FIXING RESIDENCE: FORMATIVE PERIOD PLACE MAKING AT CHIQUIUITAN, GUATEMALA

By

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To my parents for their endless support

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CHAPTER I

INTRODUCTION

The Formative period, from 2000 B.C. to A.D. 300, was a crucial time in Mesoamerican prehistory. In key culture areas complex institutions developed that did not resemble any previous adaptations and that laid the foundations for more sophisticated transitions to follow. Settlement in village communities, food production, and the solidification of social relations based on notions of social identity and participation in group endeavors are some of the notable institutions emerging at this time. These transitions can be seen at many sites throughout Mesoamerica, occurring in areas such as the lowlands of Guatemala and Belize, the Gulf Coast, the Mexican highlands, and along the Pacific coast, the study area of the research presented here. The goal of this study is to reconstruct this aspect of the Mesoamerican past by proposing new interpretations to explain transitions in settlement, subsistence, and social relations at the Pacific coastal center of Chiquiuitan.

This dissertation considers how Early Formative mound building at Chiquiuitan modified the Pacific coastal plain and created a cultural landscape. This type of landscape inscribes human modifications onto a natural environment in ways that leave behind material markers that can be approached through archaeological methods to investigate people's intentions and activities as they gradually settled into permanent villages. The transition to sedentism – the abandonment of a nomadic lifestyle and the adoption of permanent homes and settlements – is one of the major transitions in prehistory. Peter Wilson calls it the "domestication of human beings" and considers it the second major event in which our ancestors had to realign their ideology of the world around them and the way that their senses perceive the environment, after the taking up of bipedalism by early hominids (Wilson 1988). According to Wilson, after a home locale was established, people did not think of the world in the same way and their relationship with the landscape around them irrevocably changed. This idea underscores the importance of gaining a better understanding of this transition in prehistory.

Understanding the transition to sedentism is an important topic in anthropological archaeology because it is one of the first major changes along the trajectory toward complex society, often coupled with other transformations including the rise of agriculture and the development of elaborate social relations. Many scholars have turned to the Pacific coast of Mesoamerica for answers regarding how these transitions occurred in different places and at different times. Fred Bove was one of the early and instrumental researchers arguing that the Pacific coast played an important role in the cultural development of Mesoamerica. He emphasized that intensive projects needed to be conducted to understand local adaptive patterns, as illustrated in the following text,

> The Pacific Coast of Guatemala is frequently thought of in contradictory ways… First is as an area devoid of cultural achievement, only visited sporadically while the mainstream of complex societal evolution passed it by… The second way is as an originator or bearer of everything from Olmec art to Maya civilization itself…. Only through long-term regional studies can archaeologists employ a balanced perspective of those local developments which may be related to changes in the different segments of Mesoamerica (Bove 1993:1).

Following from the ideas of Wilson, Bove, and others, the primary goal of this dissertation is to understand how people perceived of the landscape at Chiquiuitan in different ways through time, and how natural and constructed spaces shaped and were shaped by cultural factors. Important work that has been done in this area in the past has pointed out the environmental conditions that generated human response. This dissertation complements those studies by also addressing social, ideological, and immaterial aspects of Formative period transitions. It is argued that the transitions occurring in the Formative period include not only key adaptational changes in settlement, subsistence, and social organization, but also fundamental shifts in ideologies that accompanied these changes. A central aspect of this objective is to determine how the place of Chiquiuitan was understood differently in the three phases of occupation between 1450 and 600 B.C. This research presents a model for understanding sedentism at Chiquiuitan through which first, during the Huiscoyol phase, people visited the site as part of a mobile settlement pattern. Then, in the later Cangrejo and Tamarindo phases, sedentism and eventually agriculture and complex social institutions began to alter the landscape in significant ways. Through time, people within the community became agents of change by enacting a landscape shift from a primarily natural space exploited by mobile foragers to a "domesticated," sedentary, and socially integrated cultural place.

Sedentism and Landscape at Chiquiuitan, Guatemala

The Pacific coast of Guatemala was a dynamic cultural landscape during the Formative period. There, changes from Archaic adaptations include the emergence of settled village life, a transition to agricultural food production, increasingly complex and institutionalized social relations within and between communities, and changing symbolic and ideological understandings of the natural and cultural landscape. By the Middle Formative period, the foundations of a highly sophisticated cultural system are clearly observed in the Mesoamerican archaeological record, with wide-spread symbolic iconography, monumental public works, large regional centers, early writing, high artistic expression, elaborate mortuary practices, a high degree of social stratification, and long-distance exchange. The transitions that occurred between the Archaic and Middle Formative are only beginning to be understood, and offer some of the most fascinating and important areas of Mesoamerican archaeological research.

It is argued here that a useful approach to understanding these changes is found in the practice theory perspective. This approach takes a humanistic perspective to understanding the past, urging scholars to seek out not only evidence for what people were doing and making, and how they were adapting, but also what they were thinking and experiencing. Getting at those experiences of ancient individuals or groups such as households or communities allows for richer interpretations of the past with more detail regarding human choices, motivations, and actions. In the case of Formative period cultural change, the practice perspective looks for ways that individuals shaped and negotiated their cultural systems and gives priority to human creativity and influence (Clark 1999, 2000; Hendon 1996; Lesure 1997b, 1999a; Love 1998a).

Through a practice theory perspective, certain elements of tradition within a cultural system take on special importance in understanding the frameworks within which past peoples lived. This contextualization of norms and institutions (or structures) of society requires archaeologists to seek out understandings of local developmental trajectories that extend back in time and outward through space. Building an understanding of the environment within which agents operated and laid the foundations of their communities lends itself well to ideas drawn from the archaeology of landscapes and from social theory. This field of theory considers spaces and places as fundamental parts of cultural contexts and provides tools for investigating how these aspects of past experience affected people's motivations, choices, and actions. Theory from the archaeology of landscapes is related to practice theory, as landscapes were changed, constantly recreated, and imbued with symbolic meaning by the people that inhabited them. At the same time, spaces and places are instrumental parts of social structure as permanent aspects of a cultural environment contribute to social memory and shape the actions of individuals who experience the physical effects of their endurance. Understanding this relationship between people and the landscape (both natural and cultural) is vital to appreciating the foundations of the Mesoamerican cultural system, especially in the period following initial sedentism, the growth of populations, and the intensification of land usage.

The Pacific coast offers an optimal research setting to investigate the relationship between people and the environment. There, Archaic foragers are known to have lived, as evidenced by the microbotanical record (see Appendix E), and indication is seen early on for the transitions to sedentism and agriculture at sites such as Chiquiuitan. Residential mounds dating to the Formative Period aggregate within early resource exploitation locales and provide the first material evidence for early people in this region. When Chiquiuitan became a permanent village, these mounds functioned as the home base for the fundamental cooperative unit of society (the household), and can be seen as reflecting wider social norms. As communities grew and developed, they left abundant material remains of changing cultural developments. It is here that the foundations of a formal community with institutionalized social structures can fruitfully be explored.

The site of Chiquiuitan is one of these early aggregation locales, probably first inhabited according to season by mobile foragers, and gradually becoming a fully sedentary and agricultural village. Some of the first human constructions in Mesoamerica (earthen mounds) emerged here, forever altering the landscape and leaving behind clues to the intentions of early village inhabitants. This dissertation treats household groups as social agents and looks closely at what these landscape constructions indicate, both for explanations of adaptation and for symbolic meaning.

Organization of the Dissertation

The dissertation is organized in thematic chapters outlining main concepts, as well as data chapters describing components of research at Chiquiuitan. This section outlines the main tenets of each chapter, with exception to the introduction.

Chapter 2 introduces the study area of the Pacific coastal region. Here is presented the region’s geography and environment. A summary of the history of archaeological research throughout this region and highlights of those finds that especially set the stage for understanding the Formative period and Chiquiuitan are discussed. Then an introduction to the site is provided, describing the previous work at Chiquiuitan, the data that comprise the site’s chronology, and the main objectives of the present study.

Chapter 3 discusses the theoretical concepts and approaches related to this study topic, including practice theory and landscape archaeology. Practice theory provides an underlying framework for understanding cultural transitions at Chiquiuitan by considering the experiences of the inhabitants of this past village and how their decisions, motivations, and actions selected for certain adaptations and shaped developmental trajectories in this region. This chapter outlines important contributions to the theory and how it has been utilized in differing applications in archaeology. Finally, examples of the use of practice theory in understanding Formative cultures are provided, with special attention to how this perspective informs the interpretation of mound building at Chiquiuitan. Theories from the archaeology of landscapes are drawn upon to understand how different groups perceived of and interacted with landscape features, and to offer a better interpretation of the significance of a cultural landscape brought about through mound building at Chiquiuitan. By focusing on place, human behavior can be interpreted a recursive relationship in which the combination of natural features and human activity creates cultural landscapes that in turn affect the ways that humans experience and operate within their surroundings. This chapter highlights how the work at Chiquiuitan contributes to the archaeology of landscapes by providing an example of a unique relationship between landscape features (natural and constructed) and how they are experienced and become meaningful symbols within a burgeoning sedentary community.

Chapter 4 begins the discussion of data through a description of the subsurface testing program at Chiquiuitan. Here, the methodology for sampling the landscape for occupation through shovel test pits is described, as well as a summary of findings. This component of the analysis is important for understanding the use of space at the site and comprehending the variability in the occupation at Chiquiuitan.

Chapter 5 discusses the excavations of mounds at Chiquiuitan. Although most of the conclusions of this dissertation focus on the heavily excavated Mound 13, the chapter includes descriptions of all of the excavations that were conducted, including those on Mounds 13, 24, 27, and 34. These excavations provide important stratigraphic information for understanding depositional history of mound construction and a base for analyzing material remains and their contexts. Important contexts are highlighted, including dirt floors, which were carefully excavated, removed in entirety, and processed in the lab for collecting macrobotanical remains and micro artifacts. Other important finds include middens, burials, hearths, and storage pits.

Chapter 6 details the ceramic classification from Chiquiuitan. Previously, ceramic materials from the site had been viewed by Drs. Laura Kosakowsky and Barbara Arroyo, both of whom analyzed only small samples. These scholars graciously provided notes from their past studies and assisted me with the analysis described here. The classification was done based on a modified type variety system that focused on vessel form, surface treatment, and paste composition to determine groups, types, and varieties. This system organizes the material in a way that reduces variability and provides a meaningful understanding of the development of pottery technology at the site and how it compared to similar developments throughout the Pacific coastal region. However, a modal analysis was performed to standardize records of attribute identification and measurements. While vessel form and surface decoration are explicitly discussed in this dissertation, several other attributes were recorded and coded for and are presented in Appendices B and C.

It is important to note that the interpretations of this dissertation are based on a collaboration of the works of many scholars. Materials analyses were performed on artifact categories not included in the body of this dissertation, including lithic tools, mollusks, other fauna, microbotanicals, macrobotanicals, and human remains. These studies are referenced and appropriate credit given to their authors throughout the text, and summaries of these data are provided in the appendices. The use of data from the Proyecto Arqueológico Chiquiutan throughout the dissertation is appropriate because the author is the project principal investigator.

Lastly, Chapter 7 brings together the information provided in the dissertation in a comprehensive summary of the main ideas. Transitions in social structures including settlement, subsistence, and social relations are summarized in comparison to developments throughout the Pacific coastal area. Then, the interpretation for mound building supported by this dissertation is reiterated in light of the data presented. The importance of this transition to sedentism and a built landscape is considered for the physical ways that it forever changed the Pacific coastal landscape, the interactions of inhabitants with their surroundings, and the ideology of landscape held by those who inscribed meaning through construction. Furthermore, Chapter 7 underscores the implications for investigating Formative period Mesoamerican sites through research designs that incorporate a practice theory perspective, while considering ancient sites as dynamic cultural landscapes. Only through these combined approaches can initial sedentism and the construction of mounds be explained in a way that considers social meaning, looks at variability within ancient cultural systems, and explains change in terms of people's choices and intentions.

Summary

This dissertation offers several conclusions important to the archaeology of Formative period Mesoamerica and to the applications of practice theory and landscape archaeology in anthropological archaeology. First, the use of practice theory provides an interpretation rooted in a humanized vision of the past where people have the power to shape emerging cultural institutions. Through intentional modifications to the environment through the construction of earthen mounds and the formalization of community organization, these people not only created habitable areas to survive in a wetland environment, but also fixed cultural places within a natural landscape that symbolized the emergence of a community with independent households negotiating their position within an increasingly complex social sphere. Second, ideas from landscape archaeology, enhanced with ethnographic analogy, provide detailed models through which to identify archaeological correlates of the relationships between people and the environment. Small scale mobile groups are often characterized as having an open and unbounded perception of the landscape, relating to natural features that are infused with meaning conveyed through mythology and oral traditions, and leaving behind a limited cultural component of the primarily natural environment. On the other hand, sedentary agriculturalists generally demonstrate a focus on fertility, a greater accumulation of debris that alters the natural environment and leaves cultural markers for subsequent generations of humans, an ideology that includes a central or home place within the wider cosmos, notions of property and boundary, reflections of social organization, and ties to the ancestors. Archaeological correlates of these models are found at Chiquiuitan and reveal significant trends in the foundation of this community as it was transformed from a special site for mobile peoples to a permanent community with village agriculture and sophisticated relations between household groups. Scientifically collected data from two years of field excavation and four years of laboratory studies provide abundant information for testing these models.

By using theory borrowed from the archaeology of landscapes and an approach rooted in agency theory, it is possible to construct a model for sedentism and community development in the Formative period at Chiquiuitan that relies not only on external determining factors and human adaptive responses, but one that also considers how people experienced, imagined, and interacted with the landscape in different ways through time. This approach allows for the identification of the transitions from natural landscapes to socio-natural, and even to primarily cultural conditions.

During the Huiscoyol phase, Chiquiuitan was repeatedly visited for social gathering and estuarine resource exploitation. The consecutive layering of thin floor levels indicates history and memory. The events that occurred there – status negotiations, exchanges, rituals, and spousal meetings – such things would have been recorded in social memory, and probably through traditions of oral history. The existence of mounds indicates some preparation of the areas at Chiquiuitan, suggesting that it was a special place used by several people.

Later, perhaps in response to the dry conditions experienced in the tropics at this time, nomadic groups elected to change their mobile lifestyle and settle down. One of these groups chose Chiquiuitan, a familiar place that they were already attached to, with convenient access to navigable waterways and abundant estuarine resources. The platforms that had once served as temporary gathering places for resource exploitation already were the products of local historical conditions and communicated meaning. The history of drawing on the site for special purposes provided social structures that were easily altered by social agents wanting to change the way the site was used, transforming it into a permanent community. The built landscape manipulated by human action came to reflect the social relations of that community. Household groups occupied the centers of the mounds, living together in communal units that were distinct from other groups in the community. Their behaviors and practices left more visible cultural signs on the natural environment as mound platforms became more substantial and as cultural debris built up. These permanent cultural features changed the landscape of the coastal plain and influenced future generations.

In the Tamarindo phase, the politics of a sedentary social group can be seen in the mounds. After sedentism was adopted, people dealt with new elements of social structure including coping with neighbors and adapting ways of communal life. Again, the structures already in place from the occupation of Chiquiuitan in previous times constrained and enabled social agents to reproduce those structures in familiar, yet innovative ways. The house mound platforms that were previously maintained through repeated layering of dirt additions had started to alter the environment in lasting and noticeable ways. They indicated social organization of the community in distinct household groups, a social norm that was reproduced by Tamarindo generations. However, these people were practicing agriculture in the immediate vicinity of Chiquiuitan, now within a region of increasing settlement and perhaps competition over the most fertile soils. In response, social actors initiated new norms aimed at displaying their identity. By appropriating and augmenting mound building for the conscious purpose of signaling their identity, the mounds were made into powerful symbols. Especially though the burial of ancestors within, they demonstrated the historical links that these groups had to Chiquiuitan. Whether as statements to future generations of residents, other groups within the community, or aimed toward outsiders who visited the site from other villages, the message inscribed in the mounds seems to be one of permanence, endurance, ownership, and justified rights to territory.

What emerges from this study is a detailed account of culture history on the Pacific coast, specifically addressing issues of social structure and practice through changes in settlement, subsistence, and social relations. Moreover, this reconstruction fits well with expectations for certain types of landscape ideology (and transitions in ideologies) thought to have been part of the lived experiences of people inhabiting this corner of the world as they were going through some of the most fundamental changes undertaken by human societies.

Chapter II

Introduction to the Chiquiuitan Study Area

Chiquiuitan is located on the Pacific coast in modern Guatemala. This region is part of a wider ancient culture area that spans from the western coast of El Salvador, through Guatemala, and into Chiapas, Mexico. The specific geographic characteristics of this region shaped the cultural developments that occurred in the past, and understanding the local environment is crucial to interpreting developments in the Formative period at Chiquiuitan. This chapter summarizes the physical setting of the region. It also provides background information on archaeological work that has contributed to our understanding of cultural developments there. Lastly, the site of Chiquiuitan is described in detail to set the scene for subsequent chapters that express the results and conclusions of this recent project.

The Physical Setting

Chiquiuitan is located in the Chiquimulilla coastal estuary ecological zone in southern Guatemala (Figure 2-1). North of the site lies the fertile coastal plain and the beginning of the slope to the Sierra Madre volcanic chain of the Guatemalan highlands less than 20km away. This coastal plain spans up to 70km between the highlands and the coast (Marshall 2007), the entire length of Guatemala, northwest into Chiapas and Oaxaca in Mexico, and southeast for a short length into El Salvador. Rivers flow out of the mountains and form wetlands that are connected by man made and natural canals all along the coastal edge. The rivers nearest to Chiquiuitan are the Maria Linda, 15km to the west, and the Esclavos, 15km to the east. Chiquiuitan occupies the seasonally inundated land near the Chiquimulilla Lagoon, 3km west of the modern town of Monterrico.

Figure 2-1. Map of Mesoamerica showing modern country borders and capitals, well known archaeological sites, and the location of Chiquiuitan.

Climate

Central America has a climate generally described as tropical and seasonal, with wet and dry months. However, much climatic variability exists within the Central American landmass, primarily depending upon altitude and distance from the oceans. This variability ranges from humid tropical rainforests along the Caribbean to dry tropical savannahs on the Pacific coast. The highlands also create climatic zones of differing types, including humid cloud forests around volcanoes, as well as dwarf scrublands found at the highest altitudes (Marshall 2007). Generally speaking, three major climatic zones can be distinguished: 1) the hot and humid lowlands toward the Caribbean, which can receive some amount of rain all year round; 2) the highlands that have a temperate, cool and humid climate; and 3) the Pacific lowland tropical savanna with a hot and dry climate, except during periods of heavy rain between May and November (Bethune et al. 2007:669; Clawson 1997). In this uneven landscape with extremes in climatic and environmental variables, exceptionally diverse microclimates, vegetative zones, and soil types can be found within small regions.

Temperatures are affected by warm ocean currents in the Pacific and Caribbean. The Pacific North Equatorial Current flows northward along the Pacific coast. Two currents, the Atlantic North Equatorial Current and the Gulf Stream, account for the warmth and humidity of the Caribbean coast (Bundschuh et al. 2007). The warmest days are found toward the end of the dry season, while the winters experience northerners which bring steady rains, cooler temperatures, and frosts at higher elevations. The annual mean temperature for the Pacific coast of Guatemala is 25-27.5°C (Bundschuh et al. 2007:5), with annual high temperatures reaching the mid to upper 30°C (Estrada-Belli 1998:49).

Atmospheric pressure belts, winds, and the effect of airflow passing mountains (orographic effect) are three factors that influence precipitation. The low pressure that surrounds the equator shifts latitudinally in response to the seasonal movement of the sun, in a region that is called the Intertropical Convergence Zone (Bundshuh et al. 2007; Piperno and Pearsall 1998; Rees 1997). The wet season begins in May when the northern edge of this low pressure moves in. During this time the region experiences the convergence of the northeast and southeast trade winds and receives much rain (Rees 1997). Hurricanes are frequent in late summer on the Caribbean side, while the Pacific is subject to intense tropical cyclonic storms called *chubascos* (Bundschuh et al. 2007:3; Clawson 1997:58). Northeast trade winds cause a decreasing rainfall from east to west across the country. By October the low pressure shifts away to the south again, bringing back the subtropical high pressure and dry conditions, when precipitation levels can reach a low of 50mm/month on the Pacific coast (Bove 1989:16). Winds at this time are more stable northeast trade winds (Rees 1997). The Pacific coast of Guatemala in general receives 4,000-5,000mm of annual precipitation (Bundschuh et al. 2007:5); however, closer to the coast this measure is usually less, perhaps as low as 2,000-3,000mm annually (Neff et al. 2006c). Actual rainfall reaching the seashore at the nearby Coyolate River was measured to be

1,500mm/year in the 1990's, while the section of the river 40km inland received 3,100mm/year (Bove 1998:265).

On the Pacific coast, this climate shapes an environment that would naturally support a tropical deciduous forest. Tropical deciduous forests are green in the wetter season, but leaves drop from tress in the dryer months. Some of the wettest areas support evergreen vegetation. Today most of the coast has been cleared for agricultural purposes including pastureland for cattle, which characterizes the area surrounding Chiquiuitan.

