 1973 excavation of the Maurer site (DhRk 8). Three assertions, based on LeClair's reported interpretations of the site (1976), were developed and evaluated using this material. Each of LeClair's assertions, that:

- (1) the remains excavated at the Maurer site were those of a structural feature
- (2) the structure functioned as a house, and
- (3) the house was between 3500-5500 years old

were verified as a result of this study. LeClair's insight into the interpretation of this important feature should be applauded. As well, he should be credited for supplying data of adequate quality to support the range of analyses conducted in this study.

Analyses applied in the evaluation of these assertions resulted in a number of significant findings, including:

- the description of a structure which was somewhat different, both dimensionally and architecturally, than originally thought
- the identification of household activity areas across the floor surface and insight into the use of space within this structure
- the refinement of the age of the Maurer house to 4230 BP (4860 BP calibrated)

Thus, the Maurer house, verified as one of the oldest recorded structures and earliest known

houses on the Northwest Coast, was discussed in relation to:

- household analysis and reconstruction
- Charles Culture age assemblage comparisons in the Gulf of Georgia Region
- the development of social complexity and inequality on the Northwest Coast

Significantly, the results of this household investigation indicate the feasibility of future household research on the Northwest Coast, given the employment of appropriate field methods (as discussed below) and adequate areal sampling of investigated structures. Spatial analysis of floor artifact distributions is singly identified as a key device for use in the investigation of household behavior.

Thorough analysis of this site has added to the long neglected, but now quickly developing upper Fraser Valley archaeological database. Such data may be used in the future evaluation of the Fraser Canyon culture historical sequence which has long been applied to the upper Fraser Valley. As a reliable comparative sample, the Maurer house component represents an intact assemblage contemporaneous with the Mayne and St. Mungo Phase sites of the Gulf Islands and Fraser Delta. Inter-site comparison of the rising number of valid 3500-5500 year old cultural assemblages in the Gulf of Georgia may prove useful in refining the Charles Culture concept. Based on the results of preliminary comparisons of upper Fraser Valley (Maurer and Hatzic Rock sites) and Fraser Delta (Crescent Beach, St. Mungo and Glenrose Cannery sites) Charles Culture-age assemblages, I concluded that the upper Fraser Valley area represents an archaeological locality. Future researchers should consider referring to this area of the upper Fraser Valley as the 'Cheam Locality'<sup>1</sup>.

Lastly, the Maurer house represents the earliest concrete evidence of a semi-sedentary household on the Northwest Coast. As a quasi-permanent structure, the Maurer house, besides serving as residence, probably also served as device for signaling resource and territorial ownership. While analysis of the Maurer household indicates an internally

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<sup>1</sup> This name is derivative of Mount Cheam, a prominent feature of upper Fraser River Valley landscape, situated opposite the Maurer site.

egalitarian socio-economic structure, it is argued that the possibility of increasing social complexity and inequality is, if not manifest in unsampled (or unsamplable) coexistent houses, latent in the socio-environmental context of the site. It is concluded that, as a reliably verified, ca. 4800 year old house, the Maurer site can no longer be neglected in discussions of the Developmental Stage (c.f., Fladmark 1982) in the upper Fraser River valley area, the Gulf of Georgia region, or the greater Northwest Coast.

## **7.2 Household Archaeology - Methodological Suggestions**

Based on the experience of conducting a household investigation from the material remains of the Maurer site, a number of methodological suggestions may be made. It is evident that a standard of minimal data collection must be established for the excavation of structural/house remains, regardless of the specific associated research paradigm. Such a standard would benefit the practice of household archaeology in the Northwest Coast, where applicable cases rarely occur, by ensuring the collection of minimally appropriate data for potential analyses. In general, excavation methods should be adopted which preserve:

- (1) the ability to reconstruct the excavated portion of the site from such data
- (2) the ability to maximize information by maintaining analytic flexibility, and
- (3) the ability to maximize analytic resolution

Types of analyses presently applicable to household archaeology are numerous and include:

- spatial
- artifact
- micro-/macro-faunal
- micro-/macro-botanical

- pollen
- chemical
- sediment/geologic
- organic residue
- tool use-wear
- debitage

Information derived from such analyses represent critical data required in making household interpretations. The use of multiple lines of evidence to replicate patterns and substantiate conclusions is essential in making valid household inferences. Facilitating such analyses requires implementing an appropriate methodology. A few basic practices should be standardly implemented when excavating structures.

Once identified, likely through horizontal test trenching, 'open area' excavation of floors must be practiced in order to both adequately define and sample the floor surface. Profiles are key mechanisms in identifying structural floors. Maximum numbers of profiles should be both drawn and photographed. The subjects of photographs should be provenienced. Sediment descriptions should be detailed, including color descriptions based on the Munsell color chart.

The sub-division of excavation units, provided they are not larger than one meter square, is considered unnecessary upon reaching a definable floor/roof-fall layer. One meter square excavation units may be maintained provided that:

- (1) three-dimensional, point provenience is recorded for all *in situ* identified artifacts from the roof-fall and floor layers
- (2) appropriately sized floor-sediment samples are taken from each excavation unit sub-quarter, and those should include samples for chemical residue and pollen analyses, and botanical flotation.

To facilitate spatial analyses, a floor aligned grid should be established. Provenience

measurements should be taken from a locally established datum point which is tied into the primary site datum. Features should be centrally point provenienced and individually documented using detailed plan and profile drawings, and photographs. Artifacts should be recorded *in situ* when possible, otherwise level material should be screened through nested 1/8" and 1/4" screen mesh. Excavation should proceed according to natural layers maximally subdivided into five centimeter levels. FCR should be systematically collected and/or weighted, and lithic debitage should be systematically collected, per excavation unit. Importantly, exposed floor surfaces should be photographed with as many *in situ* remains as possible.

Whether or not it is the intention of a principle investigator to conduct a household analysis, it is their responsibility to preserve, in adequate detail, the archaeological record of house/structural features. Conducting a proper household investigation begins with and is dependent upon the application of appropriate excavation methods.

### **7.3 Recycling Archaeology**

As a collections study, verification of the Maurer structure, its age and function, was entirely dependent upon access to reliable data. At the very least, this study should be regarded as an exercise in the importance of *reliability* in archaeological reporting and interpretation. Establishing the reliability of data, as a measure of its usefulness, is an essential first step in all archaeological investigations, and is particularly relevant to the study of 'second-hand', curated material. Though limited by unreliable data, this investigation demonstrates the potential for using curated collections as a basis for archaeological investigations which can address current archaeological questions. It is suggested that archaeologists pay more attention to the research potential of the voluminous database of

curated archaeological collections readily available throughout North America. The 'recycling' of previously excavated archaeological sites, for instance, as approached with new questions and through the application of new analytic methods, can be a productive means of conducting research.