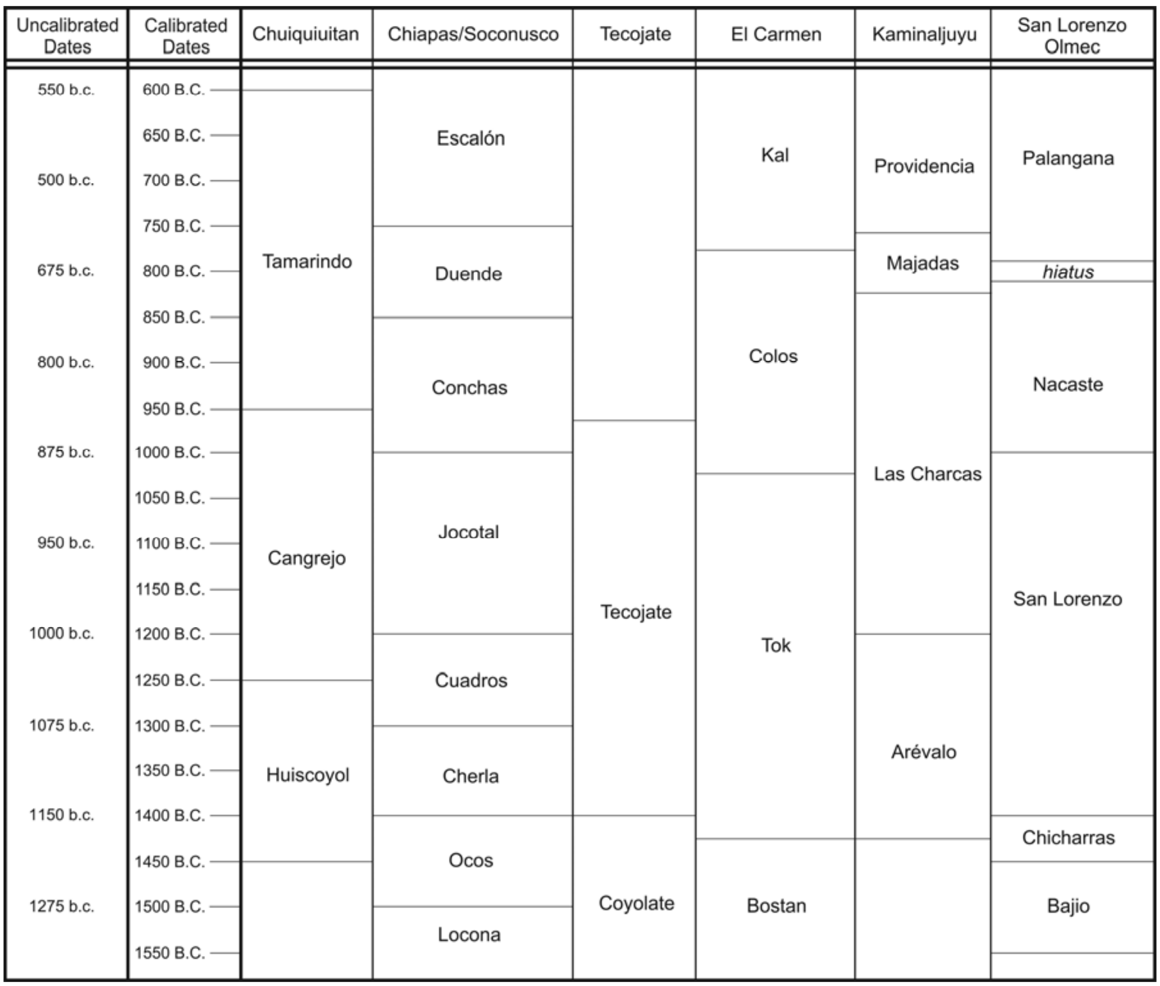

Figure 2-2. Chronology chart for the Pacific Coast and neighboring regions. The calibrated and uncalibrated correlation is provided here because dates from the Pacific coast are commonly presented in uncalibrated form. This correlation was drawn from calibration curves provided in Reimer et al. 2004:1039 and from the Oxcal online calibration program version 4.1.3. The inversion of uncalibrated dates at 700-600 B.C. calibrated is due to a flattening on the calibration curve at this point which leads to multiple intercepts on reported calibrated dates from this time

(Reimer et al. 2004). The dates for Chiquiuitan show the most recent phase designations, based on recent ceramic analyses and new radiometric results discussed in this dissertation. Dates for other areas are drawn from publications including Lowe 2007:66 and Pye, Hodgson, and Clark 2008: Figure 2 for Chiapas; Arroyo 1994:280 for Tecojate; Arroyo 1995:205 for El Carmen; Popenoe de Hatch 2002:280 for Kaminaljuyu; and Pool 2007:7 for the San Lorenzo Olmec.

In the Early and Middle Formative Periods (Figure 2-2), when Chiquiuitan was a functioning village, the climate in this area differed slightly from the conditions found there today. Between about 9,000 B.P and A.D. 1,000, Holocene paleoclimatic reports indicate that there appear to have been episodes of dramatic climatic variation (Mayewski et al. 2004). Rapid climate change events took the form of cooler temperatures in the higher latitudes and dryer conditions among the tropics, a pattern characteristic of much of the Pleistocene. One of the most dramatic of these events took place between 1500-500 B.C., when Chiquiuitan was inhabited. This may have been a time of pronounced aridity in the Central American tropics. Other similar events occurred at 4000-3000 B.C., 2200-1800 B.C., and A.D. 800-1000.

Sediments collected from the Pacific coast have recently added a much higher resolution to the understanding of climatic variation throughout the Holocene in this area (Neff et al. 2006d). During El Niño – Southern Oscillation events, the Intertropical Convergence Zone of low pressure does not migrate northward to create the rainy season, and extremely dry conditions can result. Studies from sediment cores taken on the Pacific coast support the pattern described above for a drying event peaking around 1400 B.C. with centuries of drought following. This drying may well have been a factor involved in the decision to form more permanent occupations at sites such as Chiquiuitan. Stable, moist conditions return around 800 B.C., after Chiquiuitan is believed to have been abandoned.

Also based on the studies of microbotanical remains collected from sediment cores along the Pacific coast, the paleoenvironmental record has recently been established characterizing this time period in the area immediately surrounding Chiquiuitan, (Neff et al. 2006c, 2006d). Neff et al. collected sediments from Chiquiuitan, which have only recently been analyzed and reported. Results of these analyses are presented in Appendix E. They demonstrate that the Chiquiuitan region was dominated by mangroves during the Huiscoyol phase (the earliest date reported from the column sample is 1413 B.C. from one of the lowest levels). Pollen from basal levels of the primary sample is high in *Rhizophora* content. A shift in pollen frequencies in levels slightly higher up, and 40cm below a level dated to 832 B.C., suggests that the mangroves were reduced while plants that grown in open habitats such as those from the Poaceae family of grasses, the flowering plant family Chenopodiaceae, the herb *Amaranthus,* and especially sedges (Cyperaceae) demonstrate pollen increase. These data also report a spike in charcoal content at this point. The phytolith record also indicates a wet environment, with fluctuating levels of sponge spicules and diatoms, as well as some tropical forest indicators including palms (*Arecaceae*) and *Bombacaceae*. *Heliconia* phytoliths are also seen in these levels. While this plant is an indicator of open habitat, it is also known to thrive on the edges and in openings of forests. These data suggest human clearing of the land and possibly the establishment of a freshwater lagoon or swamp. A similar pattern was seen in pollen from core samples taken at nearby Sipacate. There, two distinct waves of deforestation were identified, first dating to 3400 or 3500 B.C. in the Archaic Period, and second to around 1700 B.C. At Chiquiuitan, evidence for *Zea mays* appears in the pollen record in levels just following this transition. By 832 B.C., from the same levels that provided the first *Zea mays* pollen, phytolith content increases and evidence for some economic indicators including Marantaceae, or arrowroot, and *Zea* is present. The Middle and Late Formative levels following these demonstrate a gradual return of the mangroves and decrease in herbs and cultigens until about 76 B.C.

Hydrography

Central America has abundant water resources. It has been estimated that the renewable water resources available per person in the country of Guatemala for one year is 8,788m^3

(Bethune et al. 2007). The wide availability of water has been attributed to the humid tropical climate with its heavy precipitation and the naturally occurring bodies of water including rivers, lakes, and deep aquifers. The development of rivers is high, but rainfall differences result in widely varying runoff and river discharge. On the Caribbean side, long river systems produce swampy valleys and lagoons along the broad coastal plain. Major river systems in the east of Guatemala include Izabal and Motagua. The Pacific side is more restricted, with shorter river systems and narrow strips where estuary and lagoon environments can be found. Important lakes in Guatemala include Péten Itza and Izabal on the east side, and Atitlán, which sits in a volcanic caldera in the western highlands. Karst terrain characterizes the northeastern part of Guatemala and the Yucatan Peninsula, where water systems are largely underground (Bundschuh et al. 2007).

It is thought that the hydrography of the Pacific coastal region contributed to its favorability as a locale for mobile groups to inhabit and sedentists to settle in ancient Mesoamerica. The rivers connect the highlands to the coast – a relationship that was important for trade reasons as early as the Early Formative, as indicated by the presence of obsidian, a highland volcanic glass, even in early deposits (see Appendix D). Furthermore, the rivers connect to canals at the coast, running all throughout coastal estuaries from El Salvador to southern Mexico. This canal system brought into contact inhabitants of early coastal villages from across this region, facilitating culture contact that is reflected in shared artifact traits throughout the Formative period. Chapter 6 of this dissertation highlights this point through a discussion of ceramic attributes which demonstrate regional similarities especially in the Huiscoyol and Tamarindo phases.

Geology

Central America is located on the convergence of the Cocos and Caribbean tectonic plates (Figure 2-3). The Cocos plate is moving northeast, while the Caribbean plate is drifting slowly to the southwest, causing the collision seen in the Middle America trench, where subduction occurs as the Cocos plate is pushed beneath the Caribbean plate (Bundshuh et al. 2007). The subduction zone is located just off the Pacific coast, where deep ocean trenches and faults exist. Where the edge of the Cocos plate has been pushed beneath the Caribbean, its rim liquefies and seeks surface release, forming the volcanic chain located slightly inland (Rees 1997). This creates an area with crustal instability and much tectonic activity in the form of earthquakes and volcanoes (Bundschuh et al. 2007). The mountain chain is part of the western alpine system, which spans south to include the Andes of South America, and forms part of the circum-Pacific Ring of Fire (Clawson 1997). This convergence of plates has one of the highest densities of volcanoes found in the world. These volcanoes offer a potential source of ideological material, an idea returned to in greater detail below.

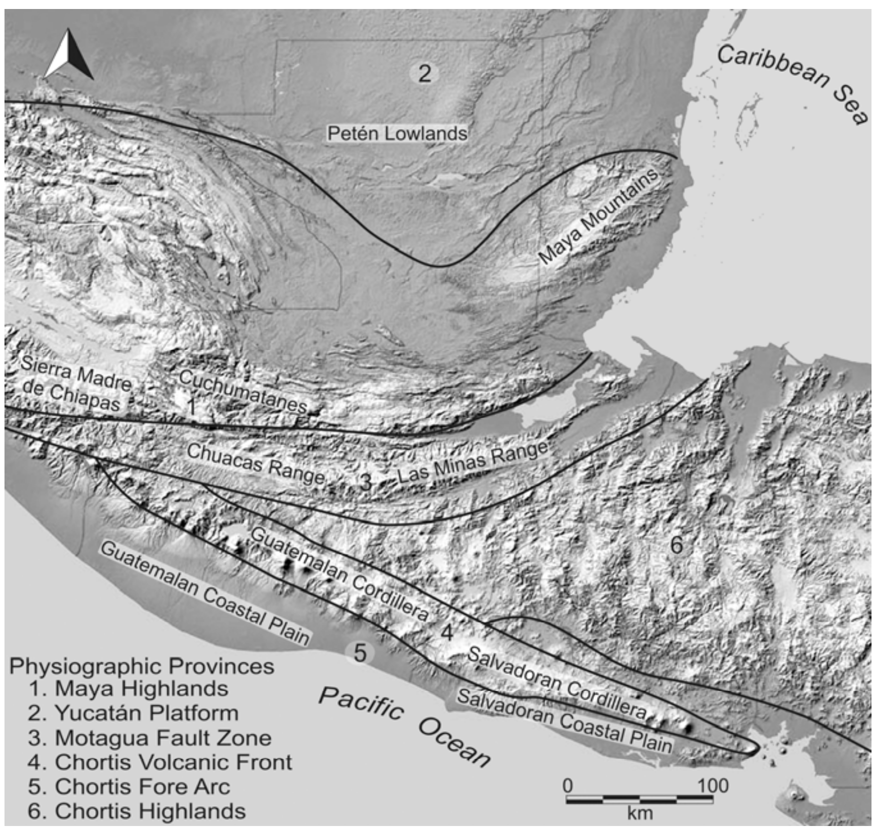

Figure 2-3. Map of the physiographic provinces of northern Central America, redrawn from Marshall 2007, Figure 3.2.

Besides occupying the Cocos and Caribbean plates, the northern part of Guatemala also sits on the large North American plate, which is moving westward. The boundary between the North American and Caribbean plates forms the Motagua-Polochic fault zone of central Guatemala (Marshall 2007). The crustal domains defined across this fault are the Maya block to the north and the Chortis block to the south.

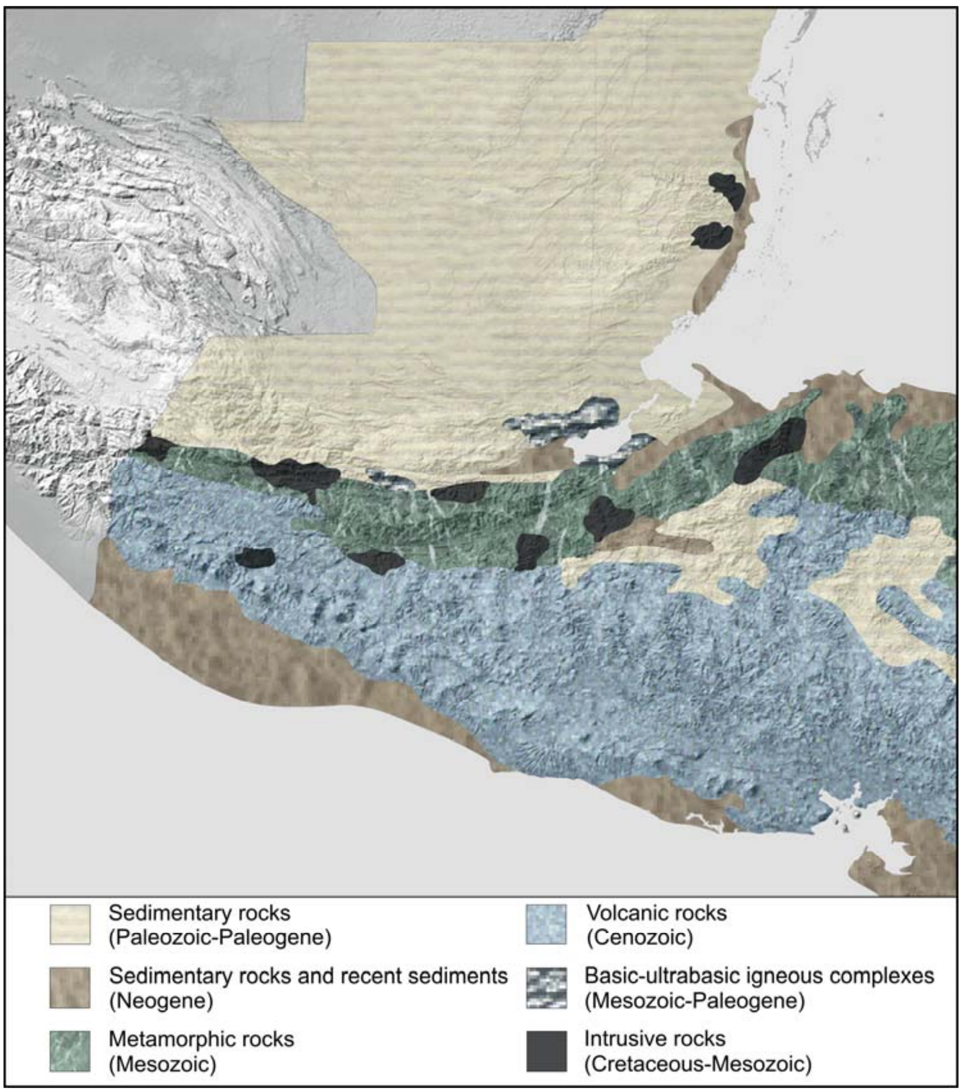

Figure 2-4. Geologic map of northern Central America, redrawn from Bundschuh et al. 2007, Figure 1.4.

Guatemala is composed of four major geologic zones (Figure 2-4). The northern part of the country lies within the southern edge of the North American plate, part of the Maya block, and is characterized by sedimentary rocks dating from the Paleozoic through the early Cenozoic eras. To the south of the North American plate, a band of Mesozoic metamorphic rocks, with some igneous intrusive rocks, spans across the widest section of Guatemala, along the Motagua-Polochic fault. To the south of that band, a wider strip of Cenozoic era volcanic rocks comprises the Guatemalan highlands. Lastly, the Pacific coast has a structure of sedimentary rocks, covered by recent alluvial and volcanic sediments.

Compared to the Pacific coast of southern Central America (Costa Rica and Panama), where the coastal topography is more abrupt and rugged, the south coasts of Guatemala and El Salvador seem gentle and low-relief (Marshall 2007). This section of the coast is composed of the smooth plain created by alluvial fans from the many rivers that flow out of the highlands, as well as volcanic sediments. Some slight topography can been observed in the laharic flows that rise slightly (up to 2m) above the flood plain, and near the coast where extinct barrier beaches parallel the shoreline, left behind by the progradation of the coastline (Bove 1989).

This geology sets the scene for specific types of human-landscape interactions. First, the volcanic soils moved through colluvial and alluvial forces to the coastal plain are especially fertile and provide a thin strip of cultivatable land between the ocean and the highlands. This feature makes the Pacific coast a prime locale for early experimentation in food production, as seen in this region in the Formative period. Second, since the coastal plain is flat and thin, with the dramatic rise of the highlands visible in the distance, it seems probable that the establishment of a village on the edge of the plain would have involved a landscape ideology with a great distinction between horizontal and vertical spaces. The transformation of the flat plain into a mounded landscape by the first sedentists at Chiquiuitan must have had a large impact on how the early coastal dwellers imagined their role in shaping the landscape. These landscape ideologies are of interest to this dissertation and are discussed more in the final chapter. Lastly, for the modern population, the progradation of the coastline leaves intact the archaeological record in this area, which is not always the case in coastal environments where rising sea levels obscure and sometimes destroy evidence of ancient lifeways. For this reason, Chiquiuitan is an especially fruitful locale to consider community building, social transformations, and landscape ideologies in an early coastal environment.

Volcanism

The Central American Volcanic Front contains at least 40 major volcanic centers spanning from the Mexico-Guatemala border to central Costa Rica. Up to 50 individual volcanoes in the front are considered active or potentially active. This volcanic range dates to the Quaternary period. In Guatemala, it includes volcanic complexes comprised of frontal stratovolcanoes to the west, flanked by back-arc calderas, and a few domes formed by the accumulation of lava above a vent (de Vries, Grosse, and Alvarado 2007). Stratovolcanoes are created by the layering of sequential eruptions and several different vents and flow fields. They are often found in subduction zones, such as along the Central American Volcanic Front. Some of these complexes in Guatemala include Santa María, Santiaguito, Santo Tomás, and Cerro Quemado, just west of the Quetzaltenango valley; San Pedro, Atitlán, and Tolimán, which cluster to the west of the Atitlán caldera and lake; and Yepocapa, Acatenango, and Fuego, near Guatemala City (Marshall 2007:84). Some of these volcanic cones tower more than 3,500m above the coastal plain. Several cones in this cordillera are visible from Chiquiuitan on clear days.

Volcanic landforms include not only the constructive masses seen in the conical tops, domes, or other tall features most recognizable in areas affected by volcanism, but also sedimentary deposits created by erosion and landslides, as well as the scars, tracks, or steep cliffs left behind by those destructive processes (de Vries, Grosse, and Alvarado 2007). The wet and dry season climate of Central America contributes to the high rate of erosion that affects the volcanic slopes in this region. Large sedimentary aprons characterize the bases of volcanoes, where eroded material collects. The Pacific coast is characterized by a gradual slope that controls the deposition of materials from the volcanic front, providing the fertile plain discussed above.

The volcanoes offer a stunning view from the coast today, and certainly would have impacted the landscape ideology of ancient inhabitants. The volcano undoubtedly held special symbolic significance to later Mesoamerican cultures, where temples and pyramids were built to reflect the upright shape of the cone (Pool 2007; Headrick 2007; Reilly 1999; Vogt 1969). The possible connection between the volcano in Mesoamerican ideology and vertical earthen constructions at Chiquiuitan is discussed in the conclusion chapter.

Geomorphology and Soils

Central America is a dynamic landscape with high rates of geomorphologic processes. Plate boundaries collide in the manifestation of the Chortis volcanic front, the major mountain range of Central America. These factors lead to high volcanic activity and frequent earthquakes. Guatemala also features a second eastward range, along the Motagua-Polochic fault, extending into Honduras and Nicaragua. These highlands, coupled with abundant rainfall, provide a landscape prone to fluvial weathering processes and high levels of erosion, occasionally taking the form of rapid mass movements such as landslides (Bundschuh 2007).

Central American soils are highly variable. High temperatures lead to rapid organic decay, while abundant rainfall contributes to swift leaching of soluble minerals. Heavily vegetated areas are characterized by the accumulation of nutrients in the plants, rather than in the soil. Erosion impedes the development of soil profiles. Several soil classification systems have been proposed, with much disagreement over the nature of soils in Central America. Generally, this region is made up of mineral soils. These soils are azonal on the Pacific coast, where alluvial deposits are of a young age (Martinson 1997). More specifically, these soils are ustalfs, a red or brown type of Alfisol that forms in warmer (mesic) temperatures and areas of wet and dry season fluctuations in moisture (ustic).

The alluvial sediments of the Pacific coast of Guatemala comprise Quaternary deposits of volcanic sands, gravels, pumiceous ash, and pyroclastic materials that had been moved by rivers or dumped in landslide events, called lahars (Marshall 2007:85). Since they are relatively young in age, minerals and nutrients have not yet been leached out as in other lowland areas. These well drained and nutrient rich soils comprise some of the most fertile soils in Central America.

The volcanic soils of the southeastern coast of Guatemala, in the areas immediately surrounding Chiquiuitan, have been further characterized as falling into five types (Estrada-Belli 1998). The Pacific edge comprises medium to coarse dark gray-black beach sands and dunes (Figure 2-5). Just behind these beach sands are heavy clays with poorly drained gray sediment found within the estuary systems. Further inland, the floodplain is comprised of clayey silts described as yellowish brown in color, located along the alluvial fans of prominent rivers. They are the most fertile soil type. The coastal plain is covered by this fertile soil type or by another soil found in the flatter areas between the rivers, where reddish or yellowish brown silty sands exist. These are well drained, dry and hard in the dry season, and of fine to coarse particles, poor properties for cultivation. Lastly, along the base of the highland slope, from altitudes of 100-500m, a shallow, well-drained, reddish brown, sandy clay characterizes the strip just beneath the piedmont.

The site of Chiquiuitan, located less than 1km from the coast, sits on the heavy sandy clays that characterize estuary systems. It is seasonally flooded when the water table rises in the rainy season. This wetland environment would have required some type of built platform for occupation during this part of the year. This characteristic could explain the initial constructions found at the site, built as an adaptation to settling in a swampy environ. However, this dissertation argues that the functional role of the earthen mounds became less important through time (especially considering the dry climatic conditions discussed above), and that in later periods the vertical additions to the mounds came to embody symbolic meanings aimed at demonstrating the presence and endurance of this community. Furthermore, this estuarine location would have been ideal for subsistence purposes. Close proximity to marine resources as well as highly fertile soils located just inland would allow for a broad subsistence base, with foraging and food production capabilities. This broad resource spectrum is thought to characterize the diet of early inhabitants of this site at the time of initial sedentism in the Cangrejo phase.