Based on the outcome of this study, it is possible to address the questions posed in the introduction:

- do archaeological collections have a shelf-life, and
- can archaeological data transcend the original research objectives and designs governing its collection?

As stated from the outset of this study, answers to these questions can only be supplied on a site specific basis. In relation to DhRk 8, a 'shelf-life expiry date' for the significance of the Maurer site material has not yet been reached. In fact, it can be concluded that 'revisiting' the Maurer material has actually served to revitalize and prolong its utility. Analysis and re-classification of artifacts from this site -- excavated a quarter of a century ago -- has produced a data-base compatible with and available for, among other things, future research on Gulf of Georgia inter-regional comparisons, with specific regard to the analysis of the Charles Culture concept. That this material remains viable for such potential studies is significant in that it signifies considerable research longevity for this, and likely other, 'curated' sites. Again, the field director, Ron LeClair, should be credited for collecting data which allow continued use and extended research viability of material from this site.

It also can be concluded that the scope and results of the present analysis transcended the original research objectives stated by the site's excavator. That the Maurer collection could provide insight into cultural reconstruction at the level of the household is both remarkable and encouraging. Given that proper household analysis requires a comprehensive and detailed data set, the ability to derive *any* household inferences from the Maurer site is relatively surprising. Material from this site has been both useful and essential in addressing

questions unknown at the time of its excavation and totally unrelated to the conceptual paradigm of its original investigation. The outcome of this study is encouraging to the future of archaeological collections 'recycling' by demonstrated that 'Recycling Archaeology' can be practiced as an effective means of conducting archaeological research.

## APPENDIX I

### Artifact Types and Descriptions

The structure of this Appendix corresponds to the sequence of artifacts presented in Table 3. Artifacts listed in this table -- all those associated with the house assemblage -- are described below. All the artifacts depicted in Plates 13-22 are from the Maurer house floor. The artifact typology employed in this study was largely based on that used by Pratt (1992), with the intention of maintaining comparability between recently analyzed/re-analyzed sites in the Gulf of Georgia Region (Mason 1994; Pratt 1992). Some modification in artifact classification was necessary due to the composition of the Maurer site assemblage and the inclusion of a few artifact types not described by Pratt or Mason.

Acute and obtuse edge-angle classifications, as presented in the body of this study (see Table 3) were based on the following system:

<45° = Acute edge-angle

>45° = Obtuse edge-angle

The following descriptions pertain only to general artifact forms (such as *uniface* or *biface pebble tool*) and do not include edge-angle based (such as *uniface pebble tool - acute*) sub-descriptions. In addition, 'Fragment' sub-categories are not described as they are considered to be self-explanatory.

### **CHIPPED STONE: CORES**

'Cores' represents a class of artifact comprised of raw material, fractured through the application of directly or indirectly applied force for the procurement of usable pieces of its groundmass. Cores were not, themselves, used as tools.

**Core:**

A groundmass of lithic raw material which exhibits scars from the removal of flakes – through direct percussion – on two or more of its surfaces, and which shows no other signs of use.

**Bipolar Core:**

A core, as described above, which exhibits crushing at opposite ends resulting from the application of force on two opposing points during the removal of flakes.

**Microblade Core:**

Typically a small piece of raw lithic material which exhibits multiple unidirectional, parallel, linear flake scars at least twice as long as they are wide and which are attributable to pressure-flaking.

**Pressure-Flake Core:**

Typically a small piece of raw lithic material which exhibits multiple small, flake scars attributable to pressure-flaking, and which displays no other evidence of use. This type of core is similar to a microblade core, though differing in the form of the flakes being removed from the parent material. From the examples at Maurer, it appears as though small flakes were being removed via pressure-flaking from these cores. They likely served a function similar to microblades, but required less skill to produce.

## ***CHIPPED STONE: TOOLS***

### ***PEBBLE CORE-TOOLS***

#### **Uniface Pebble Core-Tool:**

An implement manufactured through the removal of a few large, cortex-bearing flakes from one face of an otherwise unmodified pebble – identical to a core, but exhibiting use-wear along the flaked margin. These tools are quite large and may include small cobbles.

#### **Biface Pebble Core-Tool**

An implement manufactured through the removal of a few large, cortex-bearing flakes from two opposing faces of an otherwise unmodified pebble – identical to a core, but exhibiting use-wear along the flaked margin. These tools are quite large and may include small cobbles.

### ***UTILIZED FLAKES/SPALLS***

The tools in this category represent various forms of *unretouched* flake tools.

#### **Utilized Flake:**

A flake exhibiting wear along one or both margins resulting from solely from use. Such flake tools have not been 'retouched' or modified in any way except for the use-related edge damage. Use wear-resultant microflake scars are generally irregular in orientation and location along the utilized margin(s), less than 1 mm in length and sparse or un-clustered – atypical of intentional margin modification.

**Spall:**

An implement comprised of a large, often ovoid, flake -- typically removed from a river (water-worn) pebble or cobble -- bearing cortex on one whole face and exhibiting use-wear along its margin, but lacking retouch modification.

***EXPEDIENT UNIFACES***

The tools in this category represent various forms of *retouched* flake tools. The descriptor *expedient* is applied to all the tools in this category due to the minimal degree of work involved in their manufacture and the quickness and ease with which they can be produced -- a common factor among them.

**Expedient Uniface:**

A flake implement of which the margin(s) on one side display microflake scars indicative of intentional modification or 'retouch.' Such microflaking is typically regular in size, orientation, and location along the flake edge and is associated with the preparation of the edge for use. Modification to such flakes is minimal and limited to the flake margins, separating them from classification as 'formed' unifaces -- generally lacking in the Maurer collection (see "Scrapers').

**Notch:**

A flake implement in which a portion of the flake margin(s) has been removed via the application of force to form a distinct, shallow, crescent-shaped indentation with use-wear along its edge.

**Uniface Spall:**

An implement comprised of a large, often ovoid, flake -- typically removed from a river (water-worn) pebble or cobble -- bearing cortex on one whole face and exhibiting retouch modification along one face of its margin.

***SCRAPERS***

This class of tool represents 'formed' unifaces, that is, implements which have retouched medial sections as well as margins, with an obtuse edge angle suitable for scraping or use-wear indicative of this function. This type of tool requires more time, effort and skill to manufacture than an 'expedient' tool.

**Scraper:**

An implement which has undergone substantial modification through flaking of its margins and mid-section, on one face only. This class of tools, of which very few were located at Maurer, has an obtuse edge-angle and/or use-wear indicative of a scraping function.