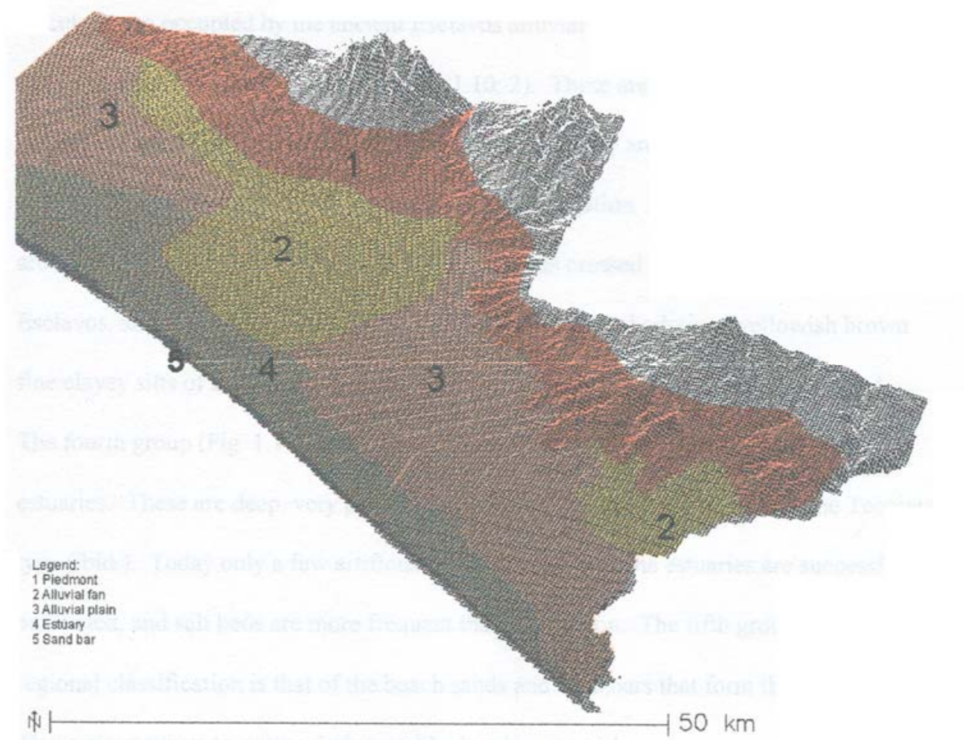

Figure 2-5. Soil types of the southeastern Pacific Coast of Guatemala. From Estrada Belli 1998:50, Figure 1.10. Image used with permission of the author.

Coastal Environments and Estuaries

The Pacific coast of North and South America is considered a mountain coastline, more specifically a leading or collision coast because it exists at the intersection of two colliding tectonic plates (the Cocos and the Caribbean). This type of coast is described as having a narrow continental shelf, high cliffs following the fault line, and steep slopes (Carter 1988). The Pacific coast of Guatemala is characterized by high-energy sandy beaches, mangrove forests, and highly productive estuaries (Cortés 2007).

The most prominent features across this relatively flat and narrow coastal plain can be seen in the many rivers that crosscut the plain as they travel from the highlands to the sea. These rivers change substantially depending on the wet and dry seasons, becoming much larger and faster when heavy rains in the highlands increase their load. When these rivers meet the Pacific and mix with its salty tidal water, extensive estuary systems are formed.

An estuary is defined as “a semi-enclosed body of water having a free connection with the open sea and within which sea water is measurably diluted with fresh water derived from land drainage” (Officer 1976:4). Usually estuaries comprise the spot where rivers drain into the ocean or larger areas such as bays or inlets where several rivers empty their fresh water to mix with salt water. They are generally long and narrow, running perpendicular to the seashore, although they may connect to lagoons that are elongated parallel to the coast. The difference between estuaries and lagoons is sometimes indistinguishable (Voorhies 2004). Sand dunes created by the sediments dumped by rivers and shaped by the action of waves separate these wetland systems from the ocean. In simple terms, estuaries are complex and dynamic systems where tides, currents, water, salt, and sediments mix (Hardisty 2007). The biology of estuary systems is affected by several factors, including salinity, sedimentation, temperature, and wave action.

The salinity of estuaries lies somewhere between that of fresh water ($<0.5\ ^{o}/_{oo}$) and sea water ($35\text{-}37\ ^{o}/_{oo}$), depending upon several forces (Barnes 1974). Where within that continuum the salinity level of an estuary may lie at any given time depends on several factors, including tidal currents, the density differences between the fresh and sea waters, the volumes of the two sources of water, and the topography of the estuary. Different parts of the estuary may exhibit different salinity levels at the same time. Furthermore, since fresh and salt waters have different densities, stratification of the water within these systems occurs when the two sources of water come in contact (Valiela 1991).

Estuaries provide a key transport path for the movement of particulates from land to ocean systems (Hardisty 2007). Like salinity levels, the sedimentation processes of estuary systems depend on a variety of factors, chiefly including the types of sediment, the topography of the estuary, and the water circulation pattern (Barnes 1974). By the time rivers discharge particulates into estuaries, the heavier and coarser sediments have usually already been deposited and the sediments that reach the estuary are fine silts. When these silt particles reach the salt water, with its higher ionic charge, they tend to bunch together and sink more rapidly (flocculate). The particles may be moved around by the circulation system, causing the water to be turbid, but eventually they will become deposited and form mud at the bottom of the estuary. This mud can be full of organic material, especially in estuaries like that near Chiquiuitan, where mangrove swamps exist nearby. This detritus provides a food source for many species.

The temperature of estuaries depends upon the season and the mixing of fresh and salt waters. In the winter fresh water is colder than salt water, but in the summer the salt water is colder than fresh water (Hardisty 2007). Thus, during low tide in the summer, when the river fresh water input is at its peak, the temperature of the estuary will reach its highest (Barnes 1974). Conversely, night-time low tides in the winter will demonstrate the lowest estuary temperatures.

Since estuaries are usually environments protected from strong sea currents and winds, wave action is generally low (Barnes 1974). At the mouth, waves may be high, but their force dissipates as they pass though the calmer waters of the body of the estuary. Furthermore, estuary mouths are usually narrow, due to the sand barriers made by wave action on the ocean side (Hardisty 2007).

Although the dynamic mixture of fresh and salt water, high and low temperatures, and varying densities can pose challenging circumstances to the survival of biological organisms, several have developed mechanisms for living and thriving in estuarine environments (Valiela

1991). Abundant plant and phytoplankton species exist in and around estuaries. The Pacific Coast is dominated by Mangrove trees as well as tall grasses in the more open lagoons. Polychaeta (marine worms), Mollusca, and Crustacea are principal faunal residents of the estuary system, and they draw in the fish, birds, and occasional mammals that visit to feed at high or low tide (Barnes 1974). It is thought that the wide availability of estuarine resources that characterizes such systems attracted the inhabitants of Chiquiuitan and was an important characteristic of this landscape in terms of cultural development. They are discussed in greater detail in the following section.

At this point, little is known regarding the specific characteristics of salinity, sedimentation, temperature, and wave action of the Chiquimulilla estuary environment during the Formative period. Certainly these factors would have been of great importance to the early coastal inhabitants of this area that relied upon the resources available there, especially to the residents of Chiquiuitan during the Huiscoyol and early Cangrejo phases, before food production is thought to have been a major subsistence practice. The studies of faunal remains from Chiquiuitan residences (Emery and Kay 2009; Valle 2007), summarized in Appendices G and H, demonstrate the heavy reliance on resources from the estuaries. These include several types of mollusks, crabs, and many species of fish. The microbotanical record (outlined in Appendix E) offers some information regarding salinity. The high frequency of mangrove pollen suggests an environment with high salinity. When the mangroves decreased around 76 B.C., well after Chiquiuitan was abandoned, the phytolith record reveals an increase in freshwater plants such as reeds, grasses, and bamboo, as well as a decrease in sponge spicules, and a transformation to a freshwater lagoon or swamp environment (possibly through a closing of the mouth of the estuary system) is thought to have occurred. Future studies in the area are hoped to focus more closely on the specific habitat requirements of the species of estuarine flora and fauna to reconstruct specific properties and possible changes in this coastal wetland environment.

Flora and Fauna

In addition to the estuaries described above, the Pacific coastal plain is an area of abundant natural resources (Arroyo 1994; Coe and Flannery 1967; Estrada Belli 1998). In the low, marshy area directly inland from the estuaries, palm trees are the predominant natural vegetation. Moving further inland, the fertile alluvial soils of the flat coastal plain support a greater variety of tropical species, including Cedro (*Cedrela Mexicana*), Ceiba (*Ceiba pentandra*), Conacaste (*Enterolobium cyclocarpum*), Amate (*Ficus*), Zapote (*Pauteria sapota*), Ujuxte (*Brosimum alicastrum*), and Palo de Jiote (*Bursera simaruba*). The scrubby vegetation of the lower piedmont slopes include the Jicaro (*Crescentia cujete* and *Crescentia alata*) and Guayacan (*Guaiacum sanctum*).

The tropical savannah witnessed on the coast today is thought to have been more of a tropical forest during the Formative period, although there is some evidence that people cleared the area of trees at certain times, as they do today. Tropical forest indicators found in the microbotanical record include pines (*Pinus*), oaks (*Quercus*), palms (*Arecaceae*), and the flowering plants called *Bombacaceae.* Clearing of the land is indicated first at levels dated to around 1413 B.C. around the time when Chiquiuitan was first occupied, where pollen content for arboreal species slightly decreases while charcoal numbers rise, and again at levels roughly dating to 1000 B.C., where mangroves were reduced and plants that grown in open habitats such as those from the Poaceae family of grasses, the flowering plant family Chenopodiaceae, the herb *Amaranthus*, and especially sedges (Cyperaceae) demonstrate pollen increase. This last pattern corresponds with a time when intensive agriculture is thought to have been adopted in the early Middle Formative period.

Similar to coastal vegetation, the faunal diversity has also suffered in modern times due to loss of habitat through agricultural production (Arroyo 1994; Estrada Belli 1998). In the past, deer, tapir, peccary, monkeys, fox, jaguar, and anteaters would have inhabited the forest environment. Today, only small mammals survive here. Some of these include the pisote or coatimundi (*Nasua narica*), raccoon (*Procyon lotor*), opossum (*Didelphis marsupialis*), and tepescuintle (*Agouti paca*). Reptiles such as turtles and iguanas (*Iguana rincophala*) are common. Inland bird species include parrots, vultures, herons, and hawks. Some of these animals were identified in the faunal study by Emery and Kay (2009), described in Appendix H, including turtles, lizards, iguanas, and mammals such as raccoon, deer, and peccaries. The evidence for these reptiles and mammals in domestic contexts, along with the estuarine species mentioned above, suggests that the inhabitants of Chiquiuitan exploited both aquatic and terrestrial fauna from the nearby coastal estuaries and the inland plain. Trends for shifts in reliance on aquatic vs. terrestrial resources are discussed in Appendix H and in the final chapter.

Today, most regions of the coastal plain have been cleared of natural vegetation for agricultural development. The most common *fincas* around Chiquiuitan produce cattle, and further inland sugar cane. Some maize, beans, sesame, tomato, and mango are also produced along the coastal plain.

Previous Research on the Pacific Coast

The history of archaeological work on the Pacific coast spans the past fifty years and reveals a varying corpus of research initiatives. Several of these projects, especially in the first decades, were aimed at recording the location of sites and gaining a better understanding of ecological adaptations. However, the focus on this area has increased over time, with issues of crucial transitions in sedentism and agriculture, the growth of trade routes, and the negotiation of status within and between societies all playing a part in the following summary. Lastly, this section outlines the chronological relationship of developments at Chiquiuitan with those in neighboring areas (see Figure 2-2).

Early Survey and Excavation Projects

Even some of the first archaeologists working in Mesoamerica knew the importance of the Pacific coast of Guatemala and Chiapas, as illustrated by the words of Alfred Kidder, “It is certain that a stock-taking of coastal remains, followed by excavations at sites which such a survey shows to be strategic, would yield a rich harvest of information not only as to Guatemalan pre-history but also upon problems of continent-wide importance” (Kidder 1949:358 as cited by Coe 1961:4). Such statements encouraged initial explorations and surveys of the coast.

Edwin Shook conducted the preliminary survey of the Pacific Coast of Guatemala (Shook 1965). His publications describe the environment of the coastal plain, with its multitude of rivers flowing from the highlands to the sea, and points out how these conditions would have been favorable to groups of people in early times, as they are today. Shook divided the surveyed area into three regions: the coastal plain, the volcanic foothills between 300 and 1000 meters above sea level, and the beginnings of the highlands. The lower area of the coastal plain, located directly behind the river estuaries and mangrove swamps, produced the greatest number of archaeological sites. Furthermore, his data indicate that the more inland sites appear to date to the Classic period rather than the Formative. His survey notes exist as some of the earliest records of coastal investigation and are available for study in the Department of Archaeology at the Universidad del Valle in Guatemala City as of the date of this writing.

Philip Drucker similarly conducted initial survey on the Pacific Coast of Chiapas, Mexico, across the Suchiate River from the Guatemalan coastal area being investigated by Shook. He recorded some thirty sites and noted the abundance of archaeological remains that he found in the area (Drucker 1948). Drucker was soon followed by Gareth Lowe, another early pioneer of Mesoamerican archaeology. Lowe began a series of archaeological investigations in the Soconusco region of Chiapas, located around the modern city of Tapachula (Lowe and Mason 1965). Their work was the first to document the locations of archaeological sites in these areas.

These early works were primarily concerned with recording the locations of sites along the Pacific coast. After initial investigations sparked interest in the Formative coastal peoples, formal investigation projects began to be conducted in the region. The projects of the 1960's and 70's at Altamira, La Victoria, Salinas La Blanca, and in the department of Esquintla in Guatemala provided some of the earliest and most often cited research projects on the Pacific coast. The sections that follow describe research initiatives beginning with sites on the northwest coast and moving roughly southeast.

Altamira

Altamira, one of the first studied sites in the Mazatan area of the Soconusco region of Chiapas, began occupying the attention of archaeologists Dee F. Green and Gareth Lowe in 1963 (Lowe and Mason 1965). The New World Archaeological Foundation publication that came out of this work reports upon the finds and compares Altamira to the inland site of Padre Piedra, located in the Central Depression of Chiapas (Green and Lowe 1967). Material culture suggests that the most heavily occupied period at Altamira was the end of the Early Formative, during the Jocotal phase.

The past residents of Altamira appear to have relied on some staple crop for subsistence. Green and Lowe propose the root crop bitter manioc to be this staple crop, suggesting the appearance of obsidian flakes as evidence of manioc graters (Green and Lowe 1967:59; see also Lowe 1975:12 for an illustrated diagram of hypothesized manioc preparation). This idea has been tossed back and forth since its initial suggestion, and has subsequently lost favor to a model of a more varied subsistence base, with some corn agriculture (DeBoer 1975; Clark 1991:16; Blake et al. 1992a and 1992b; Chisholm et al. 1993; Smalley and Blake 2003). Interestingly, the topic of manioc cultivation has recently received much interest in Maya archaeology (Atwood 2009), and it is possible that the search for its Formative origin may again become an important research question as new ways to detect the poorly preserved remains of this plant are pursued.

The most important discovery reported at Altamira involves the Barra phase ceramics, dating to at least 1600 B.C. and predating all other ceramic types previously known in Mesoamerica. Green and Lowe found sherds from the Barra phase at only one mound, Mound 19, during the 1963 excavation season (Green and Lowe 1967; Lowe 1975). The elaborately decorated and finely made Barra pottery seemed out of place on the Pacific Coast, where there are no known ceramic antecedents. For this reason, Lowe and colleagues began looking elsewhere for possible origins of this technology. Lowe states that "the Barra complex seems too well developed and too distinctive to be explained by direct diffusion from any other known pottery complex in the New World" (Lowe 1975:9), while at the same time searching for possible locations for the parenting of technological ideas that could explain the pottery's abrupt adoption on the Pacific coast. He describes similarities found between the Barra pottery and that of the Valdivia and Machalilla types in Ecuador, Sarigua and Monagrillo in Panama, and even some Florida types. He also notes similarities between the ceramic forms and gourds, suggesting a new technology to produce clay replacements for natural containers already in use.

More recently, other interpretations for the appearance of Barra pottery, with its limited number of forms and high level of decoration, have been proposed, including the idea that its local adaptation and elaboration occurred as the result of competitive displays engaged in by community members interested in building their own prestige (Clark and Gosser 1995; Gosser 1994; Gosser and Clark 2001). Lowe's identification of Barra ceramics in Chiapas began a long series of investigations seeking early communities along the coast.

La Victoria

In 1956, prior to the research at Altamira, Michael Coe performed the first formal archaeological excavation project focused on a Formative site on the Pacific coast. Aided by the counsel of Edwin Shook, who encouraged several coastal archaeologists by sharing his extensive knowledge on the area, Coe sought to find the Formative culture in Middle America at La

Victoria. Not satisfied by the data coming from the highlands, he believed that this site (with ten to twelve mounds, none being more than two meters in height), located in the Ocos region, was an ideal location in which “early people could have found ecological situations favoring an Archaic way of life, but with the environmental potential for intensive agriculture” (Coe 1961: 5).

Coe also benefited from the counsel of another great Mesoamerican archaeologist, Gordon Willey. Willey was one of the promoters of functionalist theory in response to purely cultural historical reconstruction, and Coe followed in this focus on the process of cultural development through the relationship between humans and the environment. One of his main objectives at La Victoria aimed at studying the earliest agriculturalists in Guatemala. For this reason, his 1961 report on La Victoria includes an extensive chapter on the environment and its possibilities for food procurement and production, emphasizing the site’s location between two distinct natural environments: the coastal littoral and the agricultural plain.

Coe’s research included the excavation of two major mounds at La Victoria: Mound 1, which had been previously cut by road construction, and Mound 3. His excavations were test pits lacking horizontal exposure, which was lamented in the 1961 report when Coe blamed a lack of sufficient funding for large scale excavation and exposure (Coe 1961:5).

Although Coe admittedly failed at defining the nature of the Archaic period in Mesoamerica, he did obtain information answering an important question of origins, specifically finding ceramic traits that implied a combination of an *in situ* development of settled life and an introduction of ideas from some outside culture. His analysis is the earliest of this type in the coastal area, defining three Formative chronological phases, namely Ocos, Conchas, and Crucero.

<u>Salinas La Blanca</u>

Following Coe’s archaeological project at La Victoria, he joined with Kent Flannery and began work at Salinas La Blanca, a site located across the Naranjo River from La Victoria. Salinas La Blanca is a small site, composed of two low lying residential mounds.

Coe and Flannery continued a research program focusing on cultural adaptation to environmental factors. By contemplating the ecology of the Ocos region, and posing questions at Salinas La Blanca based on the conditions necessary for settled life, they were able to present ideas regarding the process of microenvironmental reduction involved in the transition from mobile foraging and hunting to the type of sedentary agriculture displayed at the site (Coe and Flannery 1967).

Avoiding the houses of the modern farmers occupying the highest land on the mounds at the time of excavation, Coe and Flannery placed two test pits within the site of Salinas La Blanca. The large quantity of cultural material collected from these excavations allowed the researchers to revise the chronology previously established at La Victoria. The new ceramic sequence included the addition of two more ceramic phases, Jocotal and Cuadros, and provided a refined description of ceramic types from all periods (Coe and Flannery 1967:21). Later, Edwin Shook and Marion Hatch returned to Salinas la Blanca, confirmed the ceramic sequence, and added the Navarijo complex, which was thought to predate the Cuadros phase (1979).

Coe and Flannery not only succeeded in improving the chronological sequence of the Early Formative at Salinas La Blanca, but also conducted a survey to investigate the spatial distribution of sites throughout time in the Ocos area. This survey data has been expanded upon by the similar, yet more thorough project completed by Michael Love (Love 1989 and 2002a). Love determined occupation based on sherd scatters found on the ground's surface. He found 21 Early Preclassic 1 sites, 21 Early Preclassic 2 sites, and 15 sites in the phase he focused on, the Middle Preclassic. Love has excavated one of these sites, La Blanca, but due to the high water table, his work has primarily focused on the Middle Preclassic Conchas Phase (Love 1991; 1999 and 2002b).

Over a decade later, Flannery edited *The Early Mesoamerican Village,* in which he and other authors compare the work on the Pacific Coast with other Formative societies in the Valley of Oaxaca and Tehuacan (1976a and 1976b). The monograph contributes the first wide ranging analysis of the Formative period that treats the known cultural regions in a comparative manner. The authors present descriptions of individual residences, whole sites or communities, as well as wider regions, providing a useful example of multiple scales in archaeological analyses. Characteristic of New Archaeology, these studies focus on ideas of cultural evolution and rely on scientific studies using statistical analyses of data.

With this new information available from several different areas, Flannery was able to compare them to the Ocos region and discuss complex settlement systems. His chapter in *The Early Mesoamerican Village* provides a site typology description, with the Ocos area demonstrating sites of the hamlet type during the Formative period. Flannery defines a hamlet as a community of under 100 persons, with small groups of houses that are not organized around a plaza area (Flannery 1976b:164). In his comparison of settlement systems in the Tehuacan Valley, the Valley of Oaxaca, and the Pacific Coast, the later is the most complex. “On the Chiapas-Guatemala Coast, the entire piedmont and coastal plain formed an integrated system of regional centers, inland farming villages, coastal fishing-farming hamlets, and island fishing or shell-fishing stations, each eventually linked to seasonal camps and salt-making stations” (Flannery 1976b:167). He continues to state that all of these communities were integrated into a system of trade in which maize moved from the inland to the coastal sites, while marine resources moved in the opposite direction. This idea still informs theories regarding the uses of different environmental zones in Pacific coast archaeology, most notably in the Soconusco region of Chiapas, discussed below.

Pacific Slope of Southern Mesoamerica Project

In 1978-1981 a comprehensive project aimed at understanding the settlement of part of the Pacific coast of Guatemala was conducted under the directorship of Frederick J. Bove (1989a). This regional project sought to understand the dynamic occupation of the Pacific coast, from the Formative period through the Postclassic.

The region under study in Bove's project lies between the Coyolate and the Achiquate rivers in the department of Esquintla. This project did not identify any sites dating to the Early Formative period. Five sites were identified from the early Middle Formative period, all located inland, at 33-37km from the coast. It is suggested that this zone represents a favorable area for habitation due to its high precipitation levels in comparison with the coast and accessibility to diverse environmental zones (Bove 1989a:97, 1989b:79-80). Twelve sites were identified from the late Middle Formative. These include inland sites as well as sites closer to the coast. Regarding the later time periods, 28 sites were identified dating to the Late Formative, and 33 to the Terminal Formative. Classic period occupation was not classified at the time of Bove's 1998 publication. Excavations were carried out at the sites of La Morena, Los Cerritos-South, Cristobal, El Baul, Bilbao, Monte Alto, and El Balsamo (Bove 1989a, 1989b; Bove et al. 1993; Lou 1993).

Lastly, from 1982-1983, a smaller project was also conducted by Bove and Marion P. Hatch in the Tiquisate region (between the Nahualate and Madre Vieja Rivers). This project recorded no Early Formative sites, but found settlement patterns similar to those identified in the project's work to the east (Bove 1989b).

More Intensive Archaeological Investigation on the Pacific Coast

After the publication of *The Early Mesoamerican Village,* scholars began to realize the importance of the Pacific coast in understanding the development of Mesoamerican culture, and several new projects were carried out at sites throughout this area (Figure 2-6). Some of these projects began moving away from the ecological approach characterizing most of the work up until this point, and began to consider the social and ritual implications of cultural development in this area.

Lowe contributed two more works at this time, drawing some conclusions from previous studies. First, he placed the work done so far within a broader chronological framework in his publication on the chronology of Eastern Mesoamerica (Lowe 1978). Along the same line, he discussed the relationship of the Pacific Coast to other cultural areas in Mesoamerica. In relation to the Olmec, Lowe says, “the most obvious possible explanation of the relatively numerous Early Olmec sites in southern Chiapas is that of a strong infusion of traits from the imposing Olmec centers” (Lowe 1977:214), but later discusses another option, “several traits shared by the Ocos and Cuadros cultures indicate local evolution and cultural adaptations over time and space by the same people rather than cultural or ethnic displacement” (Lowe 1977:215). Such words promoted future work on the coast to clarify these questions regarding the Olmec culture. Building upon the knowledge gained at Altamira, La Victoria, Salinas La Blanca, and in the Pacific Slope of Southern Mesoamerica Project, archaeologists conducted research at Paso de la Amada, La Blanca, El Mesak, and Tecojate, in the 1980’s and early 90’s.

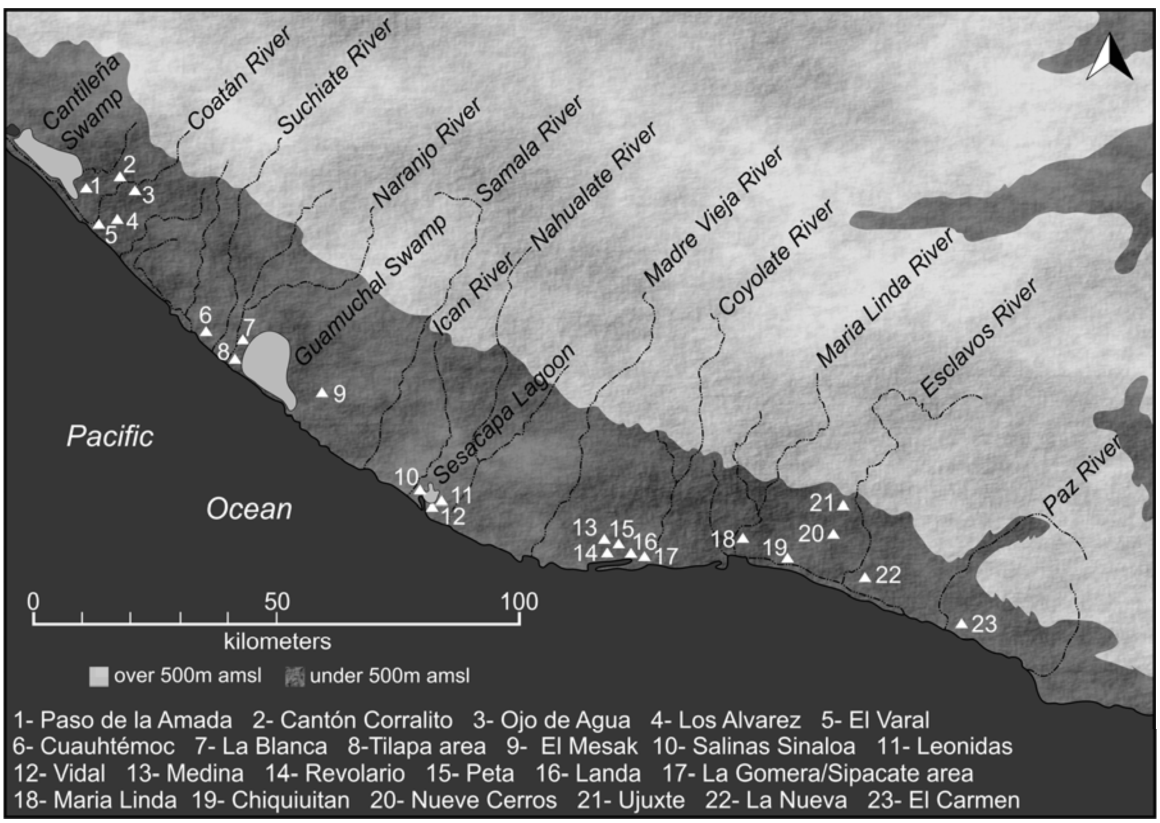

Figure 2-6. Map of the Pacific coast of Guatemala showing the locations of sites and landscape features mentioned in the text.

Paso de la Amada

Paso de la Amada, an Early Formative site several kilometers north of Altamira in the Soconusco, was first researched by Jorge Fausto Ceja Tenorio in 1974. Ceja's New World Archaeological Foundation project performed a preliminary survey of the Coatan River area and noted six Early Formative sites: Los Alvarez, Altamira, Aquiles Serdan, Paso de la Amada, Rancho Horizonte, and Alvaro Obregon (Ceja 1985:19). Due to its large size, Paso de la Amada appeared to be the most promising for early village studies, so Ceja and his team decided to conduct more intensive studies there. Their excavations did not focus on the largest mounds for reasons of permission, but they were able to dig twenty test pits on other mounds of the site. Ceja's ceramic analysis and descriptions build upon the collection of Barra and Ocos knowledge gained in previous studies. In his conclusions, Ceja classifies Paso de la Amada as one of the larger (200-300 persons) agricultural villages that occupied the piedmont region of the coast of Chiapas and was linked through trade to the smaller fishing stations closer to the beach. His excavations provided the necessary preliminary work for many more projects at Paso de la Amada, and his results encouraged more work on the coast in general.

After Ceja, small projects conducted research in the coastal region of Chiapas (Lowe 1969), but little was published until John Clark and Michael Blake, also with the New World Archaeological Foundation, began working in Chiapas. In the late 1970's and early 80's, Clark was conducting obsidian analysis at Paso de la Amada and other Mazatan sites (Clark and Lee 1984 and Clark and Salcedo 1989). Working on the assumption that reciprocal exchange systems occur in egalitarian communities while ranked societies develop redistributional systems, Clark and Lee discuss the procurement and use of obsidian in coastal Chiapas as well as the Central Depression. On the coast, they suggest that "consumers at Paso de la Amada, Altamira and Los Alvarez may have had their own obsidian procurement networks, and that the community of Paso de la Amada may have had a redistributive economy" (Clark and Lee 1984:249). Clark and Lee's assessment includes the classification of ranked society or chiefdom, applied for the first time to the Early Formative on the Pacific coast.

Somewhat later analyses, with modified and improved methodology, demonstrate the same trends (Clark and Salcedo 1989:17-18). Clark and Salcedo elaborate on trade routes along the coast and trace the movement of obsidian beginning at each particular source, noting the presence of exchange relations between autonomous societies. They also discuss the change that occurred in the Cuadros phase, when less obsidian was available, and the entire coast of Chiapas demonstrated homogeneity in inter-community distribution. They argue that this transition was based on the presence of the Olmec culture (Clark and Salcedo 1989) or a more intensely integrated regional trade system.

The publication of *The Formation of Complex Society in Southeastern Mesoamerica* continued the focus on the evidence for rank societies (Fowler 1991a). In Clark's chapter in this monograph, he adds characteristics such as two-tiered settlement distribution, ascribed status as evidenced by burial goods, possible craft specialization, and a widespread homogeneity in Locona phase ceramics to his previous discussion of obsidian data to support the idea of a chiefdom level society at Paso de la Amada in the Early Formative (Clark 1991). Furthermore, he provides an updated ceramic chronology, adding the Locona and Cherla phases. This new ceramic information increased the understanding of the Formative sites in coastal Chiapas.

At the same time, issues of ideology began to be approached in the research at Paso de la Amada, through a consideration of social relations and identity. In the same monograph, Blake discusses possible scenarios in which the presence of a large structure at Mound 6 at Paso de la Amada can be explained (Blake 1991). Excavated by Clark's team in 1987, Mound 6 revealed a structure around eleven by five meters in size and with several floor layers. Blake argues that the size of the structure, as well as the types of materials discovered in excavation, point to the presence of an elite residence or public building in the Locona/Ocos time period. A public building of this size is expected to be found within egalitarian communities, while an elite residence would clearly point towards social stratification and ranking. Because of the other lines of evidence outlined in Clark's chapter, Blake prefers the emerging ranked chiefdom scenario.

Clark and Blake also provide a theoretical basis to discuss why such ranked chiefdoms evolved from egalitarian societies. Turning away from the functionalist thinking of their predecessors, Clark and Blake join some other scholars in finding the answer in personal strives for prestige within a competitive political region, rather than as a solution to an ecological need (Clark and Blake 1994; see also Lesure 1994). They focus on one particular community as part of a wider region, consider individual historic sequences, and place importance on individuals within the system as the creators of social change.

Following this intensive work coming from Paso de la Amada, Michael Blake edited the monograph *Pacific Latin America in Prehistory*, contributing a collection of theoretical discussions on the evolution of Archaic and Formative cultures (Blake 1999). In their chapter, Blake and Clark restate their hypothesis that ranking developed on the Pacific coast in the Locona phase.

Three other lines of work, providing data on different types of materials analysis, should be mentioned in this discussion of research at Paso de la Amada. First, a combined effort of the scholars working on the Coast of Chiapas and Guatemala provided a comprehensive report of the radiocarbon dates available at the time (Blake et al. 1995). The result includes a solid chronology that is still used to reference Pacific coast dates and time periods.

Second, using stable carbon isotope analysis, researchers determined the changing importance of maize in the diets of the ancient coastal people (Blake et al. 1992a and 1992b; Chisholm et al. 1993; Smalley and Blake 2003). Contrary to some predictions, maize did not become a staple crop until the Cuadros phase. The Early Formative maintained a combination of fishing and hunting with only a slight reliance on food production.

Third, a reformed ceramic typology was proposed. Following the ceramic work of other researchers at Paso de la Amada (Gosser 1994; Clark 1994), Richard Lesure sought to provide more specific information pertaining to the function of Early Formative wares in feasting (Lesure 1998a and 1998b). In a detailed analysis of form and function, Lesure develops the understanding of the uses of different pots between 1400 and 1000 B.C. He argues that the Barra Phase seems to be limited to beverage service forms, while the Locona Phase expresses a greater range of forms to include a more diverse vessel inventory (Lesure 1998b). Furthermore, he pinpoints specific attributes, such as wear, differential firing, specular vs. nonspecular red slip, rim modification on bowls, and decoration of unslipped *tecomates* for the statistical analysis of multidimensional scaling (Lesure 1998a). His work provides a straightforward key for classifying midden assemblages at Paso de la Amada, in which, by answering three questions regarding color of slip and rim treatment, Lesure claims that it is possible to determine if the deposit is from the Locona, Early, Middle, Late Ocos, or the Cherla phase.

La Blanca

La Blanca, located on the Naranjo River, a few kilometers upstream from La Victoria and Salinas La Blanca, is one of the ongoing archaeological projects on the coast of Guatemala today. Michael Love began his research there in the late 1980's and has returned for subsequent excavations on several occasions since then. His work has provides information on one of the regional centers of the Middle Formative, and contributes to the understanding of interaction and material culture throughout the coast. The Middle Formative was a time of major new developments in the Soconusco, as well as across Mesoamerica. It is during this time that the previously broad subsistence base was abandoned and maize agriculture became the staple crop, the manufacture of prismatic blades was developed in obsidian technology, a shared iconographic system spread throughout Mesoamerica, and demographic reorganization and growth occurred. The work at La Blanca has significantly added to our understanding of this important period.

Love's ceramic study has clarified the understanding of the Middle Formative (Love 2002a and 2002b). Love uses wares as his unit for classification rather than the typical type-variety system. Wares focus on paste and form attributes in addition to surface treatment. Based on ware designations, Love performed multidimensional scaling as a quantitative approach to seriation. His conclusions provide an overview of ceramic change within the Conchas Phase occupation of La Blanca.

Love's historical reconstruction of adaptations at the site, as well as interactions between sites, offers an informed interpretation to explain the rise of social complexity, adding to those theories proposed for the Early Formative at Paso de la Amada. He sees an increasing level of social complexity in the Naranjo Region in the Middle Formative, later than what was demonstrated in the neighboring region (Love 1989). Love suggests that social distance grew between classes or groups as seen in differing material goods and demonstrations of wealth and status. Economic intensification also grew in response to increasing social and political demands.

Love sees the Middle Formative period as a time of transition as regional centers with large buildings that participated in a wider interaction sphere emerged (Love 1991, 1999b). Trade of raw materials and iconographic elements intensified, and conical pyramid structures were constructed for the first time (the 25m high pyramid at La Blanca was probably the largest structure in Mesoamerica in the Middle Formative). These lines of evidence point toward a more wide spread shared symbolic system. At the same time, utilitarian wares and goods became increasingly regionalized. The growth of competing yet interacting centers seems to have been the case. Shifting regional centers have recently been identified throughout the Soconusco region during the Early Formative. La Blanca functioned as the regional capital during the first part of the Middle Formative. La Blanca probably grew in population as people vacated the Soconusco region, moving eastward along the coast during the Middle Formative (Love 1999b).

<u>El Mesak and Rio Jesus</u>

El Mesak, on the Guatemalan coast east of La Blanca, was also a locus of archaeological activity in the late 1980's. Focusing on the Manchon estuary and mangrove swamp between the

Catileña and Jesus rivers, Mary Pye and Arthur Demarest conducted research aimed at better understanding economic patterns between areas of differing environments. Their work included an extensive survey of the Rio Jesus area and excavation of El Mesak (Pye 1990 and 1992). Comprised of nearly 50 mounds scattered along the edge of the estuary, El Mesak revealed successive layers of village occupation from the late Early and Middle Formative periods.

In her dissertation, Pye argues that the rich environment of the coastal littoral allowed the ancient inhabitants of El Mesak to develop a specialized economy focused on the production of salt (Pye 1995). Her identification of the Mesak jar, a tall and crudely made ceramic type with a hemispherical shape, usually burned and broken, is a unique find in the ceramic record of the coast. Furthermore, the high quantity of Mesak jars uncovered and the standardization of vessel form clearly suggest a specialized function. While salt production seems a logical proposition, the one residue sample analyzed thus far does not support a salt production hypothesis. More research on the function of Mesak jars, including additional residue study, is needed in this case. This is an important topic since the production of salt as a necessary utilitarian resource was important to early inhabitants of the Pacific coastal region, and probably functioned as a primary trade item (see also Arroyo 2004; Lesure and Wake 2008).

Based on the evidence uncovered at El Mesak, Demarest has provided more detailed information pertaining to the interregional contact during this early time period. More specifically, he focuses on the idea of the Olmec culture and the extent of their contact as seen through the wide distribution of Olmec style artifacts. The debate of the Olmec Mother Culture has been heavily argued (Sharer and Grove 1989 and Benson 1996) and Demarest adds his own view based on the finds from the Jocotal and Cuadros periods at El Mesak (Pye et al 1999 and Pye and Demarest 1991). Pye and Demarest argue that the material culture at El Mesak supports a scenario of the gradual, independent evolution of chiefdoms, with only subsequent interregional exchange of goods and ideas. The manifestation of similar styles in the Middle Preclassic period is thus a result of a trend begun by local antecedents traced to comparable objects or styles over

1,000 years previous. Demarest calls his model a "lattice of interaction," describing the multi-directional and complex cultural influences being passed between Formative groups on the coast and across the Isthmus of Tehuantepec. More recent finds at Cantón Corralito, described below, have demonstrated an instance of more direct contact between the Pacific Coast and the Gulf Coast than Demarest's model suggests, although the basic framework of an overlapping, multidirectional, and interrelated system is still supported.

Tecojate

In the early 1990's, Barbara Arroyo conducted archaeological work in the region of Tecojate, on the central Guatemalan coast, between the Madre Vieja and Coyolate Rivers. Arroyo and her team surveyed sixty square kilometers of land in the area, and excavated four sites, namely Medina, Peta, Landa, and Revolorio (Arroyo 1994). The investigation of these four sites aimed at the Early Formative, specifically looking at issues of initial sedentism.

Arroyo's conclusions provided new information regarding the earliest time period on the Pacific coast of Guatemala, in a region little studied in the past. Her investigation of sedentism contributes to the body of theory on the subject. Arroyo proposes the early presence of gathering and fishing groups that gradually founded sedentary villages to take advantage of the favorable marine environment. Once these communities developed, human populations increased and agriculture emerged as a solution to food pressures. Thus, contrary to earlier theories, sedentism developed prior to agriculture and in a region of resource abundance.

This information and subsequent work by Arroyo have begun to expand our understanding of Formative cultural developments along the southern reaches of the Pacific coast, filling a gap in knowledge pertaining to this important time period, and providing data with which to gain a wider understanding of important transitions occurring in Mesoamerica. These projects have been especially important to Chiquiuitan research, as they describe adaptations occurring in neighboring regions.

Recent Research

After the projects of the 1980's and early 90's, described above, several other research initiatives have returned to some of these sites, clarifying issues of cultural development and providing additional data with which to approach questions of early transitions. Other projects have begun to explore new areas of the coast, filling in gaps in the understanding of this culture area. The following discussion summarizes the present understanding of Pacific coastal adaptations in the Formative period.

<u>Soconusco Region</u>

In 2008, Richard Lesure organized a session called "Sociopolitical Transformation in Early Mesoamerica: Archaic to Formative in the Soconusco Region" at the Cotsen Institute of Archaeology at UCLA. At this conference, scholars clarified much regarding the sociopolitical history of the Soconusco in the Formative. The Soconusco was redefined as an area lying between the Cantileña Swamp west of the Mazatan Region, spreading eastward to just past the Manchón Estuary that lies to the west of El Mesak. This area was renamed the Greater Mokaya Settlement Region (Pye, Hodgson, and Clark 2008). These authors argue that this large region (around 1,000 square kilometers) existed as one culture area, sharing characteristics of material culture and evolving as an integrated region through Formative period transitions (although the earliest part of the Early Formative probably also included the Guatemala coast to the southeast as part of this culture area). To facilitate this integration, the many rivers and the Pacific seaway would have functioned as easily navigable waters to support canoe transportation. A sequence of emerging and collapsing capitals was also discussed and analyzed at this conference.

The earliest settlements in the Soconusco are described as being characterized by large, chiefdom level centers, such as Paso de la Amada in the Mazatan region, surrounded by smaller villages and hamlets. These communities were located on the inland coastal plain, but may have been linked to smaller sites on the coast that provided marine resources. Los Alvarez is one site that has been identified as a special resource procurement location, where Early Formative people would have sought mollusks, crustaceans, fish, and salt. This site has been linked to the center of Paso de la Amada (Ceja 1999). El Varal was another such coastal site, and also demonstrates exploitation of shellfish and salt (Lesure and Wake 2008). This site dates to the Early Formative, but demonstrates ceramic evidence pointing to the later part of the time period (Cuadros and Jocotal phases), perhaps better linking it to the subsequent capitals of Cantón Corralito, Ojo de Agua, or other inland villages.

By around 1300 B.C., most of these large early centers had collapsed, and a regional center emerged at Cantón Corralito. This deeply buried site is at least 60 acres in size, as determined in recent work by David Cheetham (2006). It demonstrates an unprecedented assemblage of Olmec style artifacts found outside of the Gulf Coast Olmec heartland. At this time the Soconusco region was united as a culture area centered around one capital, with identifiable material characteristics and a clear settlement hierarchy for the first time. It is interesting that this centralization occurred at the time in the Formative period of the greatest Olmec influence. Cantón Corralito has been positively identified as an Olmec community, with a large quantity of ceramic sherds and figurines demonstrating chemical sourcing results through INAA that tie it to San Lorenzo on the Gulf Coast (Cheetham 2006 and 2007).

Cantón Corralito was subsequently flooded and abandoned, and the Olmec connection to the Soconusco significantly weakened. By 1200 B.C., a new regional capital had been established at Ojo de Agua, which includes the site previously called El Silencio (Pye, Hodgson, and Clark 2008). This site is thought to date to 1250-1000 B.C. and has demonstrated more than 400 mounds organized in a formal layout around a central plaza (Pinkowski 2006). The regional settlement pattern for this time period has not been clearly discussed due to a lack of intact stratigraphic deposits within the Mazatan region. More information is anticipated from Ojo de Agua in a dissertation now in progress by John Hodgson. Outside of this area, it appears that a dispersed settlement, with most sites characterized as small hamlets or residences, best describes the coastal occupation.

One of the sites outside of the Mazatan area is Cuauhtémoc, which has been investigated recently by Rob Rosenswig (2000). Rosenswig surveyed and mapped this area, providing extensive coverage and settlement information for an area in the Soconusco to the east of Mazatan (2005). Two main transitions in the Early Formative period were also studied through the datasets provided at this site. First, the transition to a settled society, with low residential mobility was traced to the Early Formative, or possibly even the Archaic Period (Rosenswig 2006). The transition to agriculture gradually followed, with true village based food production only occurring much later, in the Middle Formative.

Cuauhtémoc occupied a third-tier position on the settlement hierarchy during the Middle Formative period, linking it to the powerful nearby center of La Blanca (Rosenswig 2007). Despite its small size, Cuauhtémoc offers and important contribution to the understanding of large scale transitions occurring in the Middle Formative, from a view outside of the Naranjo central region. Rosenswig has gathered evidence for processes of social stratification, specifically considering the role of feasting (2007). It appears that Mound 2 was the location of feasting events, a place in which food and drink were served and consumed with the express intention of building social cohesion and integration within the community during a time of intense social stratification. This theory explains some of the transitions seen in material culture pertaining to subsistence activities. Specifically, the faunal remains indicate a focus on dog and deer mammal remains, which would be valued resources for feasting. There was an increase in the use of manos and metates, presumably to grind corn, the new staple crop, which would also have been important as a beverage consumed during feasting.