***EXPEDIENT BIFACES***

This category represents *retouched* flake tools, the margins (only) of which have been retouched on two opposing faces. The term *expedient* is applied to the tools in this category due to the minimal degree of work involved in their manufacture and the quickness and ease with which they can be produced -- a common factor among them.

**Biface Spall:**

An implement comprised of a large, often ovoid, flake -- typically removed from a river (water-worn) pebble or cobble -- originally bearing cortex on one entire face and exhibiting retouch modification along two opposing faces of its margin. Flake scars on the cortex-bearing face will have removed portions of the cortex which originally covered this portion of the flake.

**Expedient Biface:**

A flake implement of which the margin(s) on two opposing sides display microflake scars indicative of intentional modification or 'retouch.' Such microflaking is typically regular in size, orientation, and location along the flake edge and is associated with the preparation of the edge for use. Modification to such flakes is minimal and limited to the flake margins, separating them from classification as 'formed' bifaces, such as 'Leaf-Shaped Bifaces' which display medial retouch.

***BIFACES***

The manufacture of bifaces in this class entails a multi-stage reduction sequence resulting in the production of a shaped implement in which flakes are removed from both faces. A substantial degree of time, energy and skill is required in the manufacture of bifaces, which were commonly used as hafted implements.

**Leaf-Shaped Biface:**

An elongated bifacial implement which has the characteristic shape of a willow leaf, pointed at the distal end and rounded at the proximal end/base. Grinding of the basal margins, where hafted, may be apparent.

**Lanceolate Biface:**

An elongated bifacial implement which has a pointed distal end, an expanding though nearly parallel sided mid-section, terminating with a rounded proximal end/base.

Lanceolate and Leaf-Shaped biface forms overlap to a certain degree, depending on the degree of mid-section expansion. Grinding of the basal margins, where hafted, may be apparent.

**Triangular Biface:**

A biface which is triangular in form, with a straight base lacking notches. Basal thinning may be present.

***BLADE TOOLS***

Blade tools represent a class of linear-flake tools which are: triangular or prismatic in cross-section; parallel sided, at least twice as long as they are wide; and have a linear dorsal crest the length of the flake. Blades can be produced in various sizes and by pressure as well as percussion flaking techniques.

**Blade-Like Flake:**

A small, linear flake, generally less than 3.0 cm long, similar to a pressure-flaked 'microblade' but lacking a definitive point-pressure crushed platform.

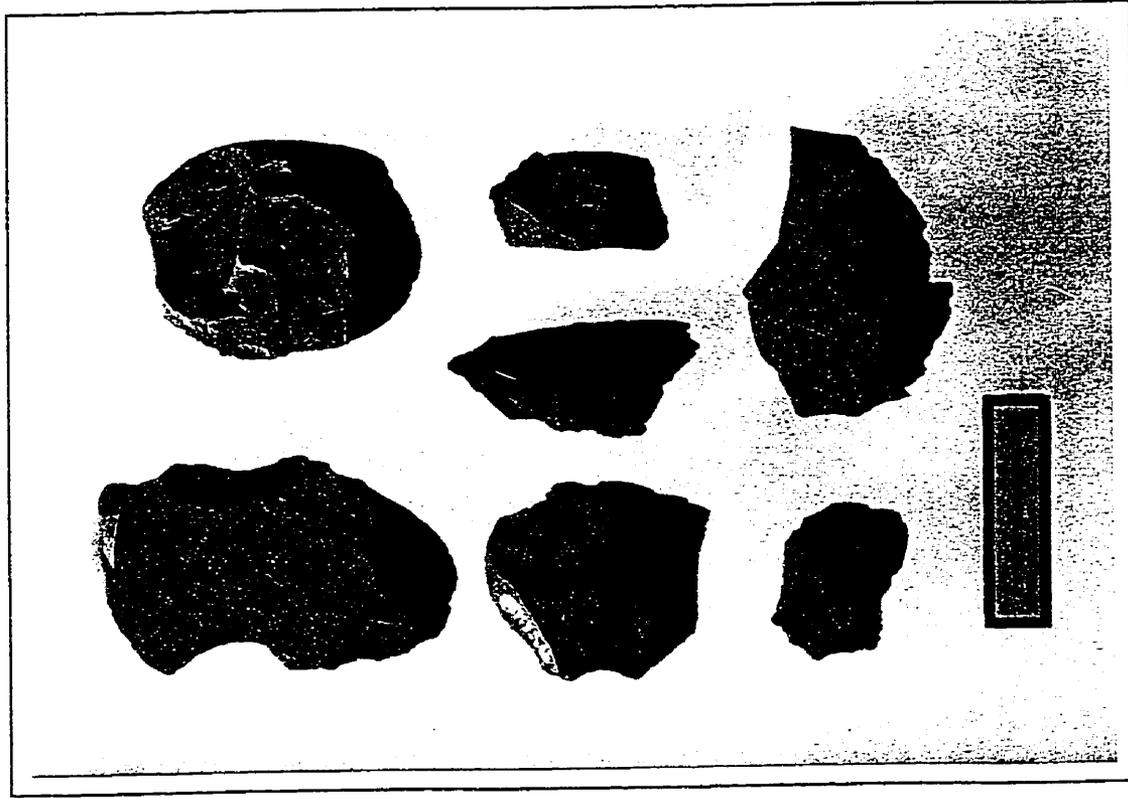


Plate 13. Cores and Core Fragments.