Further research has also been conducted at the Middle Formative center of La Blanca, further to the east in the Soconusco. There, Love has focused attention on residential mounds to reconstruct household patterns. One of these excavations recently unearthed a monumental clay sculpture (Love et al. 2005). The monument appears to have been a large basin in the form of a quatrefoil shape. Research on this monument and the associated residence indicates that it was used in water rituals having to do with supernatural communication (Love and Guernsey 2007). The importance of this monument is that it contradicts previously made distinctions between public ritual and household ritual, in that it is located in a house context, yet it evokes notions of rulership and sacred communication through its quatrefoil shape.

Thus, the Formative period is becoming much more clearly understood in the Soconusco region. Settlement patterns and adaptive transitions have been well documented. Furthermore, important questions relating to social stratification and negotiations of power, as well as the role of ritual in society are also being explored. Following the Middle Formative period, the Naranjo and surrounding regions (including the site of Cuauhtémoc) were abandoned. Just as the population had shifted from the Mazatan center east to the Naranjo region around 900 B.C., another shift took place as Izapa, located further inland on the piedmont, became the new center a few centuries later.

Sipacate, Manchon, and Tilapa

Along the Guatemalan coast, closer to Chiquiuitan, Arroyo and colleagues have continued to research settlement in estuary regions. Between 1999 and 2001, they performed survey and limited test excavations in the regions of Sipacate, Manchon, and Tilapa. This work started in La Gomera, Sipacate, in the department of Escuintla, in an area of the coast just west of the Coyolate River (Arroyo 1999). This research included ground reconnaissance and the collection of diagnostic sherds found on the surface of visible mounds. This investigation documented 32 sites total, including six Early Formative, one Middle Formative, 10 Late Formative, 12 Classic period, one Postclassic, and two indeterminate sites. The Early Formative sites tended to aggregate along the edges of the mangrove estuaries. One test excavation of 2 x 2m was carried out at the Early Formative site of Albeño. This excavation revealed thick layers of sand and clay fill used to elevate the surface of the mound in consecutive building episodes in the early part of the Early Formative (Locona and Ocos phases). Arroyo remarks that these layers of fill are more substantial than those found at other sites in neighboring areas of Tecojate and Suchitepequez, and may indicate more permanent residences in the Sipacate area than had been interpreted for the other areas, which have been described as demonstrating residential mobility for the exploitation of available seasonal resources from various locales (1999:19).

Survey along the coast continued with this project in the following two years (Arroyo and Neff 2001). In the Sipacate area, two additional sites were identified, one dating from the Early Formative through the Classic period, and the other demonstrating only Classic sherds. In the Manchón area, thought to be an extension of the site of El Mesak, nine mounds were identified, all dating to the Early Formative. Lastly, the Tilapa area, located about 3km east of the Naranjo River, near the site of Salinas la Blanca, revealed three additional Early Formative sites. All of these early sites were identified on the edges of the coastal estuaries, similar to Chiquiuitan.

Suchitepequez

The Suchitepequez region, between the Ican and Nahualate Rivers, demonstrated 12 Early Formative sites in survey. Several of these sites are located around the Sesacapa Lagoon. Excavations at Vidal, Leonidas, and Salinas Sinaloa have been the subject of a publication clarifying some of the ceramic designations for this area (Arroyo, Neff, and Feathers 2002). Researchers have been able to identify three distinct ceramic complexes between Mazatan and the southeastern coast of Guatemala. The time span that they focused on falls into the later part of the Early Formative, a time when it is thought that sedentary settlement practices were intensifying and smaller areas were becoming more insular than in the previous period, when a common cultural horizon seemed to have spanned the entire coast (Arroyo 1998; Arroyo, Neff and Feathers 2002; Clark 1991; Neff and Arroyo 2001). The three separate complexes defined by

Arroyo and colleagues include the Cherla phase in the Soconusco region, the Navarijo in western Guatemala, and the Tecojate regional complex with ties to Cangrejo pottery at Chiquiuitan.

El Salvador

Lastly, Arroyo has also conducted some of the only Early Formative research in El Salvador. Upon entering El Salvador, the Pacific coastal plain quickly narrows and then disappears. Arroyo's work was conducted at the site of El Carmen, where the coastal plain is only 4km in width. Research at the site revealed seven layers of construction in the one long, low visible mound. The earliest deposits are special oven features, excavated into sterile soil. Importantly, these features may represent the use of the site for marine resource exploitation by mobile groups of people, who only later built up the mound at the site and used it on a more permanent basis (Arroyo 1995), perhaps paralleling developments at Chiquiuitan. Residential mobility and the initial settling of Early Formative sites is one of the most important questions being addressed on the Pacific Coast, and one that is pursued in this dissertation.

Summary

This summary of Early Formative archaeological work on the Pacific coast demonstrates a growing body of knowledge of past adaptations in this culture area, with a promising future trajectory. This section has covered the main projects aimed at understanding the Formative Period. Other isolated Formative finds have also been recorded and offer potential datasets (Sharer 1978; Shook and Hatch 1978). Through the archaeological projects outlined here, a clear picture is emerging of the dynamic history of settlement, subsistence and other resource procurement strategies, status negotiation, and regional interaction.

Adaptation to a marine environment proved favorable to coastal inhabitants. Rooted in an Archaic adaptive strategy of the exploitation of estuary resources as well as movement inland and along river deltas, the Early Formative saw an increasing focus on the coast, perhaps in response to a global climatic drying event that peaked around 1400 B.C. and led to drought conditions in the study region (Mayewski et al. 2004; Neff et al. 2006d). The long term response to these events may have been a gradual increase in dependence on cultivated crops, with full agriculture emerging in village economies around 1000 B.C.

The Early Formative was a time of settlement and growth along the Pacific coast. Pockets of high settlement density emerged, the largest being at the western edge of this culture area, in the Soconusco, where shifting chiefdom level regional capitals demonstrate some degree of centralization following a period of Olmec contact around 1300 B.C. Other areas of somewhat less intensive settlement but clear early sedentism at this time include around the Sesecapa Lagoon in Suchitepequez and in the Tecojate region, where hamlet clusters occupy areas just inland of estuary-lagoon systems, as well as in the more dispersed hamlets and villages eastward from the Rio Maria Linda into El Salvador (an area which includes the sites of Chiquiuitan and El Carmen).

Following initial sedentism and subsequent village growth, a regional settlement including provincial centers, large villages, and smaller hamlets developed. These occupation areas were connected in a shared system of symbolic representation observed in design motifs on pottery and some sculpture (loosely called the Olmec artistic style and found all across Mesoamerica at this time) by 1000 B.C. On the Pacific coast, this Middle Formative region of interaction included the impressive site of La Blanca at the northern end of the coast and Chiquiuitan, a much smaller center, at the southeastern edge, to name a few.

Research thus far has established a solid chronological framework for understanding settlement and ecological adaptation throughout the Pacific coast culture area. In the Soconusco region issues of sociopolitical dynamics and ideology have also been approached both regionally and within specific sites including Paso de la Amada, Cantón Corralito, Cuauhtémoc, and La Blanca. Trends toward economic specialization have been seen in an increasing village farming economy at several sites as well as intensive production of salt at sites such as El Varal and El

Mesak. Studies describing patterns in domestic practice within household groups have been carried out at some of these sites, including Paso de la Amada, Cuauhtémoc, and La Blanca. All of these initiatives have contributed to an understanding of people's lives and experiences that is moving toward a humanistic approach and an understanding of practice through choice and motivations. Such an approach has not yet been applied to the southeastern coastal region, and the details and explanations of domestic life, ritualism, household relationships, and sociopolitical power relations have not been included in descriptions. Work at Chiquiuitan is contributing to a better understanding of cultural development in this area by focusing specifically on the household as a valuable unit of study through which individuals and agency can be approached and by considering ideological understandings of spaces and landscapes that can inform on wider issues of identity within a changing political landscape.

Introduction to the Site of Chiquiuitan

The site of Chiquiuitan is composed of 22 broad and flat earthen mounds varying in size between 50-150m in diameter and 1-4m in height. The site layout comprises a center of 20 mounds in this relatively flat area of the coastal plain, including Mound 13, located slightly to the west, and two other mounds slightly removed to the east (Figure 2-7). The Chiquimulilla Lagoon is located to the east of Chiquiuitan. Estuaries, mangrove forests, the Chiquimulilla Canal, and an extinct beach dune separate the site from the Pacific coast one kilometer to the south. Barrier ridges such as the one to the south of Chiquiuitan are found all across the coastline and show evidence for the progradation of the coastline since the stabilization of the sea level after about 7500 B.P. (Kennett et al. 2006; Voorhies 2004). The northern and western boundaries of the site are created by an artificial road and canals that delineate the southern extent of a man made irrigation system that may have destroyed additional mounds of the site.

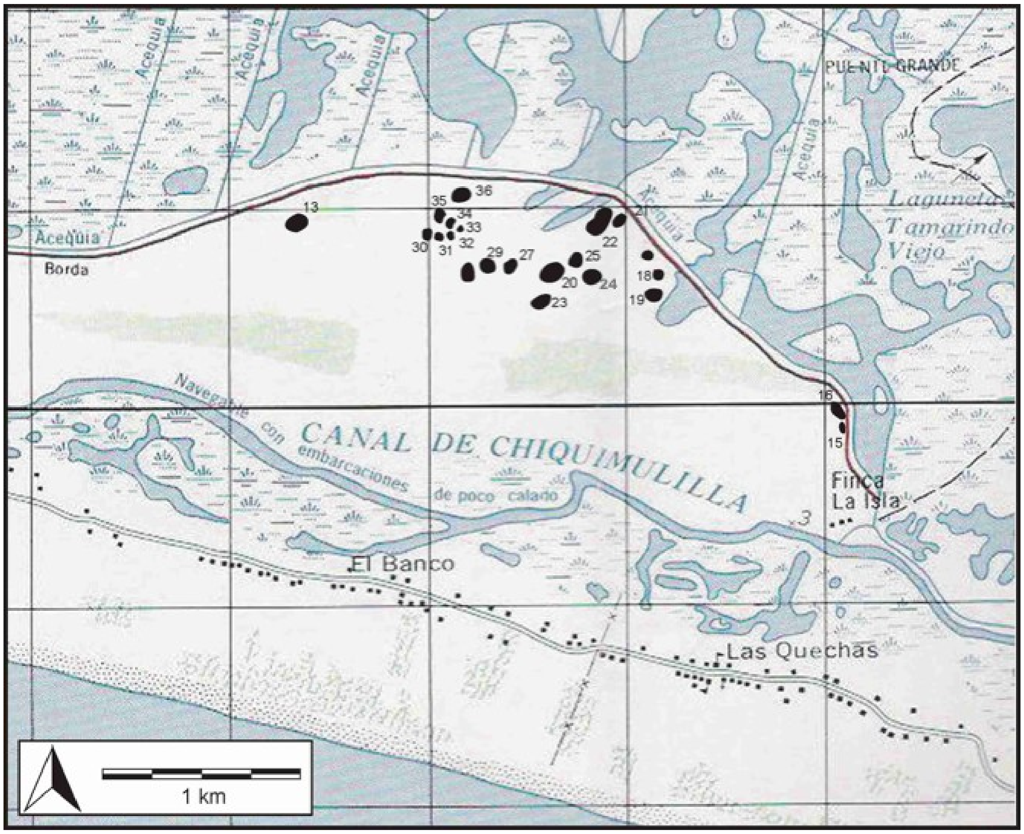

Figure 2-7. Map of the site of Chiquiuitan showing mound locations and their numbers.

The layout of the site may indicate an organized or planned design, although this cannot be demonstrated with certainty due to the possibility that additional mounds once existed to the north. In the area where an extensive irrigation system now exists, much dirt moving was once conducted and the presence of mounds in that area is unknown. Looking at the layout of the existing mounds (see Figure2-7), it appears possible that a plaza once existed, with only the southern part visible still today. Mounds 36, 33, 32, 29, 27, 25, and 22 seem to delineate a northeast to southwest angled rectangle or semi-circle of open space. This space could have been purposefully designed into the site layout and used as a public plaza. However, it could also be that the mounds occupy this layout simply due to their construction upon natural high ground within this wetland environment. Unfortunately it is not possible at this time to speak with sureness regarding site layout (for an example of an Early Formative Pacific coastal site with planned layout, see description of Paso de la Amada in Clark 2004b).

The only previous survey and excavation project conducted at Chiquiuitan took place between 1995 and 1997, when Francisco Estrada Belli identified the site as part of a regional GIS study (Estrada Belli 1998; Estrada Belli et al. 1998). That survey project helped to define the occupational chronology of the region between the Maria Linda and Paz rivers and over the coastal plain and piedmont (Estrada Belli 1999, 2002). Three test pits were excavated at the summits of mounds at Chiquuitan. Furthermore, Laura Kosakowsky conducted a preliminary ceramic analysis, which identified diagnostic attributes and established a basic chronological framework (Kosakowsky and Estrada Belli 1997; Kosakowsky et al. 1999). The chronology established by Estrada Belli and Kosakowsky (Kosakowsky 2002; Kosakowsky et al. 2000) included three phases: the Early Formative Huiscoyol and Cangrejo, and the Middle Formative Tamarindo.

Estrada Belli's published results include a settlement history for the southeastern Pacific coastal region. Chiquiuitan is the only known Huiscoyol phase site between the two rivers Maria Linda and Paz (Estrada-Belli 1998). According to Estrada Belli (1999), the site was initially composed of five widely spaced mounds, including Mounds 13, 24, 27, 34, and 36. He interprets the mounds as residential platforms and describes an economy based on marine resources. Important changes occurred at Chiquiuitan in the Cangrejo phase, when the community expanded from five to 11 inhabited mounds (Extrada Belli 1999). Three hundred people are estimated to have occupied the site at this time. New neighboring sites emerged at Pulido/Canal, Salinas Santa Rosa, Palosadentro, and Aguadulce along the coast to the east, and at Ujuxte on the piedmont. These are believed to be minor Early Formative sites with low occupation, each comprised of only a few mounds with Cangrejo sherds on the surface. By the Tamarindo phase, Chiquiuitan had become a significant center in the region with 19 identified mounds in the site core. Estrada Belli (1999) estimates a population of 500-700 inhabitants at the site at this time. Other sites that were previously established in the region grew in size through this phase as well, but none came near the density of settlement at Chiquiuitan.

More recently, Chiquiuitan was one of the sites targeted in a regional project aimed at reconstructing paleoclimatic and paleoenvironmental patterns. Data recorded from sediment cores collected on the Pacific coast have indicated general paleoenvironmental transitions and human impacts in the Archaic Period (Neff et al. 2006a). Small and mobile human groups had important effects on the mid-Holocene landscape through sporadic exploitation of resources available in different localized areas (Neff et al. 2006b, Voorhies and Metcalfe 2007). Other activities include clearing, burning, and some low-level cultivation of early domesticates, all of which were probably conducted in a limited capacity to increase return rates in the seasonal tropical forests that expanded throughout Mesoamerica in the Early Holocene (Neff et al. 2006a).

While these early projects provided important preliminary results for understanding Chiquiuitan within the region, this dissertation project, called the Proyecto Arqueológico Chiquiuitan (PACHI), sought a more targeted understanding of this particular early community. In the first, pilot season of PACHI, conducted in March and April of 2006, archaeologists excavated test pits in two of the mounds believed to be the earliest at the site (Morgan and Valle 2006). These test pits revealed successive platform layers and architectural features, and allowed researchers to gather artifacts and material samples that were used in understanding the site’s chronology. In addition to the two radiocarbon results from Estrada-Belli’s project (Kosakowsky, Estrada-Belli, and Pettitt 2000), new dates from carbon samples collected in 2006 and 2007 have provided important data needed to refine this chronology (Morgan and Valle 2007a) and compare it in a regional context (see Appendix A).

In 2007, PACHI continued field and laboratory work. The main objectives of this season included a subsurface testing program to investigate the use of space between the mounds and more intensive excavations located on the mounds to examine domestic economy (Morgan and

Valle 2007b). Laboratory studies integrated analyses by specialists and students of several classes of material culture including ceramics, the clay remains of wattle-and-daub architecture, ground stone, obsidian, and shell. Following the season, additional materials analyses were performed and include the osteological analysis of human remains, a Laser Ablation Inductively Coupled Plasma Mass Spectrometry analysis of obsidian artifacts, and the identification and analysis of macrobotanical and archaeofaunal remains.

The results of these studies are summarized and discussed in the chapters and appendices that follow. They are used to reconstruct adaptations in settlement, subsistence, and social relations, and for the ultimate goal of this dissertation, to build an interpretation of mound building and community development at Formative period Chiquiuitan. This study adds significantly to the work being done on the coast by filling the gaps in an understanding of culture history at the southern end of the coast, which until this time has been lacking in detailed accounts, as well as by taking a new approach to reconstructing aspects of ancient life in the Early and Middle Formative periods. While previous interpretations have focused primarily on explanations rooted in environmental adaptation, this dissertation considers the behaviors, experiences, choices, and motivations of the ancient inhabitants of Chiquiuitan through a fine-grained analysis of domestic contexts, and connects those lives to the wider environment and regional developments through a consideration of landscape.

CHAPTER III

THEORETICAL CONCEPTS KEY TO THIS STUDY

This dissertation explores early mound building and community development on the Pacific coast of Mesoamerica by considering the changing ways that people perceived the natural and social landscape at the site of Chiquiuitan between 1450 and 600 B.C. Specifically, this study looks at how the natural and cultural transformations to the landscape influence people's lives and vice versa. This is especially relevant when considering the drastic changes that occur during the transition to sedentism and the development of agriculture. It is argued that changes in structures of society at this time include not only settlement and population shifts, technological advances, economic transitions, new adaptive strategies, and the solidification of social relations, but also an important ideological shift in the conception and perception of the landscape. The approach taken to this topic pays attention to the relationship between people and these social structures, reflecting a practice theory perspective. In addition, this research also draws on studies in the archaeology of landscapes by including an identification of natural spaces utilized by mobile people and cultural places associated with society, memory, and identity. It is in these places where tensions and negotiations between agency and social structure occurred. This dissertation emphasizes such places (primarily in domestic places in early communities) and uses ethnographic case studies to illustrate shifting landscape ideologies through time.

This research will contribute to practice theory and landscape archaeology by looking at a small scale society that made the transition from residential mobility to sedentism and increasing social complexity. The practice approach has not previously been applied to research on the Formative period Pacific coast, resulting in a somewhat dehumanized version of the past that prioritizes environmental adaptation for explaining cultural development. This study aims at providing a more humanistic version of the Formative, in a landscape selectively modified by groups of people with histories, ideologies, motives, choices, and influential actions. Studies of archaeological landscapes have interpreted public places in the civic centers of complex societies, but have rarely attempted to explain early transitions such as moves toward sedentism and agriculture in small scale and simple communities. This work also attempts to fill that void in the application of this type of theory. Overall, the combined approach of practice theory and approaches from the archaeology of landscapes results in a more detailed account of Formative period mound building and community development that reflects a humanistic approach to reconstructing the past and explaining cultural development in this area. This chapter introduces concepts and theoretical approaches important to the main ideas presented in this dissertation.

The Practice Theory Perspective

This study takes a practice theory approach (also commonly called action theory, agency theory, or social construction/constitution theory in varying applications) by identifying elements of social structure in a cultural system and documenting how those structures are reproduced or changed by social actors engaging in that system. Practice theory focuses on the intersection of society and the individual or group of individuals by considering how social norms constrain and enable the abilities of agents, and how the consequences of their actions affect society (Bourdieu 1977; Dobres and Robb 2000; Giddens 1984; Ortner 1984). In archaeology, practice theory has been used toward different ends including such topics as collective agency, individual intentionality, rational acts, unintended consequences, and social struggle (Dornan 2002). Among these many subjects, practice theory and its related agency perspective have been employed in the analysis of social change and emerging cultural complexity (Clark 2000, 2004b; Dobres and Robb 2000; Hayden 1995; Lesure 2004; Price and Feinman 1995). Practice theory is key to this study and the objective of understanding why social actors constructed mounds throughout the development of their community, and how they continued to maintain them in different ways during the transition to sedentism and through increasing social complexity.

The first component of practice theory - structure - includes those regular practices of a social system that become embedded in time and space and form the rules and daily experiences of society (Giddens 1984:16-17). Pierre Bourdieu (1977) defines social structure in his discussion of *habitus*, in which individuals are guided by specific cultural norms that combine to form all of those shared beliefs and practices that compose society and bind individuals together within it. However, the *habitus* is at the same time comprised of "structuring structures" and "structured structures" (ibid). This means that, since social norms influence the actions of all individuals who share society, reproduction of society and its structure is seen in every social process. Indeed, social norms, rules, and regulations tend to maintain social structures and encourage actors to reproduce them. Through these reproducing actions of people, structure is dynamic and meaning is constantly changing and creating new modes of social life.

Since structure is defined by its persistence through time and space, place becomes an especially important means for its analysis (Barrett 2000; Crumley 1994; Giddens 1984: chapter 3; Love 1999b; Smith 2003:12-17). The idea that places are critical features of social structure is further addressed in this chapter in the discussion of the archaeology of landscapes. Since time is the other dimension through which structure is manifested, identifying the foundations of social institutions at the initial development of a community can target the origins of some aspects of structure in a given cultural system and address ways in which they expand and change. The foundation of sedentism is thus the ideal arena within which to identify and analyze important elements of social structure in order to understand initial community development. It was with this transition that the material products of culture began to accumulate in new ways, changing how people were influenced by the environment by adding a more significant cultural component to the natural landscape.

As mentioned above, structure does not exist outside of the actions and intentions of individuals. Anthony Giddens' (1979 and 1984) *structuration* theory highlights the duality of social structure by discussing the role of people in reproducing and reshaping it. Change occurs when the stability of the social system is not maintained and conditions favor (through a trajectory of change or a more forceful revolution) a structural shift. Even as the first villages in Mesoamerica grew and developed, the people that inhabited them made choices that shaped how the landscape within and surrounding the communities was manipulated and maintained, creating and recreating new aspects of social structure that would continue to influence (and be influenced by) future generations.

This dissertation employs these ideas from practice theory to recognize shifting social structures associated with decreasing residential mobility, increasing reliance on food production, and solidification of social groups into household units. These transitions are reflected in the material remains of earthen mounds. These aspects of community development are considered in combination with ideas from recent studies in the archaeology of landscapes to better understand how the landscape functioned as an aspect of social structure, both before residential mounds were constructed and later when they became impressive features on the flat coastal terrain. The mounds played an important role in the recursive relationship with humans in which the landscape can be seen as shaping ideas and perceptions while also being shaped by them.

The Archaeology of Landscapes

A place in which people have lived and carried out habitual practices exhibits physical manifestations of social structure, including aspects of cultural ideology and development. Carl Sauer, an early cultural geographer, identified the landscape as constantly changing through the work of humans and defined the landscape as the combination of cultural features and physical features (Larkin and Peters 1983:139-144). Even for residentially mobile groups, a cultural landscape is created when places hold symbolic meaning and shape social memory. Edward S. Casey states, "An alert and alive memory connects spontaneously with place, finding in it features that favor and parallel its own activities. We might even say that memory is naturally place-oriented…" (1987: 186-187). Drawing from these ideas, this study begins by considering the relationship between people and the environment before sedentism.

By the time of initial sedentism, the actions of human groups had begun to alter the spaces they inhabited, creating a physical cultural landscape that testified to their presence and accomplishments. Peter Wilson (1988) calls this process *domestication,* in the sense of the domestication of humans, and emphasizes the fundamental shifts that occurred at this stage. He argues that the cultural environment resulting from the process of sedentism created a new buffer between humans and the natural environment, as well as a new set of structural factors that shaped how humans interacted with one another. Ian Hodder (1990) takes the argument a step further by specifically addressing the role of the house as a special place for understanding these transitions. In his concept of the *domus* (house, home) he suggests that,

> domestic production and the productive activities were couched within the ideology of the domus as the guarantor of social life against the wild. The domus was where the wild was brought in and controlled or where the cultural was separate from the natural… As social and economic competition and intensification increased they did so in terms of the domus concept… The domus thus provided the medium for the dialectical relationship between economy, society, and symbolic meaning (1990:53).

The archaeology of landscapes offers useful tools for assessing these shifting aspects of social structure within human communities and ways to approach them through the archaeological record. In its most extreme application, phenomenology, the archaeology of landscapes sees surrounding areas existing not as places in of themselves, but as necessarily embodying symbolic meanings associated with cultural histories and action (Tilley 1994). Physical spaces are experienced by humans bodily and through their senses that are processed by the individual whose own history and cultural understanding of the universe instills upon it symbolic meaning from the beginning. Stated another way, "bodily perceiving is directed at…

things and places that come configured, often in highly complicated ways. Moreover, the configuration and complication are already meaningful and not something internally registered as sensory givens that lack any sense of their own: the sensory is senseful" (Casey 1996:18). Through the tools of phenomenology, the subjective experience that each individual undergoes through sensory knowledge makes the perception of physical features inseparable from individual identity (Lawrence and Low 1990). This viewpoint requires archaeologists to understand places as social constructions produced through human agency, fostering a deeper understanding of the experience of natural features, the motivations behind the shape and form of the built environment, and the nature of the relationships that were negotiated through them.

In the terms of practice theory, places are a fundamental part of social structure. As actors undertake everyday activities, they constantly observe events and other actors around them, as well as aspects of the social and physical context within which they act. Physical surroundings can influence how people move and act in overt ways, such as through barriers or passageways, or in subtle ways such as through the emotions stirred up by participation in communal endeavors that leave lasting signs on the landscape. The power that the actor has through agency, to do something that affects the flow of everyday life, is always situated in time and space (Giddens 1984). Changes to the landscape can shape the ways that social structure is reproduced, and agents have the ability to impose their understanding of the universe onto the built aspects of their surroundings (Bourdieu 1973; Hayden 1996; McGlade 1995). Lefebvre states, "space is by no means simple. In the first place, there are its constitutive dualities. For it is both a result and a container, both produced and productive…" (1991:288). Like structure itself, space can be constraining and enabling. Understanding these aspects of social places is fundamental to answering questions regarding how people perceived of and interacted with landscapes in the past. These ideas strongly resemble some of the main tenets of the study of historical ecology, as described by Carole Crumley (1994:9, emphasis original), "Historical ecology traces the ongoing dialectical relations between human acts and the acts of nature, made manifest in the *landscape.*

Practices are maintained or modified, decisions are made, and ideas are given shape; a landscape remains the physical evidence of these mental activities."

Theoretical discussions of landscapes include some specific concepts and this paragraph outlines the definitions for key terms used throughout this dissertation. First, the idea of landscape as a core concept in archaeology has to do with "linked sociohistorical and natural processes within specific space-time frameworks" (Kirch 2007:8). This perspective is long term, and thus appropriate to archaeology, and sees landscapes a dynamic systems merging the cultural and the natural (Ashmore and Knapp 1999; Baleé and Erickson 2006; Crumley 1994; Jackson 1984; McGlade 1995:126; van der Leeuw and Redman 2002). In comparison to the characterization of landscape, the concepts of space and place are less agreed upon and scholars often use them loosely, without presenting clear definitions of what they mean by the terms. In this dissertation, the concept of space is used as a generic term to refer to natural settings and the use of natural areas such as the wetlands, forests, and estuaries of the Formative period Pacific coast. Places, on the other hand, are built by (or in some way modified by or associated with) humans (Agnew and Duncan 1989; Casey 1997; Smith 2003). Spaces are abstract and provide context, while places are situated in space, but draw meaning from human experience and have history (Casey 1996; Smith 2003; Tilley 1994). Lastly, "socio-natural system" is a term used to highlight the irreducibility of the natural and the cultural in places where they both exist (McGlade 1995), reflecting ideas highlighted in quotes by Casey and Lefebrve above, and describing the transition through time and space that Wilson (1988) described in the "domestication" process. Socio-natural places include elements of nature as well as constructed components that hold memory for the societies that live there. As will be explained in this dissertation, Chiquiuitan started as a natural space characterized by a flat coastal tropical forest bordering an estuary region, became a socio-natural place when humans decided to build a permanent village there, and lastly was turned into a largely cultural place with little natural influence in the immediate vicinity as people stripped the dirt for use as mound fill and covered the area with cultural debris.

Studies of archaeological landscapes have become central to understanding the ways in which people perceived, experienced, and contextualized their surroundings (Knapp and Ashmore 1999). Seeing archaeological sites as cultural landscapes allows researchers to interpret meaning from specific spatial features that are products of local historical conditions (van Dommelen 1999; Smith 2003). Furthermore, this approach assumes that the phenomenon of "place attachment," described as a psychological process through which people develop deep attachments to places, occurred in the past as has been observed today. Hayden states, "People make attachments to places that are critical to their well-being or distress. An individual's sense of place is both a biological response to the surrounding physical environment and a cultural creation…" (1996:16). By considering how past inhabitants of an area experience the spaces they lived in, developed attachments to them, and modified them to fit their ways of life, it is possible to gain a better understanding of the ways people and the landscape are intertwined.

Studies in the archaeology of landscape have used many combinations of these ideas and interpreted various meanings behind constructed landscapes of the past. One type of interpretation focuses on the inscription of social memory (Pauketat and Alt 2003). Others have focused on the intricate and symbolic use of geometric properties or astronomical alignments in site planning (Aveni 2008; Clark 2004a). Some studies have highlighted aspects of status and influence needed to control labor for the construction of powerful monuments (Clark 2004b; DeMarrais, Castillo, and Earle 1996; Trigger 1990; Sassaman and Heckenberger 2004; Smith 2003), the politics behind powerful residences (Christie and Sarro 2006; Clark et al. 2006), or the performative functions of public spaces for leaders to promote authority through visible demonstrations or religious rituals (Freidel et al. 1993; Grube 1992; Janusek 2006; Reese-Taylor and Koontz 2001). These examples focus on complex societies to demonstrate important socio-political meanings of civic landscapes. While studies of landscape in Mesoamerica have focused on the public component and revealed important information regarding the symbolism of power in public architecture within complex societies (Stone 1992), few (e.g. Joyce 2004; Hutson 2002) have focused on domestic constructions or the ways that people in small scale societies perceived of the landscapes they inhabited.

The present study fills this gap by presenting information from a small scale society undergoing important cultural transitions. In this research, empirical data from Chiquiuitan and derived primarily from one intensively analyzed residential mound, supplemented with ethnographic and other examples, point to transitions in the perceptions of and interactions with landscape features. It is argued that the house (represented at Chiquiuitan as a low, earthen platform mound) is a crucial place for understanding transitions in social structure. As people settle into a place, a permanent structure for shelter is constructed and begins to take shape within the natural environmental features that surround it. Furthermore, there is a solidification of a distinct social group that inhabits that structure (or group of structures) and cooperates toward domestic tasks in that place. As people inhabit those structures and surrounding areas for longer periods of time, domestic areas take on more and more signs of that social group's identity. Thus, houses are especially usefully places for investigating social meaning. Since the archaeology of landscapes has focused heavily on the public component of urban built environments (Aveni 2003; Clark 2004a; DeMarrais, Castillo, and Earle 1996; Freidel et al. 1993; Grube 1992; Janusek 2006; Pauketat and Alt 2003; Reese-Taylor and Koontz 2001; Sassaman and Hackenberger 2004; Smith 2006; Stone 1992), the study of houses and their corresponding household social units in small scale societies can contribute to a better understanding of the relationship between people and the landscape in diverse types of societies.

In addition to the community as an important unit of scale for understanding social development on the Pacific coast, the household also functions as a key component. The household has been defined as the smallest unit of social organization in which its members share in economic tasks. While to mobile people the organization of economic tasks between individuals may change depending upon the family members that happen to be traveling together at any given time, in a sedentary society this aspect of social organization is more fixed and individuals or groups are less likely to move away from one another, but rather come to comprise a permanent community. The functions of the household have been identified in order to promote its use as an analytical tool, and these functions include production, distribution, transmission of property, and population reproduction (Wilk and Rathje 1982). Furthermore, the understanding of social structures within the household can be seen as a model for understanding wider social relations. Ian Hodder (1990) further reflects upon this idea through his continued discussion of *the domus,* when he states, “The domus involves practical activities carried out in the house… Secondary, symbolic connotations are given to the practical activities, leading to the house as a focus for symbolic elaboration and to the use of the house as a metaphor for social and economic strategies and relations of power.” The position of the household at the very foundation of social reproduction (both cultural and biological) points to its value as a unit of analysis in studying community development (Netting, Wilk, and Arnould 1984).

The following sections document some general ways that mobile hunting and gathering groups differ in their relationship with the landscape from sedentary agriculturalists. This discussion is not designed to identify absolute characteristics of the differences between sedentary and mobile groups. Rather, it approaches the variation in human-landscape interactions by pointing out some commonalities that can be used to draw general expectations for archaeological correlates. Two approaches to understanding these differences can be taken when analyzing the archaeological record. First, a dichotomy can be identified in which nomads and sedentists live in fundamentally different settlement systems and exhibit opposing characteristics in the ways that they interact with the environment (Binford 1980, 1982). Alternatively, greater variation can be recognized, with mobile groups occupying one end of a continuum in landscape ideologies while sedentary peoples represent the other end, and with varying manifestations of ideas and activities falling in between (Crothers 2004; Kelly 1995). This dissertation favors the second approach, which more closely resembles the circumstances at Chiquiuitan (as explained below).

Landscapes and Hunter-Gatherer Bands

Small scale mobile societies (I focus here on nomadic hunter-gatherer groups, but am not excluding "complex" foragers such as semi-sedentary peoples or mobile food producers) have a particular type of relationship with the landscape that corresponds with their nonsedentary lifestyle. Some of the main characteristics of this relationship between mobile peoples and the environment include an open and unbounded perception of the landscape; natural features that are infused with ideology related to ancestors, social memory, and mythology carried on through oral tradition; and a limited cultural component of the primarily natural environment.

Often times, the perception of the landscape within these groups is a fluid one that stems from constant movement, following tracks or paths throughout a region, while also giving emphasis to specific spaces and natural landscape markers (Tilley 1994; Wilson 1988). These special places that are returned to repeatedly can be seen as holding significance through the attachments that people develop to them.

For example, the Mistassini Indians of Quebec, Canada refer to their hunting territories as 'my path or road' suggesting that they are not necessarily physically bounded territories, but tracks of land where the hunter walks and works (Speck 1923). These people call themselves 'Big Rock People,' after a prominent feature on the shore of Lake Mistassini, where they live in a permanent village, and from where they are mobile in their hunting practices. Interestingly, when trying to gather information through a survey of hunting territories, the ethnographer Frank Speck had trouble pinpointing specific boundaries because one's territory, while intimately known by each individual, was not well delineated (ibid). No physical boundaries or markers were used, and from generation to generation a family's territory was passed on through memories and experiences shared by fathers and sons. This suggests that the Mistassini notion of space is a loose one and that territory can be subject to slight shifting, demonstrating the fluid nature of people's relationship with the areas in which they live and work.

However, there are certain places along loose pathways that may hold special significance to mobile peoples. Since certain places, such as resource exploitation locales, are returned to annually or seasonally by nomadic groups, people form "place attachments," especially to those locales where the band stayed for a longer visit, where different groups gathered for socialization and exchange, or where important events occurred. Societies develop intimate knowledge of landscape features in able to survive and procure available water, subsistence, and other naturally occurring resources. But the connection is deeper than purely adaptational. For mobile groups, the attachments and memories inscribed on landscape features can be especially strong, and often guide their movements from place to place.

Morphy argues that, to the Yolngu-speaking Australian Aborigines, the landscape is completely culturally infused, with a totemic geography linking landscape features and ancestors (1995). As these people move through the landscape, they are constantly guided by the histories of their ancestors, which are called to mind through the symbols perceived in natural topographic features. About the actions of the ancestors, he states, "Where they cut down trees, river courses or ceremonial grounds were formed by the impressions made in the ground; where they bled, ochre deposits were formed or waters of a particular color were left behind" (1995:187). This connection to the ancestors through the landscape provides a history of where the Yolngu came from and a structure for how social groups are organized into clans and moities descended from specific ancestors and linked to those territories associated with them. In this way, Aboriginal groups form intense personal attachments to their territories. These attachments serve to encode ancestral histories, create durable social norms, and are passed on to younger generations (Tilley 1994)

Another common feature of mobile groups is that oral histories often narrate tales of traveling through different areas, and in doing so highlight prominent landscape features and recount events of past expeditions. These stories serve to remind the group where to go to find important resources, and thus have an important functional purpose. But they are also often infused with mythological symbolism or memories of ancestors that link these spaces to key events in the culture's past.

When the Western Apache transverse the landscape, they constantly encounter material objects that evoke entire worlds of meaning, all portrayed through oral histories (Basso 1995). The significance of natural features in relation to historical events is illustrated in the naming of significant spaces, such as "Widows Pause for Breath" and "She Carries Her Brother on Her Back," places named for events that occurred when the ancestors were settling into areas of modern Arizona. To the Western Apache, a dry spring is known as "Snakes' Water" and stirs a memory of ancestors squatting on the flat rocks where the snakes that own the water bathed in the sun. The ancestors came to fill their containers with water after a thirsty day spent digging up agave. In this case, the memory summons up a different landscape and captures changes to the terrain that have taken place through time. In another example, a place called "Juniper Tree Stands Alone" represents the first plot of corn planted by one group of Western Apache women. The oral history associated with it describes how they had wandered looking for a good place to live, found this place and planted the corn, left older people to look after the plants as they grew, and finally celebrated a strong harvest upon their return. This tale recalls the origin of their community and the place that is associated with the best methods to cultivate corn.

For mobile groups, the physical aspect of a constructed cultural landscape is often limited. Even if structures were built in camp locations, they were made to be temporary and were given back to the natural elements when the group moved on, perhaps being indicated only by subtle signs upon their return. The cultural landscape that is created in such cases is an ideological one. Rather than people creating a built landscape, the natural landscape shapes the ways that people live and move, how they remember the past, and the ways that they think of themselves in the present.

Archaeological Correlates

The following chapters and appendices in this dissertation outline the material evidence used to construct a model for the development of sedentism, transition to food production, and move toward social complexity at the site of Chiquiuitan. This model includes the notion that Chiquiuitan was first used by mobile people in the Early Formative Huiscoyol phase (1450-1250 B.C.), perhaps as a specialized resource exploitation locale. Humans occupied the area, but only for temporary use, thus leaving the site to be a natural space the rest of the time. By using the ethnographic examples discussed in the previous section, it is possible to identify archaeological correlates that can be used to form an interpretation for how these people may have conceptualized and interacted with the landscape at this time.

Identifying archaeological correlates of mobile peoples' interaction with the landscape is not easy. Archaeologists may expect to find spaces used by mobile groups only through limited lines of evidence. Sites may be as ephemeral as a simple fire pit where a small band camped or cooked a meal. Hunting groups may have left behind sites indicated by modified faunal remains where a kill was made or prey was butchered. In those areas where people developed place attachments and returned over and over again, researchers may expect to find signs of repetitive uses, such as at camp locales with layered stratigraphy. Stratigraphy indicates repeated uses and demonstrates that the place evoked memory, adding an important symbolic dimension to the ways that people of the past experienced that place. If these places were large gathering places, they would cover a wide area and have more material remains, perhaps including the residue of feasting events, and thus may be more archaeologically visible.

All of these examples of sites created by nomadic people demonstrate interactions between agents and the landscape. Some of the social structures of a mobile lifestyle involve the routines involved in moving through various spaces, consistently returning to specific places, and interacting with other groups through encounters taking place across this setting. Any particular group will have a shared understanding of an appropriate way to live out these movements and interactions, which relates to their worldview, reflects their adaptive strategies and ideological associations, and is represented in the material remains of the archaeological record.

In the Huiscoyol phase, Chiquiuitan demonstrates what appears to have been a gathering place that was used repetitively. The mounds exhibit layered stratigraphy and, judging by the labor requirements to build earthen platforms and the existence of multiple mounds, are interpreted as having provided habitable space for separate groups of several people. While the collected materials from this phase are modest, it is possible to discern that a limited number of activities were practiced at this site, suggesting that it was not occupied full time and perhaps used only for certain practices. For example, the ceramic assemblage is restricted to the *tecomate* form in the Huiscoyol phase, suggesting limited uses of ceramic vessels, while in later phases a more diverse form assemblage is observed and indicates a wider array of functions (see Chapter Six). The specialized function of the site at this time was probably for the exploitation of estuarine resources (Appendices G and H indicate that marine fauna were heavily utilized at this time).

Once it has been determined that a site was used by mobile people, certain postulations about the way the group perceived of and interacted with the landscape can be made based on parallels from ethnographic observation, described in the previous discussion. Considering these aspects of landscape interaction, we can identify elements of social structure that specifically relate to the landscape and that solidified during the Huiscoyol phase at Chiquiuitan. Similarly, it is also possible to reconstruct actions of social agents that participated in such social norms and eventually challenged them at the transition to the Cangrejo phase. Social structures can be seen in subsistence norms, settlement routine, and rules of social relations.

The mobile groups using Chiquiuitan probably had a broad diet based on many available resources found throughout the estuaries, coastal plain, rivers, and perhaps even into the highlands. What we can say for certain is that they appear to have placed special importance on resources available in the estuaries, based on the location of Chiquiuitan in close proximity to this environment and the high volume of estuarine resources found in excavation (see Appendices G and H).

Nomadic people more often attach ideas and memories to environmental features than place human constructions upon them as is the case in sedentary societies (Wilson 1988). People's actions seemed to have been more structured by the ideology of the landscape than physically imposing upon its natural features. The large site of Chiquiuitan must have played an important role within landscape ideology. Little is known about other sites in the region at this time. Smaller sites used by fewer people or for shorter lengths of time have been overlooked by archaeologists in this area due to their low visibility, and it is difficult to comment on patterns enacted away from Chiquiuitan. Based on what we know from ethnographic analogy, movements between resource patches by the mobile inhabitants of Chiquiuitan were probably guided by ideological associations, perhaps linked to memories of the ancestors. It would be expected that the coastal waterway and rivers facilitated movement across these spaces in the Chiquiuitan region. Being a site where people returned repeatedly for several years or generations, Chiquiuitan can be interpreted as an especially powerful place important to group identity. It may have held symbolic meaning passed on through the generations in oral narratives.

Lastly, social relations were probably negotiated by individuals moving in flexible traveling groups. Again, since little is known about other types of sites used by mobile groups in the region at this time, it is difficult to make interpretations regarding these interactions away from Chiquiuitan. However, it is possible to infer that these groups gathered together at the large site of Chiquiuitan for exchange and socialization. The events that occurred at these gatherings probably occupied special memories in the lives of the individuals involved, adding to the symbolic importance of Chiquiuitan as a locus of social memory and interaction.

These interpretations offer a more informed explanation of how the inhabitants of early sites may have related to the landscapes surrounding them. Archaeological studies of places like

Huiscoyol phase Chiquiuitan should not be limited to adaptational pursuits such as how they were used to promote group survival by providing resources. They should also consider the power of the memories and symbolic meanings that may also be attached to those places and that characterize mobile peoples' spaces in ethnographic research today. It may well have been because of the symbolic importance of the site's mounds that the residents advocated founding a permanent village there in the Cangrejo phase.

Landscapes and Sedentary Agriculturalists

As opposed to forager bands, agriculturalists who enjoy a sedentary lifestyle demonstrate different characteristics in terms of their interaction with the landscape. These include a focus on fertility and a greater accumulation of cultural debris that alters the natural environment and leaves cultural markers for subsequent generations of humans, communicating an ideology that includes a central or home place within the wider cosmos, notions of property and boundary, reflections of social organization, and ties to the ancestors.

To sedentary village dwellers, landscapes often hold specific types of meanings and concerns, some of which relate directly to food production practices. While foragers may exploit a broad range of subsistence types, food producers have an equally intimate knowledge of their natural surroundings, but usually focus their energies on fewer species of plants and animals and a more limited environment where some preparation for cultivation (burning and/or clearing) has taken place. The desire for crop fertility in these select spaces and species is felt strongly, and these aspects of the landscape are often perceived of as having life-giving forces.

The modern Maya of Zinacantan are sedentary and agricultural, and demonstrate a well known example of a structured landscape. Their ritual life revolves around cycles of the planting and harvesting of maize. To the Maya, maize is believed to have a type of soul, and throughout the planting and growing cycle ceremonies are conducted at which alms are offered to the deities in the form of candles, incense, and liquor in the hopes of reciprocal gifts of rain and fertility

(Collier 1975; Vogt 1969). These dedications are placed at the four corners of the *milpa*, or cornfield. Rights to milpa lands are guarded by family members and the solidarity of descent groups is actively managed in order to maintain legitimate access to land resources (Collier 1975). To the Zinacantecos, their community is located in the valley at the center of the universe, and is referred to as the ‘navel of the world’ (Vogt 1969:298). Lastly, the house is a place of great significance. Like maize, the house has a soul and is part of the living Zinacanteco culture.