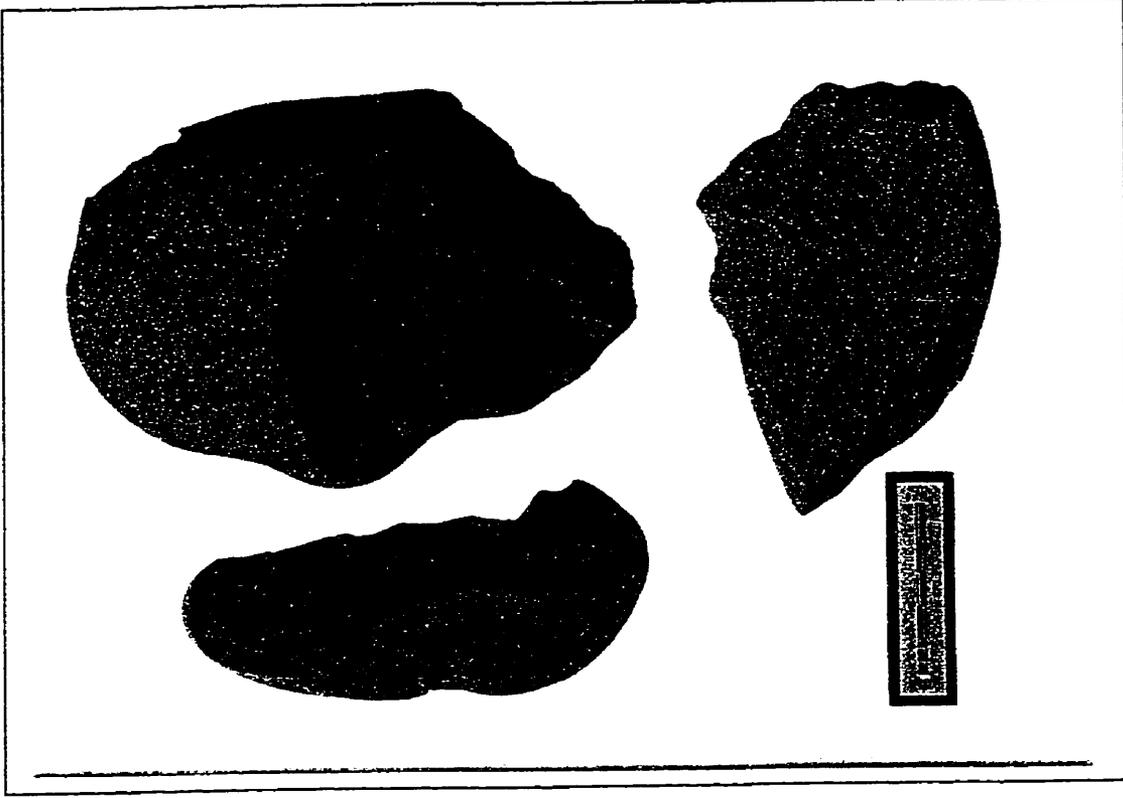


Plate 14. Pebble Core-Tools. (Photos: D. Schaepe)

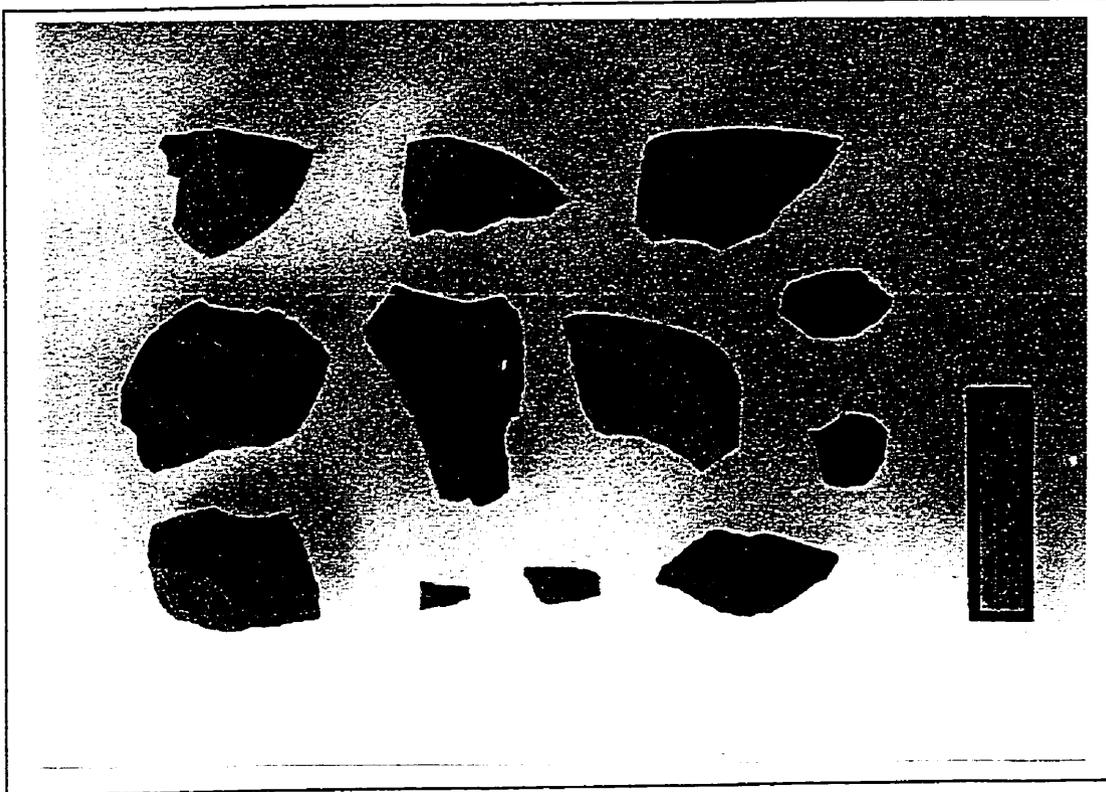


Plate 16. Expedient Flake Tools and Unifaces.  
(Photos: D.Schaepe)