Other aspects of the relationship between nonmobile peoples and the landscape have to do with the nature of sedentism as it provides a place for the accumulation of different types of cultural symbols that serve as elements of social structure for future occupants. Communities that are inhabited for long periods of time begin to leave impressive signs on the physical setting, modifying the landscape into a built environment in more lasting ways. Markers or monuments may be set up toward the objectives noted above, namely the identification of community or even sub-community level group territories. These marked places often times serve as vehicles of symbolic thought, providing a model for conceiving of the wider world and sometimes as small-scale reproductions of the universe (Wilson 1988), as illustrated in the Zinacantecan example above. Specific locales are designed to function as visible signs of the link between a lineal kinship group and the places that they inhabit within the landscape, as well as the roles they played in the community. Peter Wilson summarizes this point regarding the permanence and continuity of places in sedentary societies in *The Domestication of the Human Species*, when he states:

> One of the most striking, and visible, differences between the open societies of hunter/gatherers and all other human societies is that the latter live in an architecturally modified environment. Hunters/gatherers create for themselves only the flimsiest architectural context, only the faintest line divides their living space from nature. What we know of prehistoric hunter/gatherers is entirely by accident and good fortune, but what we know of prehistoric villagers is partly by design, for it was part of the function of their architecture to create a sense of permanence and continuity, to build resources for their heirs and to commemorate their ancestors (1988:57).

In this “architecturally modified environment” that Wilson describes, the sedentary community is a permanent locale that people call home and within which social relations are structured, ritual events are organized, and daily practices are conducted. Ian Hodder (1990) emphasizes that a dichotomy is established between the conceptual unit of the house (social, cultural, domesticated) and the wild (unsocial, natural, dangerous). Efforts are made to distinguish this community territory from the outside environment. Social relations take on a more permanent and organized structure through the coalescence of a permanent community as households, corporate groups, clans, and other types of social divisions solidify. Since socially factioned groups are less likely to move away from one another in sedentary societies, social norms are adopted that aid in civic regulation and smoothing social relations. Sometimes these social groups invest time and labor into their own sections of the landscape, and the demonstration and legitimization of ownership over the land may be a priority.

It is important to this study to point out the special importance of houses as particularly promising contexts for finding information about the structure of society, the development of the community, and the ways that people interacted with the landscape. Archaeologically, most of the first structures found in sedentary communities are residences. These constructions are associated with specific people that built them and resided in them. Past people recognized an association between groups of people and sites (the household and the house). Furthermore, the organization of houses can be used to understand the wider organization of the community. The way these houses were organized spatially and the households were organized socially says much about the structure of the community. In other words, the material foundation of the sedentary village in space reflects the ideological foundation of the community as a network of social organization (Wilson 1988). The house is linked to the community because it is in the house that mechanisms of social structure were rooted – it was within the domestic context that social relations and methods of control were formed and from there came to characterize the entire community (Hodder 1990). Thus, the foundation of sedentary community may co-occur with the establishment of the household as a permanent social group whose configuration can be evaluated through the structures of the places left behind where people resided.

The idea that the material remains of the house can be used to understand social structures of the people that lived there is illustrated in the example of the Maloan house found within Fijian culture and described by Marshall Sahlins (1976:32-33). Sahlins (ibid) states, "the superstructure of the village community is traditionally the infrastructure of the domestic construction." The inside of the house is divided into a "chiefly side," located facing the sea, and a "common side," facing inland. The male household head and his older sons inhabit and work in the seaward side while younger sons and their families live and conduct activities on the other side. A raised area at one end of the "chiefly side" further removes the family elder and his immediate kin and serves as a place for him to sleep and store his belongings. It is opposite the end of the house where women engage in food preparation and other activities. The division of domestic labor within these places corresponds with the social status of individuals performing tasks. Even outside of the house, spaces on the two sides of the house are divided into upper and lower sections associated with the four-class system of Maloan society. Wilson summarizes this example when he states, "Who one is in domesticated society is largely a function of where one is" (1988:70).

Another way houses and their associated contexts can inform on social relations and landscape use can be through a consideration of the cooperative labor input required to transform the spaces of the natural environment into built, cultural places. These cultural landscapes can inform on past practices by revealing the motivations behind costly labor endeavors involved in the construction of social places, including houses. "People can create a built environment… that structures how groups and individuals experience space and thus how they interact within those culturally defined spaces" (Pletka 2001:203). Sedentists and agriculturalists invest much labor into the places that they occupy, often times in communal works requiring the cooperation of many people. In such situations, the participants have a sense of responsibility to work within the production process that is associated with certain parts of the landscape. They owe it to one another through relationships of reciprocity to help in the construction and maintenance of houses or other structures. Similarly, labor investment is required for the land to be fertile and to produce subsistence resources. This demand often requires the cooperation of a large number of people, whose relationships to one another are driven by the labor needs of their particular relationship with the land. As social complexity develops, the management of the combined labor of individuals and the results of their labor (houses, fields, monuments, etc.) can be a strong source of power for emerging leaders (Wilson 1988).

For example, among the Amazonian groups occupying the Bajo Urubamba region, landscape is heavily implicated in kinship relationships and responsibilities (Gow 1995). The need for the maintenance of kinship relationships is driven by the need for cooperative endeavors in creating a cultural landscape. This cultural landscape is formed through the transformation of forest into garden and home. Within this community, houses and gardens are frequently abandoned and new ones established in nearby areas, meaning that this cooperative labor need is a recurring one. Furthermore, a transformed landscape needs constant maintenance, so that even after the garden or house is formed, those kin are linked through their reciprocal responsibilities in cooperative labor endeavors to maintain the house and garden places. In this way the relationship to the land involves the responsibility of labor that is often necessarily intertwined with notions of kinship alliance and reciprocity. Gow states, “A child grows up in a particular house in a specific village site, eating the food produced in particular gardens” (1995:53). Just as one is born into a family with certain kinship obligations, one is born to a specific place that is also implied in and signifies those obligations.

Another recurring theme among horticulturalists and agriculturalists is in demonstrating and communicating rights to land. Sedentary communities are somewhat limited to the lands immediately surrounding them for their primary resources, especially for cultivation. The desire to keep outsiders from seizing these lands can be very strong, especially in circumscribed or competitive regions. Among the Wamira of Papua New Guinea, spaces are often associated with myths of ancestors and origins, and certain places and their associations serve to legitimize the land rights of the clan, lineage, or family (Kahn 1996). Each person in this society draws aspects of his or her identity from the places that belong to them. These spaces are physically marked by houses, trees, and stones. All across Wamira landscape, stones are associated with cultural myths, and are especially important in linking people to their territories. The ancestors are represented in large stones that are visible on the landscape, and each stone reminds current community members of how their lineage or family came to be connected to that place. The ancestors are thought of as watching over the taro gardens, and the house of each family also holds symbols of family history. Posts of the house are male or female, drawing on the paternal and maternal family alliances and representing the social ties that endure. Furthermore, a flat stone placed at the doorstep holds the memories of events that occurred within the house. All of these visible physical markers strengthen their claim over the landscape that they occupy and serve to bolster their justification for inherited land rights.

Often times this justification for inherited land rights is physically demonstrated through the burial of deceased ancestors within group territory. Placing the remains of an ancestor in a special space can powerfully mark that locale and signal the longevity of the deceased's lineage in that place. Wilson suggests that an appeal to the past, in the form of ancestor worship, is a fundamental aspect of power in sedentary society (1988). He suggests that it was only when sedentism occurred that the mobilization of a labor force to build mortuary monuments became an instrument for demonstrating group identity (and property).

In an illustrative example of this type of practice are the Berawan of Borneo, who live in longhouse social units in which land rights are protected and passed from generation to generation (Metcalf and Huntington 1991). When a high-ranking person dies, much labor is combined as elaborate tombs are constructed from carved hardwood. The tombs are placed in graveyards adjacent to the longhouse. The building of the tombs serves to demonstrate solidarity in support of certain leaders. That individual's support signifies a united longhouse community. Unity was an important characteristic of Berawan society, where prolonged fissioning weakened several groups and left them vulnerable to endemic warfare. In this way, the tomb itself represents not only the individual buried within, but also the unity, strength, and longevity of the social group that conducted mortuary rites, as well as their claim to farmland.

In summary, sedentary societies are expected to have certain characteristics that reflect their particular relationship with the environment. These include a subsistence base relying on resources within close proximity to the sedentary village and, especially if agricultural, a concern with the fertility of the land. Ideas of ownership and territory also become important as the lands immediately surrounding the village are associated with permanent inhabitants and support their survival. Residents of a sedentary community leave behind an architecturally modified environment, having created spaces that embody social memory and portray important aspects of social relations within that community. These social relations include new social norms that guide the intensive interactions of village residents, often times organizing the community into subgroups such as households. These architecturally modified places frequently indicate labor cooperation that points to notions of reciprocity and responsibility to others that exists between individuals and groups within communities. Lastly, symbols associated with the ancestors are fixed in the permanent places of the community, especially when mortuary practices are conducted, and historically link the descendants to the places that they inhabit.

Archaeological Correlates

By the Cangrejo phase (1250-950 B.C.), Chiquiuitan was a sedentary community comprised of several residential mounds, demonstrating an example of a socio-cultural place. Later, in the Tamarindo phase (950-600 B.C.), the construction practices implicated in creating these mound platforms changed from requiring limited repeated maintenance, slightly raising floor levels, to much more dramatic and labor intensive additive constructions. The transitions seen in the Cangrejo and Tamarindo phases reflect social agents intentionally changing norms within their community. Each transition modified the structures of society, creating a new social order that characterized life in their community. Again, archaeological correlates of these new cultural places can be derived from the examples just discussed and used to address issues of agency and landscape involved in the development of this.

Archaeological expectations for sedentary groups differ from those of mobile peoples and resemble their particular relationship with the landscape. While mobile groups create largely ideological landscapes representing cultural meaning passed on through oral history and social memory, often leaving behind limited material evidence, sedentary groups alter the landscape in lasting physical, material ways. The permanence of the group in the area affects patterns of floral and faunal growth, sediment erosion, and the pooling and movement of water. Cultural remains leave a more visible sign, as nonportable objects become more frequently used and accumulated debris builds up. Sites inhabited on a permanent basis will include the material remains of a large number of activities, indicating the full range of practices conducted by that community.

At Chiquiuitan, first in the Cangrejo phase and increasingly in the Tamarindo, material indications of people's activities accumulated in large residential mound platforms. Hearths, storage pits, middens, and activity areas on floors all indicate domestic practices. Artifact assemblages expanded as well. For example, ceramic forms increased in number (see Chapter Six) and stone tools increased in frequency and variation (see Appendix D). These lines of evidence clearly indicate a permanent residential community, much different from the use of the site during the Huiscoyol phase.

The transformation of social relations that follows the foundation of a permanent community is also reflected in the archaeological record. The solidification of domestic groups (households) that share in economic activities and that reside in shared places leaves signs on the landscape. These signs reflect the behaviors that went on there and aspects of the group's identity. For archaeology, the careful and intensive excavation of houses or other dwelling contexts in the material record allows for interpretations about the individuals and groups that shared in the use of these places (Wilk and Ashmore 1988). House construction, activity areas, mortuary deposits, and middens provide evidence for such reconstructions and for making assessments of the habitual practices that indicate social structure. Investigations in house mound contexts have the potential to inform on ways in which aspects of identity are embedded in productive activities (Gilchrist 1999, chapter 3) and how all members of society played a role in the reproduction or modification of its structure (Dobres and Hoffman 1994; Hendon 1996, 2000; Robin 2003).

At Chiquiuitan, distinct house platforms are observed. These platforms are separated by 20-50m (see Chapter Four for conclusions of a subsurface testing program initiated in areas between the mounds), indicating a clear division between social groups that resided atop the mounds. Activity areas were restricted to the centers of the mounds (for more detail on excavation data from Mound 13, see Chapter Five), suggesting that each mound was inhabited by one social group, presumably a household unit. Furthermore, a norm for permanent communal living was a new social structure implemented by the residents of Chiquiuitan in the Cangrejo phase. Distinct household groups are demonstrated, but within a community where they aggregated together, perhaps for cooperative endeavors through which labor was shared in reciprocal relationships for tasks such as mound construction, subsistence, territorial control, and/or ritual.

While the evidence for the establishment of a sedentary community and the foundation of household groups within that community is clearly established through material evidence at Chiquiuitan, it is more difficult to make interpretations regarding the individual identities of household groups. A comparative study of the material remains gathered from different mound platforms would be expected to reveal differences in residential construction techniques, subsistence methods, tool technologies, and possibly ritual practices that could point to differences in these groups’ roles within society. For example, they may demonstrate wealthier households, farming households vs. fishing households, or households specializing in specific productive activities. Unfortunately, at this point enough data gathered from excavation at distinct house mounds at Chiquiuitan are not available and interpretation regarding household diversity within the community is not possible.

Another characteristic of sedentary societies outlined in the previous section involves a heavy reliance on nearby lands and resources, which fosters a heightened sense of property and territory. As the sense of ownership becomes more important to communities (or even smaller groups within those communities, such as households) that occupy an area on a fulltime basis, boundary markers or signs of territorial property may be created as visible indicators of the group's presence and rights to land. The landscape is then materially inscribed for political aims. Intensive land alteration processes and visible constructions could be expected to materially demonstrate key transitions in the relationship between people and the landscape when sedentism and agriculture are adopted.

The transition in mound construction practices following the Cangrejo phase is thought to be an expression of permanence and ownership. Additions to the mounds previously involved 10-20cm layers of dirt. Through time, the accumulation of these layers came to leave more visible signs on the landscape, and held memories for the inhabitants of these places. As household groups experienced the effects of this cultural landscape, these social agents eventually made the decision to begin more actively manipulating the impact that they had within these places by making their additions to the tops of the mounds more dramatic. The site may have begun to take on an organized layout, in a semi-circular form. In the Tamarindo phase, these additions were in layers of 50-70cm (see Chapter Five for a more detailed discussion of excavation data). They essentially transformed the social norms guiding mound building to create a more competitive and symbolically infused landscape through their mound constructions.

The exponential augmentation of mound construction occurred around the same time that increasing evidence for food production is seen. Indirect evidence suggests that some degree of cultivation may have taken place in the Cangrejo phase. Appendix E describes a pollen record indicating land clearing at this time. The lithic study (Appendix D) reveals an increasing frequency of ground stone tools, suggestive of a growing need for these implements to process cultigens. By the Tamarindo phase, direct evidence of agriculture is demonstrated through the positive identification of maize microbotanicals. With this transition to an increasing reliance on the productive capacity of the surrounding lands, rather than estuarine resources as was the case for Chiquiuitan in the Huiscoyol phase, a growing concern for the fertility of the land and the protection of rights to use it must have become important to the people relying on these resources. The larger construction projects may have been signals that this resource exploitation locale was taken and the lands around it claimed by local residents with long ties (and rights) to its resources.

The more expressive mound construction practices were accompanied by another method for symbolic associations with the mounds, mortuary activities. The practice of marking the landscape with burial structures or monuments is addressed in Saxe's Hypothesis 8 for the correlation between mortuary practices and dimensions of social relations. The hypothesis states, "To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (i.e. lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead" (Saxe 1970:119). Although Saxe emphasizes the ecological concerns with marking off one's plot within a competitive environment, the marking of territory need not be entirely driven by environmental stimuli. Other authors have critiqued the generalizing approach of the hypothesis to emphasize that the development of mortuary disposal areas could also demonstrate aspects of identity related to a particular social group or to ideological beliefs having to do with the appropriate treatment of the ancestors (Brown 1995; Pearson 1995). In any case, the creation of mortuary places indicates an association of those spaces with powerful notions of the ancestors, notions that are used by living people to permeate the landscape with symbolism.

Burial of ancestors within the mounds is evidenced in the late Cangrejo phase at Chiquiuitan. As described in Chapter Five and Appendix F, two individuals were identified in Cangrejo phase levels at Mound 13. Both individuals were flexed, possibly bundled, and probably the result of secondary burial. They were placed on dirt floors at the time of the initiation of the construction of a mound addition and subsequently buried within the fill used to raise the top of the platform. These burials were interred in two of the first of the more substantial additions to the mound.

Considering the implications for community life discussed above, in which social norms involved in cooperative living often times foster a heightened desire for expression of identity, it is not surprising that an expansion of mound construction for the visible appearance of household permanence would occur at the same time that ancestors are first buried within the mounds, linking that group with the past through the intentional manipulation of place. The household group residing at Mound 13 may very well have experienced an increasingly competitive environment within (or perhaps extending outside) their community at the end of the Cangrejo phase. Concern for access to agricultural lands appears to have grown, and the regional settlement demonstrates a growing number of sites with increasing populations throughout the area. In this competitive atmosphere, residents of Chiquiuitan (social agents) began to look for ways to alter social structures in order to promote their own status by demonstrating that they were an established group within a planned community, with associated rights to lands and resources. The mounds, already shaping the community landscape, provided just the means necessary. The methods employed to make these statements came in the form of residential mound construction and treatment of the deceased – they began to build a larger, more visibly impressive mound and to move the remains of deceased family members to that place.

Landscapes and Chiquiuitan

Few seasonally occupied sites subsequently demonstrating the transition to sedentism have been identified on the Pacific coast of Guatemala, and Chiquiuitan provides an excellent opportunity for the exploration of landscape ideology among nonsedentary groups vs. sedentists and evaluation of the expectations listed above. In the preceding sections, specific archaeological expectations were outlined to help determine important characteristics of mobile peoples' interactions with the landscape and those of more sedentary groups. Two approaches from anthropology can be taken to understanding these differences. The first seeks to identify types – types of materials, types of behaviors, and types of peoples (Murdock 1967). This approach would see the generalizations outlined above as dichotomous, looking for either the characteristics of mobile peoples' interactions with the landscape or signs that sedentists participated in relationships with certain places. For example, in archaeology, Lewis Binford (1980) has outlined critical differences in what he calls "between-system variability." He identifies site diversity through time as characteristic of hunting and gathering (mobile people's) behaviors and repetitive or homogeneous function at sites used by sedentary people. Through studies in ethnoarchaeology, Binford was able to define collector and foraging strategies among hunting and gathering groups, providing analytical and descriptive categories through which archaeologists can identify the material remains of groups of people exhibiting differing settlement systems (Binford 1980). The organizational variability identified by these types represent internal variation in organized arrangements of human cultural systems.

More recently in anthropology, the identification of absolute types has been abandoned as variability in human cultural systems has proven too diverse to neatly fit into such classifications (Crothers 2004; Kelly 1995). In relation to landscape theory, this has translated into an understanding of a wide unevenness, or perhaps a continuum between the behaviors and markers for mobile groups and sedentary groups in the study of the transition to settled village life. For example, in ethnographic studies of Amazonian peoples and ecology, several studies have pointed to the complex adaptations expressed by foragers there. William Balee (1999) makes this point by demonstrating that the "wild" resources exploited by the Sirionó, an Amazonian foraging group, are actually the products of cultivation by an ancient complex society that are now collected by this modern group living within an anthropogenic forest. In this case, the classification of the subsistence strategy depends upon the historical depth considered. Similarly, in his study of the Huaorani, Laura Rival (2002) suggests that mobility is not always linked to subsistence strategies, but rather can be closely tied to social understandings of space. These examples blend characteristics mentioned in the previous section, illustrating the difficulty in understanding the relationships of cultural systems with the environment in distinct classificatory types. Rather, an idea of complex, dynamic interactions along a continuum of change better characterizes the diversity of foraging practices and the shift to horticulture or agriculture.

This dissertation favors the latter approach, through which variability and is recognized for mobility patterning in settlement systems of past groups. At Chiquiuitan, this approach allows for interpretations to fall somewhere along the continuum from complete mobility to pure sedentism. Characteristics from both generalized descriptions above may be found among people's behaviors at any given time, especially during the transitions occurring the Early Formative period.

Chiquiuitan was first used by hunting, gathering, and fishing people and was visited intermittently as part of a complex settlement system. Short platforms were constructed in a wetland environment, where raised surfaces probably functioned to elevate the ground level above the seasonally swampy surroundings. The site was primarily a natural space, but it was used as a place by mobile people (see definitions of space and place above), perhaps as a special gathering place that was returned to repeatedly for economic purposes of estuarine resource exploitation, but also as a socially and symbolically powerful place that held social memory for interacting groups.

Around 1250 B.C., initial sedentism occurred at Chiquiuitan as people came to occupy the site on a more permanent basis. Mounded residential platforms were elaborated to elevate living surfaces above the seasonally inundated low areas of this estuary region and provide more enduring livable areas. Relationships with the landscape probably took on characteristics from both descriptions above (those of mobile people and those of sedentary people) as the site was used on an increasingly permanent basis, as a socio-natural place, during this transition.

Throughout the Early Formative period, the maintenance of these platforms was an aspect of social structure in which domestic work came to include the habitual practice of piling additional layers of dirt atop the mounds to preserve elevated surfaces. It is argued that community members (social agents) cooperated in these labor endeavors in a manner that was guided by social norms such as cooperation and reciprocity and reproduced throughout this temporal phase. The emergence of permanent structures at the site signals the beginning of the social trends outlined above, namely the establishment of a socio-natural place and the foundation of households as distinct and lasting social units within a cooperative community.

As ancient Mesoamericans developed more complex social systems, drastic transformations occurred in everyday practices. At Chiquiuitan in the late Early Formative and early Middle Formative, a larger aggregation of mounds can be seen and mound construction practices changed. Agents enacted change in the social structure when they stopped repeating the typical method for mound maintenance and began to make even larger additions to the heights of the mounds, creating a primarily cultural place from a socio-natural one. These activities altered the landscape in ways that are still visible across the flat Pacific coastal plain. At the same time, other social transformations were also occurring. The region faced increasing complexity in site hierarchy, Chiquiuitan reached its maximum population, subsistence transitions occurred, and mortuary rituals moved to burying individuals within the mounds themselves. These actions indicate new intention of social actors to inscribe notions of identity (permanence, lineage, inheritance) onto the landscape through mound construction.

Thus, Chiquiuitan is an ideal locale for the study of social agency and landscape. The site was occupied for extended periods of time between at least 1450 and 600 B.C., and is comprised of places infused with signs of social structure and human agency, as well the transitions that occurred in specific habitual practices related to subsistence, residential mobility, and social relations. Furthermore, it is one of the earliest known Mesoamerican villages, making it an optimal place to investigate the foundation of cultural trends associated with the appearance of food production, sedentism, and permanent household social groups.

Understanding how people perceived of the landscape in changing ways as they constructed and maintained earthen mound platforms throughout Early Formative transitions is one of the goals of this dissertation, and is informed by the theoretical traditions outlined above. The remaining chapters in this dissertation present the material evidence used to reconstruct these patterns at Chiquiuitan. In the final chapter, the theoretical considerations and material expectations presented here are returned to and considered in light of the evidence provided for Chiquiuitan.