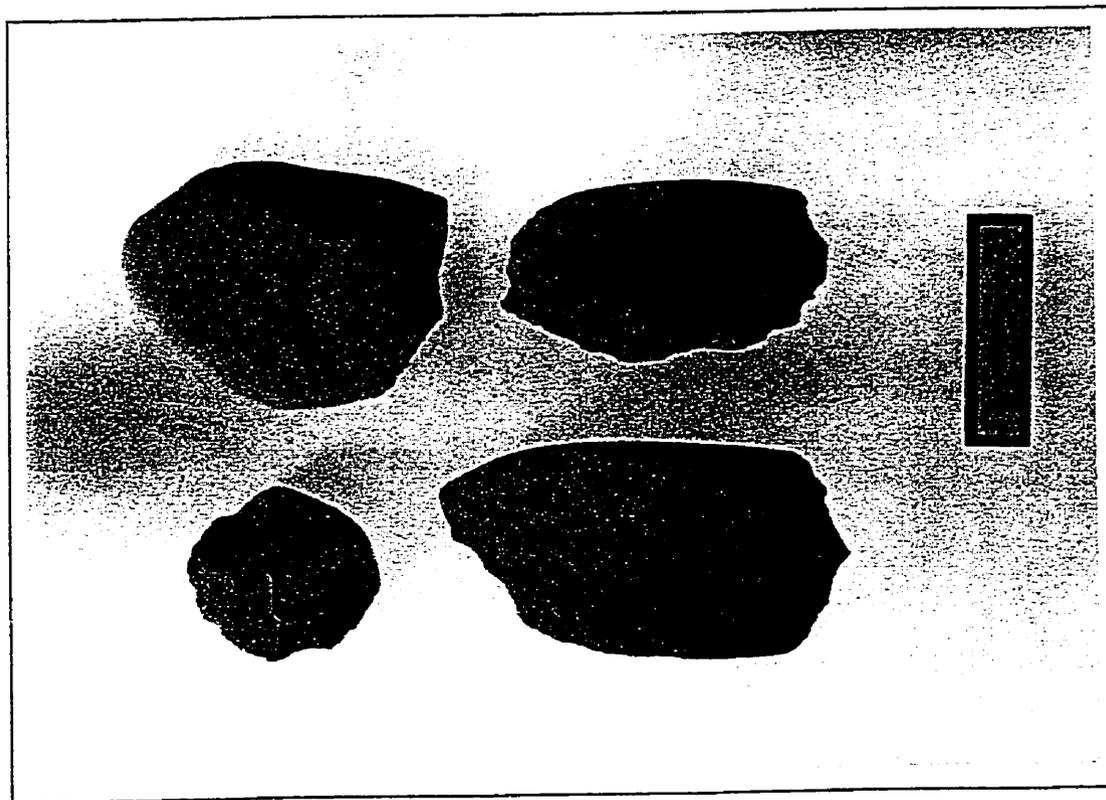


Plate 15. Utilized Spalls.

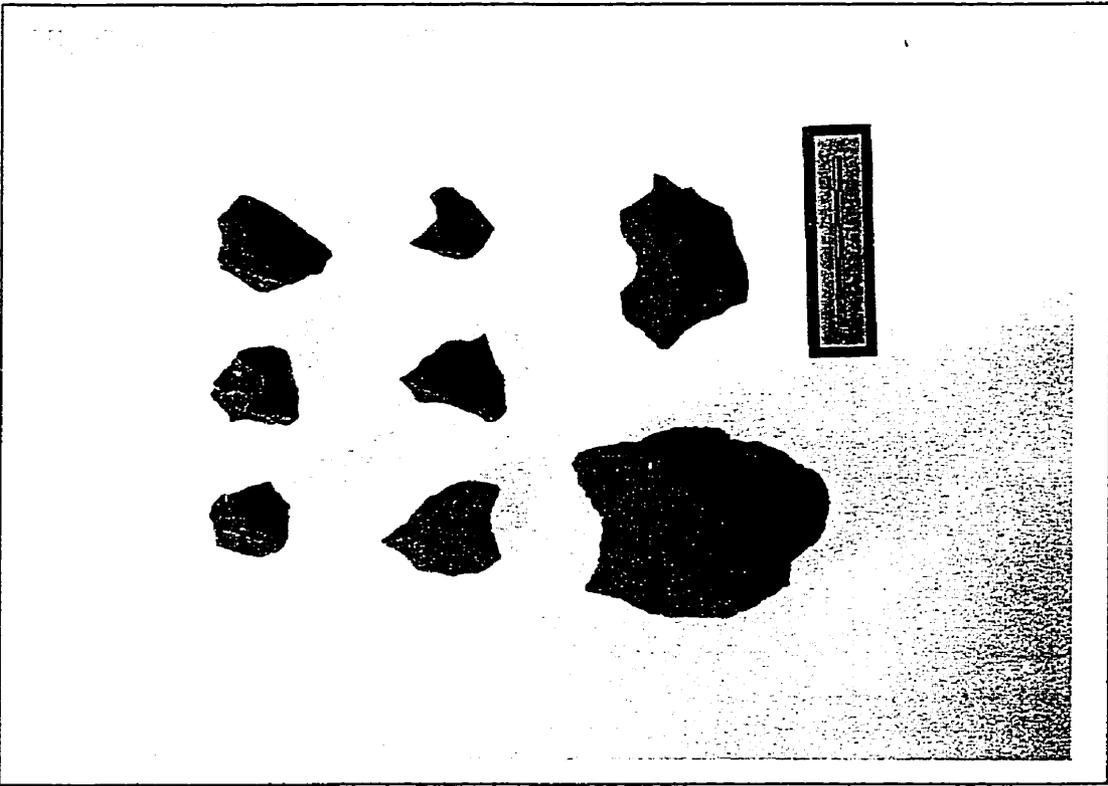


Plate 17. Microblade Core and Pressure-Flake Cores (top),  
Burin and Gravers (middle), and Notches (bottom).

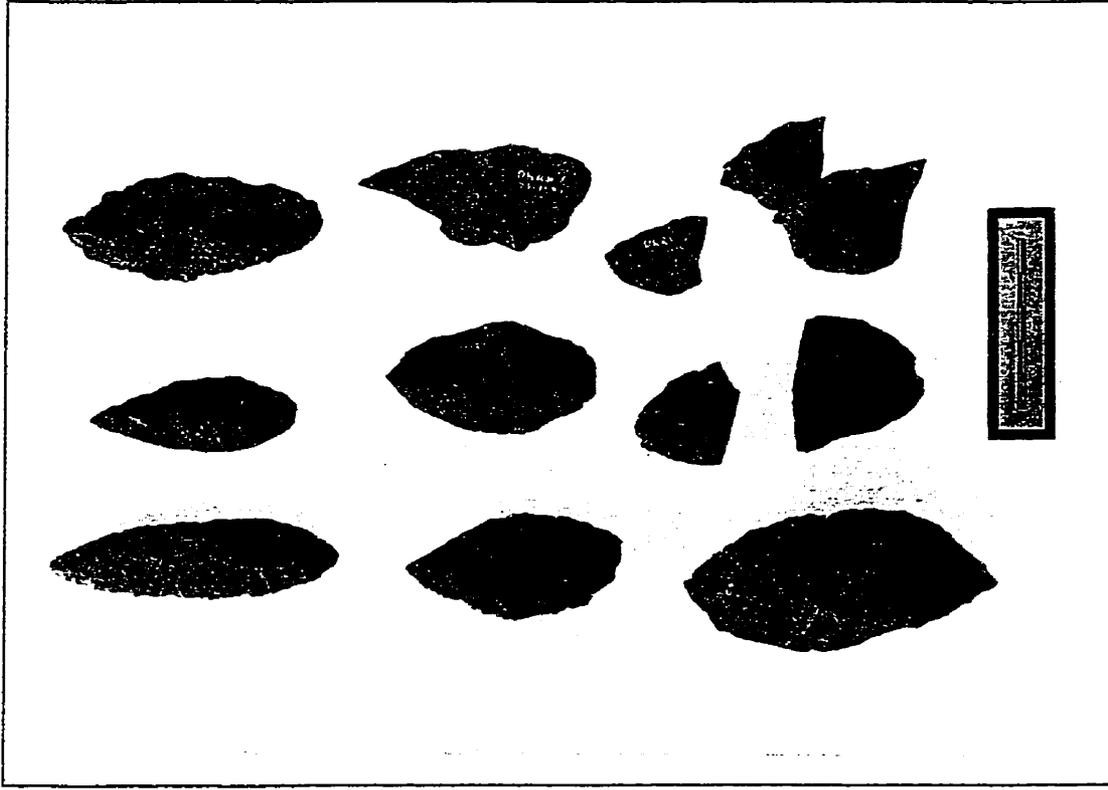


Plate 18. Bifaces and Biface Fragments.  
(Photos: D. Schaepe)

## ***MISC. CHIPPED STONE TOOLS***

### **Graver:**

This type of tool has a characteristic sharp projection, needle-like point, spur, or spine usually produced through the removal of surrounding material along one margin. All the gravers identified at Maurer were unifacial. Evidence of use-wear, potentially ranging from micro-flaking to polish, should be evident on the spine.

### **Drill:**

An implement with a pronounced projection, unifacially or bifacially worked, with evidence of rotary or concentric use-wear on its margins. The projection tip may show considerable polish.

### **Burin:**

An implement with a sharp 'point' produced by the removal of a burin spall from one margin, forming an accentuated corner.

## ***MISC. GROUND/BATTERED STONE TOOLS***

This class of artifacts is comprised of non-flaked implements.

### **Miscellaneous Ground Stone:**

An unshaped implement with one or more ground surfaces, from either the deliberate shaping of the item or as a by-product of its use. Striae, sleeks, troughs and/or polish, resulting from this friction-based process, typically mark such ground surfaces. The

ground stone item identified in the Maurer house assemblage was an apparent by-product of its use as a grinding surface.

**Miscellaneous Pecked/Battered Pebble:**

A pebble fragment which exhibits an 'impact surface' of small, pock-marks resultant from pecking and/or battering on a portion of its surface. A generally incomplete and nondescript item.

**Hammerstone:**

An unshaped, often elongated pebble or cobble exhibiting battering or crushing at one or both ends.

**Anvilstone:**

A large, unshaped cobble with evidence pronounced crushing mostly confined to one area of its surface.

**Edge/End Battered Pebble:**

An unformed pebble, generally water-worn, which exhibits an 'impact surface' of small, pock-marks resultant from pecking and/or battering on its ends and/or edge. Such pock-marking is typically clustered and more substantial than water-transport wear.

**Tabular Palette - Pecked:**

A flat or concave-faced, spatulate cobble or stone exhibiting peck marks on one or both surfaces.

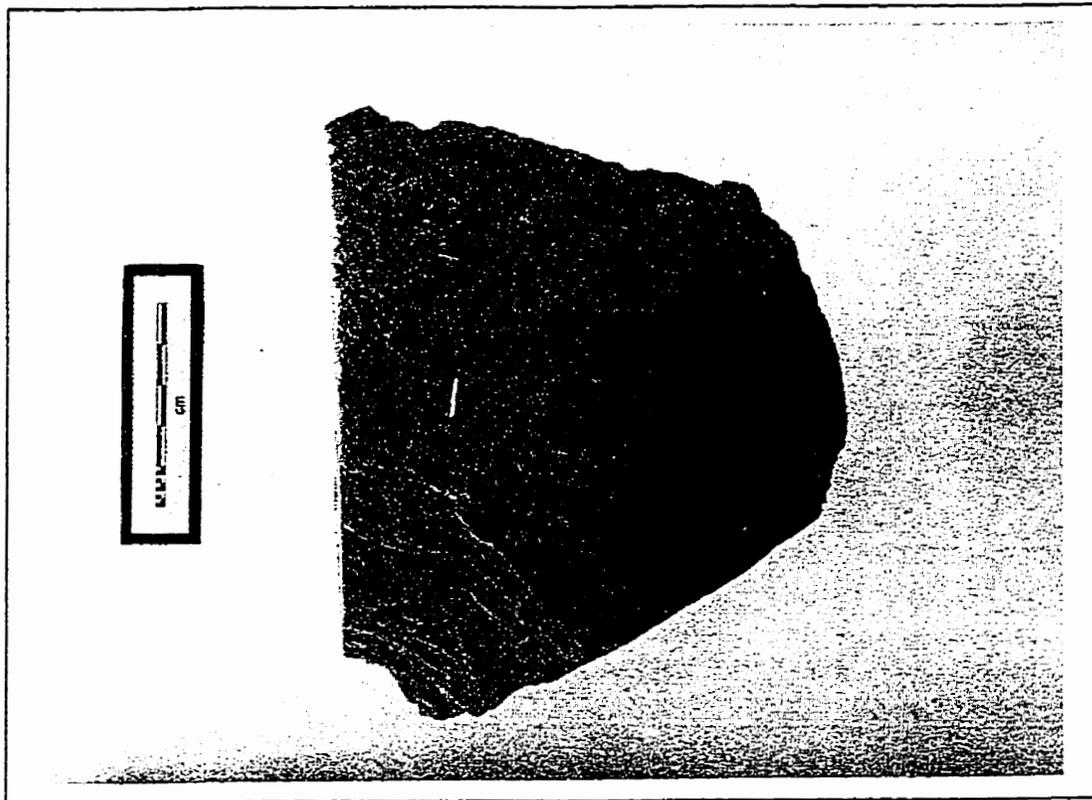


Plate 20. Tabular Palette - Pecked.  
(Photos: D. Schaepe)

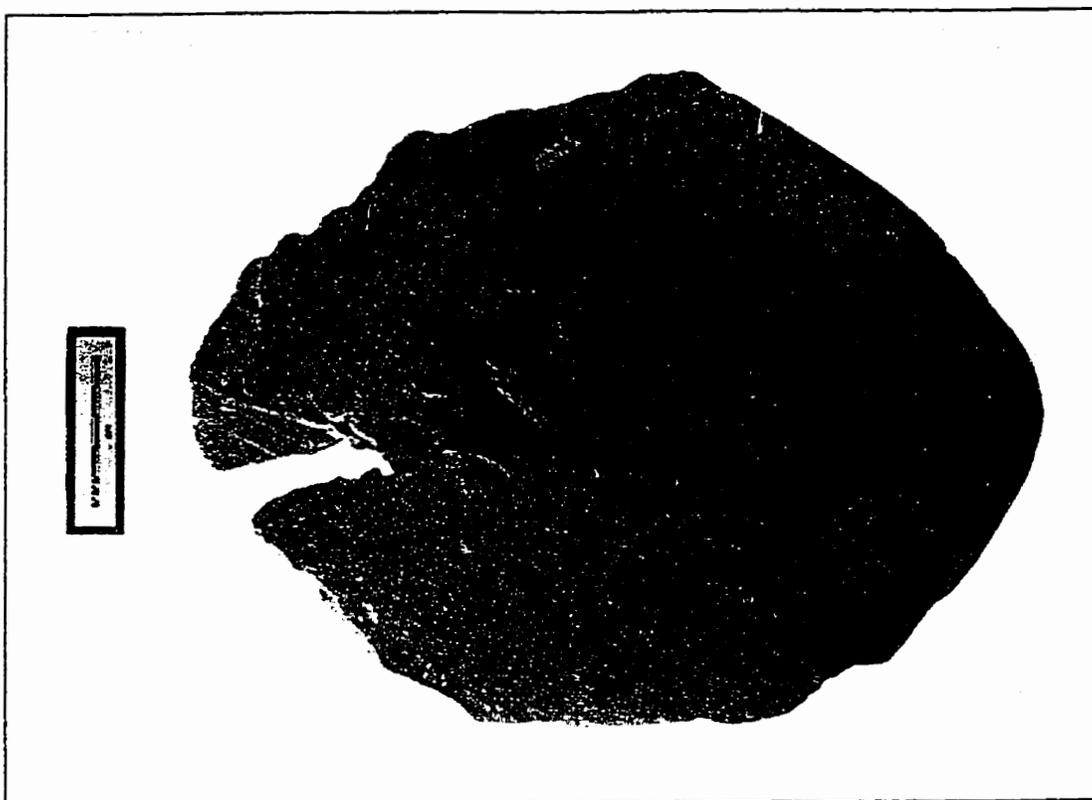


Plate 19. Tabular Palette - Pecked.

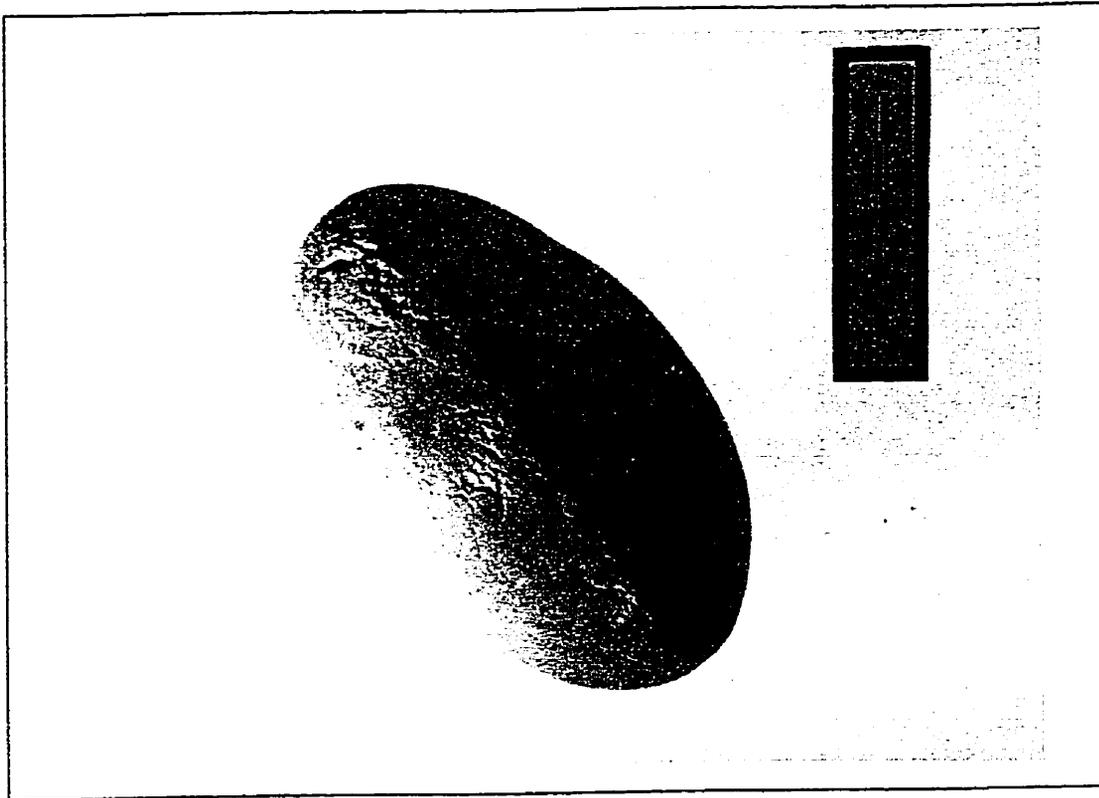


Plate 22. Edge- and End-Battered Pebble.  
(Photos: D. Schaepe)

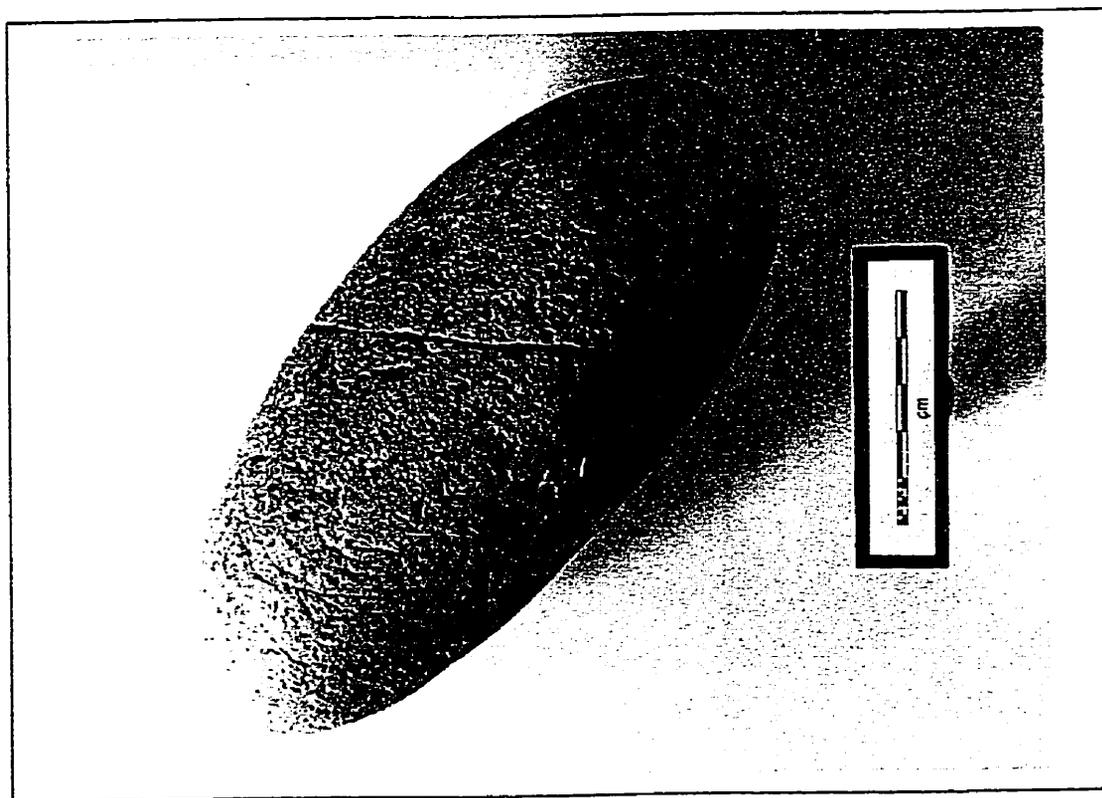


Plate 21. Edge- and End-Battered Pebble.

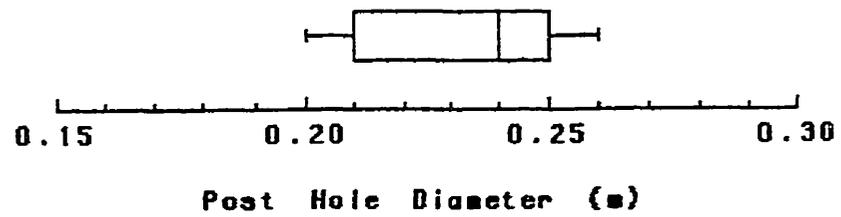
***CHIPPED STONE: DEBITAGE***

**Debitage:**

Unmodified, unused flake and shatter debris resulting from lithic reduction processes.

**APPENDIX II**  
**Post-Hole Diameters**

**Figure 35. Box plot of post hole diameters.**



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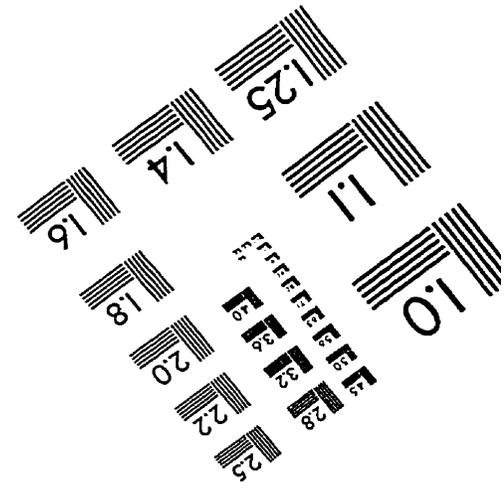
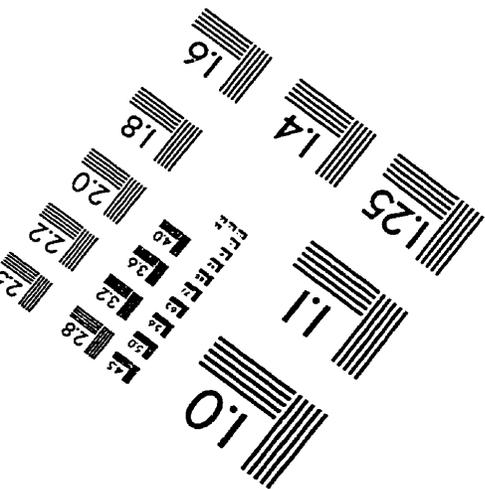
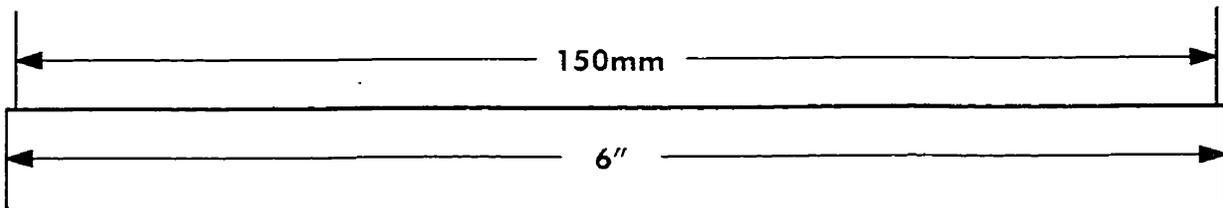
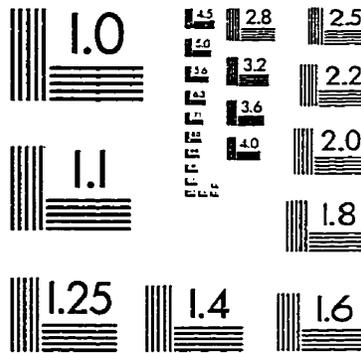
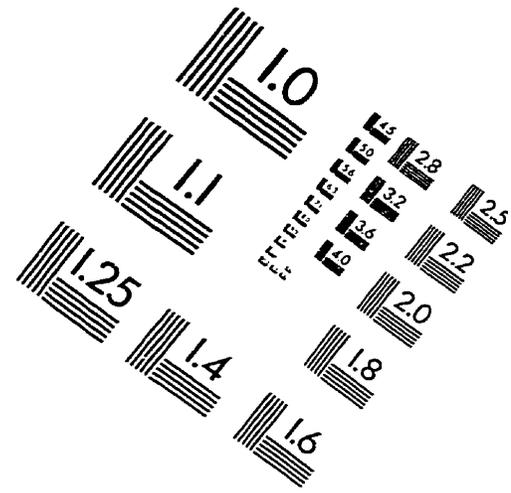
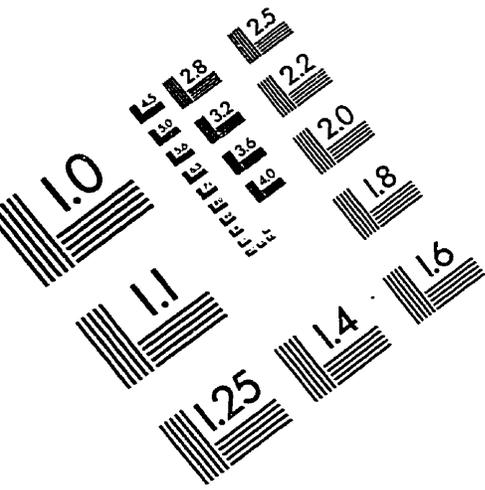
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