CHAPTER IV

SUBSURFACE SHOVEL TESTING PROGRAM

Collecting comprehensive settlement data is crucial to understanding ancient sites, their variability, and the composition of the cultural landscape. However, completing this task through surface survey procedures alone can be difficult, especially in cases where natural deposits may obscure occupation, as is found in the seasonally inundated lagoon estuary of Chiquiuitan, where sand and heavy clay soils accumulate rapidly. In such circumstances, a more complete representation of diachronic site organization must be acquired through a second stage of survey investigation that involves some sort of subsurface testing. Furthermore, research on the Pacific coast of Guatemala has traditionally focused on investigating areas atop mounds, taking as given that these were the primary activity areas of past communities. A test pit or two at a site is characteristic of most of the work that has been done, and evidence of subsurface artifact densities is sparse (investigations at Paso de la Amada pose an important exception; see Blake et al. 1992; Ceja Tenorio 1985; Clark 1994; Lesure 1997). For these reasons, one of the main objectives of the 2007 field season at Chiquiuitan included a test pit sampling component looking for settlement and activity areas located off mound, in what has been referred to as the hidden domain of settlement remains (Velásquez López 2007b). This research complemented the surface survey of the site conducted by Estrada Belli (1998, 1999) in a way that more comprehensively investigated occupation and activity areas below the ground surface. Moreover, it tested previously held assumptions that mounds were primary activity spaces and sought more secure evidence for cultural remains located in various spaces throughout the site. This specific facet of investigation provided important information needed to create a base understanding of settlement at the site, upon which the topic of ancient mound building could be approached for this dissertation.

In this subsurface testing program, project researchers excavated 393 shovel tests in the low-lying areas between the residential mounds at the site. Forty-two of these probes located cultural deposits. These data supplemented those gathered through excavation of test pits and horizontal exposures of the mounds to complete an intensive and comprehensive domestic archaeology program. This work has significantly enhanced our understanding of the use of space at the site, indicating activity in areas of the site previously assumed to be culturally vacant. Moreover, the results of these investigations have important implications for how Formative coastal sites are conceptualized and it is urged that future researchers also consider multiple site spaces, and not just the mounds themselves, to understand these ancient communities.

Subsurface Testing

Subsurface testing has been an important means for settlement data collection from several multi-stage archaeology projects in Mesoamerica and elsewhere. For example, in the United States, conservation archaeology has increasingly employed large-scale survey projects in areas of forthcoming development (Schiffer et al. 1978). Lightfoot (1986) provides an important discussion of the strengths and weaknesses of subsurface testing programs in his comparison of survey projects in New York and Arizona. In the American Southwest, most sites can be identified through surface survey procedures alone. However, in the Eastern Woodlands, low visibility necessitates other techniques. Through subsurface testing, Lightfoot was able to identify small buried sites including quarry areas, lithic workshops, camp sites, and artifact scatters on Shelter Island, New York. Previously, shell middens had been believed to be the prominent site type in the study area, due in a large part to their high surface visibility. Subsurface investigations thus significantly informed upon the understanding of prehistoric occupation and activities in this case study. His conclusion underscores the need for appropriate research designs that select site discovery methods based on characteristics of the local environment in order to effectively detect a representative sample of the target population.

Especially in environments where vegetation and aggrading soils pose special challenges, researchers often employ subsurface testing as a means to augment other survey and excavation methods. For example, Zeidler (1995) discusses hidden domain studies through a probabilistic analysis of test pit sampling in his review of archaeological survey. He describes the ability of shovel-probe testing to cross-cut distinct physiographic zones and facilitate the discovery of sites in the Jama Valley of coastal Ecuador. Furthermore, he uses this example to discuss variables important to survey design and illustrate the effectiveness of different methods through statistical techniques. This example provides a useful summary of essential issues paying attention to methodological vigor in lowland South American archaeology that can be related to similar themes in neotropical Mesoamerica (see also Erickson 1995; Siegel 1995).

Turning to examples from Mesoamerica, at the Late Preclassic Maya center of Cerros, a sophisticated water control system was fruitfully investigated through trenching as well as posthole excavation, with the specific goal of the postholing program to produce a series of schematized profiles to illustrate the nature of buried platforms and raised fields (Scarborough 1983). The results of the subsurface testing in this case study confirmed over a greater area the stratigraphic sequence that had been detected in excavation, illuminating the important component of agricultural features at ancient Maya sites.

In one further example from Mesoamerica, auger testing was conducted at Tres Zapotes to successfully study settlement patterning in the Arroyo Hueyapan floodplain where alluvium and volcanic ash cover archaeological deposits (Wendt 2003). The deep test units (up to 6m) revealed entire buried cultural mounds and terraces, significantly improving the understanding of settlement in this area. Furthermore, the systematic survey and random transect selection methodologies employed by this project were adopted in the shovel pit investigation at Chiquiuitan.

In summary, systematic subsurface testing programs have provided successful results for detecting buried deposits in the United States, as well as Mesoamerican and other neotropical lowland environments. These examples illustrate the ability of shovel pit testing to reveal subsurface information over a greater area than typically possible through unit or trench excavation techniques, which require significant expenditures of time and labor. Thus, subsurface testing in posthole, auger, or shovel test programs offers a beneficial means for investigating settlement that may be hidden by aggregate deposits, and thus was chosen to facilitate the acquisition of site settlement information at Chiquiuitan.

Subsurface Testing at Chiquiuitan

Discovery probability for archaeological sites generally depends on three variables: visibility, accessibility, and survey intensity (Zeidler 1995). At sites in the neotropics of Central and South America visibility and accessibility pose significant challenges. Archaeologists frequently encounter nonexistent visibility and extremely difficult accessibility due to dense vegetative cover or soil aggradations. Such circumstances require more labor-intensive subsurface testing programs in addition to, or in lieu of, pedestrian surface surveys. The last variable, survey intensity, involves the spacing (test pit interval) and size of test pits, in addition to the thoroughness with which the fill is inspected (Nance and Ball 1986).

Decisions regarding survey intensity and sampling design are influenced by considerations of intersection and productivity (Nance and Ball 1986; Schiffer et al. 1978). Having a previous knowledge of abundance, clustering, and obtrusiveness of artifacts or features in the archaeological record can inform sampling design and increase the probability of the intersection of a test pit with cultural material and the productivity of the test pit to yield artifacts (Schiffer et al. 1978; Zeidler 1995). Such previous knowledge of the population to be sampled is often gained through surface survey or strategically placed preliminary test pits.

Previous investigations of hidden domain using geophysical survey have been conducted at other sites on the Pacific Coast of Guatemala. In 2003, the sixth meeting of the School of Central American Applied Geophysics tested techniques including magnetometry and electromagnetic induction at the site of El Baúl (Pérrot-Minnot et al. 2004). Later studies have also been done in the Cotzumalguapa region (Chinchilla et al. 2007). These projects prove the applicability of geophysical survey techniques by documenting previously recorded and new subsurface features. Furthermore, these researchers encourage the use of such methods in Guatemalan archaeological pursuits and the sharing of information and technology throughout Central America. Following this study, Michael Love conducted another magnetometry investigation at Mound 1 at La Blanca (Love et al. 2004). Results of that project aided in the reconstruction of building methods and phases of this Middle Formative monumental structure.

Unfortunately the wetland location and lack of stone building materials at Chiquiuitan pose significant problems for geophysical survey, and for those reasons subsurface testing was the chosen method in this study. For example, ground penetrating radar is a useful method for identifying changes in the density of materials and is especially adept at pinpointing the location of rocks within buried soils. However, since no stone architecture has been encountered at Chiquiuitan, no differences would be expected to be detected between cultural deposits and natural strata using this technique.

Shovel testing is an appropriate means to meet the challenges of poor visibility and accessibility, and collect settlement data at Chiquiuitan for three reasons. First, the surface survey conducted by Estrada Belli (1999) already identified a significant clustering or aggregation of artifacts around the large area of the mounds, suggesting that activity areas were observable in wide areas on and around the mounds. While the subsurface program tested the assumption that surface finds could be used to assess the uses of space across the site, the information provided by Estrada Belli aided in determining the spacing of shovel test pits. Since activity areas were previously observed in wide areas, relatively widely spaced test pit intervals would be expected to successfully identify activity or occupation areas in off mound locations. Second, the abundance (or density) and obtrusiveness of large ceramic sherds in previously excavated cultural deposits indicates that even small excavations (shovel pits create holes of 50-70cm diameter) provide enough evidence to positively indicate settlement or activity areas. Lastly, previously excavated test pits (Morgan and Valle 2006 and 2007b) at the site have shown that cultural deposits are not found more than 1m below the ground surface, an easily accessible depth to reach through shovel-probing, while allowing the excavator some control over vertical stratigraphy in a time effective manner.

Shovel Test Sampling Methodology

Investigators carried out the test pit sampling program at Chiquiuitan through a systematic sampling procedure. The boundaries of the survey area were partially determined by the visible layout of mounds at the site and partially by the modern spatial boundaries of the cattle ranch where the site is located. The area surveyed included the spaces between and around all of the 19 mounds of the site center, and extended through an area of about 300-400m to the south. Project archaeologist Dr. Jon C. Lohse first set up the east-west transect to the south of the survey area, placing 80 stakes at intervals of 25m. From this baseline, one north-south transect was randomly selected from every 100m stretch of survey area to be sampled through shovel testing (researchers conducted shovel testing by walking northwards from one out of every four stakes on the East-West transect). Another project archaeologist, Antolín Velásquez López, supervised field excavation for the shovel-testing program by placing a pit at every 25m test pit interval along the selected north-south running transects (Figure 4-1), with the assistance of four hired workmen, José Estuardo Carvajal, Víctor Rogelio Betancourt, Wilfred Tuna, and Gregorio Hernández. Where mounds or the edge of the Chiquimulilla Lagoon were encountered, shovel pits were not excavated.

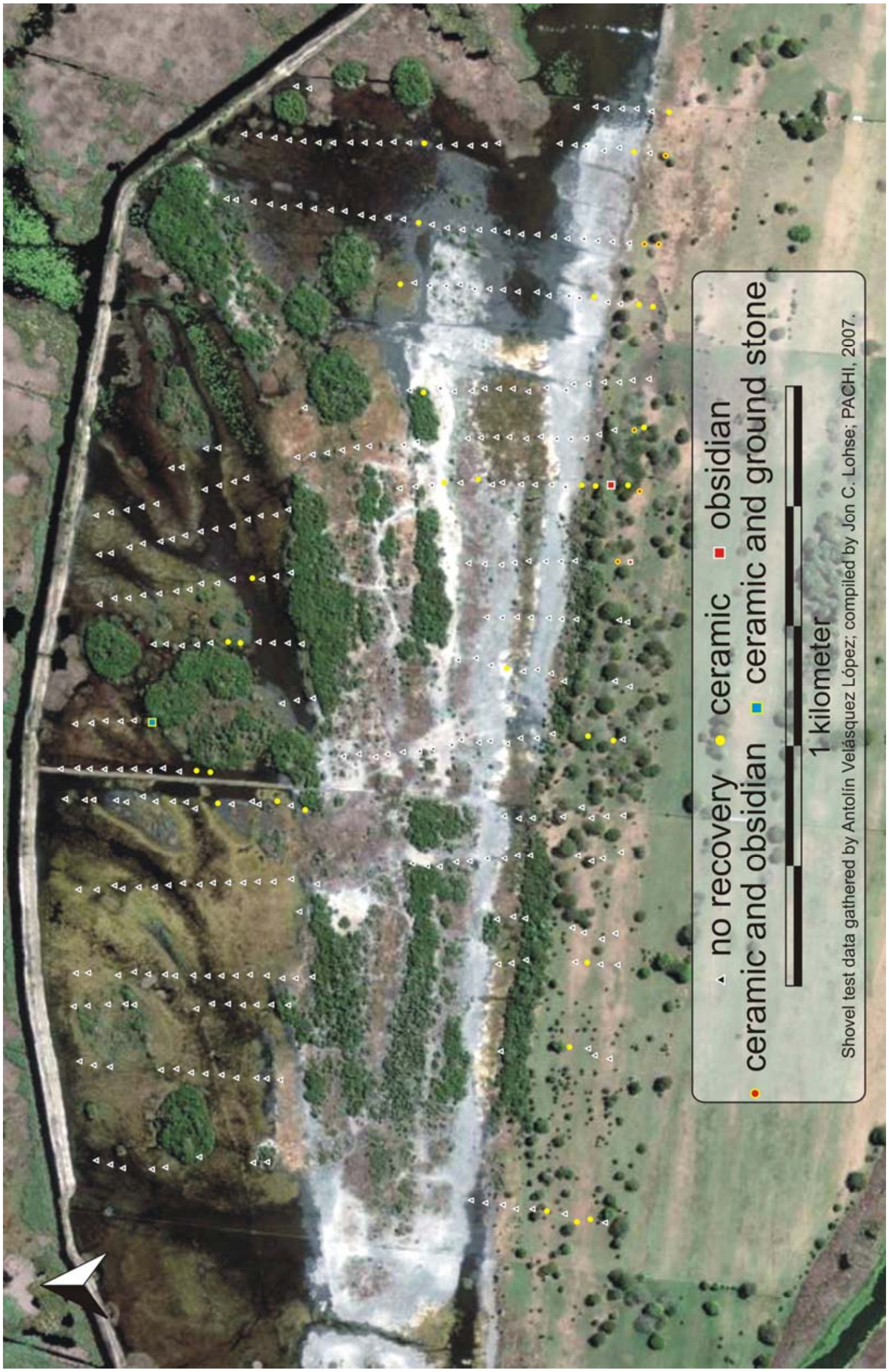

Figure 4-1. Aerial photo of Chiquiuitan with overlay of symbols indicating shovel pit locations and cultural material finds.

The test-pits were round in shape, with diameters of 50-70cm, and depths varying from 0.60 to 1.60m (Figure 4-2). Excavations ceased when the water table was encountered. The soil extracted from each shovel probe was sifted through a portable quarter-inch mesh screen, which increased productivity probability and made the results of artifact observation more reliable. Cultural material was separated, bagged, and labeled in the field.

Figure 4-2. Photo illustrating an example of the typical shovel test pit.

The data recorded on shovel pit deposit characteristics include the following: a field number designated during survey, UTM coordinates, altitude above sea level, a description of the soil, Munsell number, and any artifact types located (Table 4-1). Data on shovel-probe location was gathered using a handheld GPS and compass.

Pit Field #	UTM	Altitude	Description	Munsell	Depth	Artifacts
08.01.01.01	0708143 1540199	1 M	Sandy, Fine, Soft	2.5YR 2.5/2	1 M	Ceramic
08.04.01.01	0768071 1540204	2 M	Sandy, Soft, with Charcoal Inclusions	10YR 3/2	1.20 M	Ceramic, Obsidian
08.04.03.01	0768077 1540257	0 M	Sandy, Soft	2.5Y 5/3	.70 M	Ceramic
08.10.01.01	0767922 1540216	1 M	Sandy, Muddy, Soft	10 YR 3/2	1.25 M	Ceramic, Obsidian
08.10.02.01	0767922 1540239	0 M	Sandy, Muddy, Soft	10 YR 3/2	1.10 M	Ceramic, Obsidian
08.10.17.01	0767958 1540617	2 M	Sandy, Muddy, Soft	5 YR 4/6	.95 M	Ceramic
08.14.01.01	0767818 1540225	3 M	Sandy, Compact, Hard, Dry, with Charcoal Inclusions	5 YR 3/1	1.25 m	Ceramic
08.14.02.01	0767822 1540249	3 M	Sandy, Hard, Compact, Dry	5 YR 3/1	1.20 M	Ceramic
08.14.05.01	0767826 1540323	3 M	Sandy, Humid, Soft	7.5 YR 5/8	1.00 M	Ceramic
08.14.18.01	0767856 1540647	0 M	Sandy, Humid, Soft	Gley 1 5/N	.85 M	Ceramic
08.19.16.01	0767675 1540608	1 M	Sandy, Humid, Soft	10 YR 5/6	1.00 M	Ceramic
08.22.01.01	0767616 1540240	6 M	Sandy, Compact, Hard, Dry	10 YR 5/6	1.30 M	Ceramic
08.22.02.01.	0767612 1540257	2 M	Sandy, Compact, Hard, Dry	7.5 YR 3/1	1.30 M	Ceramic, Obsidian
08.26.01.01	0767510 1540248	4 M	Sandy, Compact, Hard, Dry	10 YR 3/6	1.31 M	Ceramic, Obsidian

08.26.02.01	0767520 1540267	3 M	Sandy, Compact, Hard, Dry	7.5 YR 3/2	1.30 M	Ceramic
08.26.03.01	0767520 1540295	3 M	Sandy, Humid, Soft	Gley 1 5/10Y	1.10 M	Obsidian
08.26.04.01	0767519 1540321	7 M	Sandy, Humid, Soft	Gley 1 4/10Y	1.10 M	Ceramic
08.26.05.01	0767920 1540344	9 M	Sandy, Humid, Soft	2.5 Y 4/3	1.00 M	Ceramic
08.26.12.01	0767530 1540517	4 M	Sandy, Humid, Soft	10 YR 4/4	.95 M	Ceramic
08.26.14.01	0767524 1540574	3 M	Sandy, Humid, Soft	10 YR 4/4	1.00 M	Ceramic
08.31.01.01	0767391 1540252	4 M	Sandy, Compact, Hard, Dry, with Charcoal Inclusions	2.5 Y 4/2	1.45 M	Obsidian
08.31.02.01	0767391 1540283	4 M	Sandy, Compact, Hard, Dry	2.5 Y 4/2	1.50 M	Ceramic, Obsidian
08.31.14.01	0767363 1540905	3 M	Sandy, Muddy, Soft	10YR 4/6	.95 M	Ceramic
08.35.14.01	0767257 1540914	-4 M	Sandy, Muddy, Soft	10 YR 4/4	1.05 M	Ceramic
08.35.15.01	0767258 1540935	-2 M	Sandy, Muddy, Soft	10 YR 4/4	.88 M	Ceramic
08.39.07.01	0767214 1540469	2 M	Sandy, Muddy, Soft	10 Y 4/4	1.30 M	Ceramic
08.39.14.01	0767124 1541062	5 M	Sandy, Muddy, Soft	Gley 1 3/10GY	.70 M	Ceramic, Lithic
08.43.02.01	0767093 1540291	0 M	Sandy, Hard, Compact, Dry	7.5 YR 3/1	1.45 M	Ceramic

08.43.03.01	0767101 1540334	5 M	Sandy, Hard, Compact, Dry	10 YR 3/2	1.60 M	Ceramic
08.43.19.01	0767041 1540964	1 M	Sandy, Muddy, Soft	Gley 1 4/N	.95 M	Ceramic
08.43.20.01	0767043 1540988	1 M	Sandy, Muddy, Soft	2.5 Y 4/4	.90 M	Ceramic
08.48.09.01	0766978 1540806	0 M	Sandy, Muddy, Soft	Gley 1 5/N	.85 M	Ceramic
08.48.11.01	0766903 1540853	3 M	Sandy, Muddy, Soft	10 YR 5/8	.75 M	Ceramic
08.48.15.01	0766988 1540952	1 M	Sandy, Muddy, Soft	2.5 Y 4/2	.65 M	Ceramic
08.58.03.01	0766724 1540335	3 M	Sandy, Hard, Compact, Dry	10 YR 4/3	1.50 M	Ceramic
08.64.04.01	0766582 1540365	6 M	Sandy, Hard, Compact, Dry	7.5 YR 5/4	1.20 M	Ceramic
08.75.02.01	0766294 1540329	6 M	Sandy, Hard, Compact, Dry	10 YR 5/6	1.30 M	Ceramic
08.75.03.01	0766290 1540352	6 M	Sandy, Hard, Compact, Dry	10 YR 4/4	1.30 M	Ceramic
08.75.05.01	0766307 1540402	1 M	Sandy, Hard, Compact, Dry	2.5 Y 5/2	1.25 M	Ceramic

Table 4-1. Data from shovel pits that tested positive for cultural material finds (of 393 total pits excavated).

Results and Discussion of Test Pit Sampling Investigation

Of the 393 shovel pits excavated, 351 proved negative for cultural material. These results demonstrate that there was not extensive occupation between the mounds at Chiquiuitan. From the 42 positive tests, 26 (or 62%) were located on the paleo dune located to the south of the site. In fact, of the approximately 69 shovel tests excavated on this southern rise, 38% (26 test pits) proved positive for cultural material, indicating a significant concentration of artifacts in this area of the site. Ceramic sherds found in test pits in this area demonstrate diagnostic attributes of all three phases of the Early and Middle Formative occupation of the site.

Since most of the occupation of Chiquiuitan appears to have been situated on the hill to the south of the site center or atop the constructed earthen platforms, it seems that the seasonal inundation witnessed at Chiquiuitan today probably also occurred in the past, compelling ancient inhabitants to seek (or create) high ground upon which to build their residences. However, there were 16 cultural deposits located in the low area between mounds, indicating that this space was not devoid of activity at all times throughout the site’s history. On the contrary, one find in particular, shovel pit CHI.08.39.14.01, located a midden (Figure 4-3) dating to the Middle Formative Tamarindo phase, and probably associated with nearby Mound 35. This deposit along with the other cultural materials found between the mounds suggests that this area was utilized to some extent, perhaps during the dryer parts of the year.

Figure 4-3. Photo showing test pit CHI.08.39.14.01, which located a midden perhaps associated with nearby Mound 35.

When compared to research at other Formative Mesoamerican sites, the data from Chiquiuitan provides a much clearer picture of spatial organization of site settlement than has been observed at projects where test pits on mounds offer the only available data. This study demonstrates that focusing only on mounded spaces can overlook important settlement diversity and that surface survey alone cannot be expected to reveal all of the cultural remains from ancient activities. Buried deposits often characterize Formative period archaeological sites, and should be targeted through some type of subsurface investigation to accompany excavation on the mounds, if at all possible. Another case study, from Paso de la Amada in Chiapas, Mexico, further supports this point. Important off-mound investigation has been conducted at that site and revealed important information regarding settlement and the uses of spaces there.

Paso de la Amada, an Early Formative site in the Soconusco region of Chiapas, has been the subject of investigation for several field seasons and is one of the most heavily researched sites in the Pacific coastal region. Excavations have largely focused on investigating the construction of mound platforms, but off-mound test pits and trenches were also conducted. In early research by Ceja Tenorio (1985), a test pit located south of Mound 1 uncovered the first known burial at Paso de la Amada. Another pit excavated at the eastern edge of the site only revealed natural strata. The occupational description provided for Paso de la Amada parallels the conclusions for Chiquiuitan. Ceja Tenorio (1985:37) states, “The population of the Paso de la Amada zone originally took place upon very low, sandy, dunelike elevations and at the edges of lagoons… With the passing of time these natural low elevations were gradually built up with both cultural debris and possibly material added deliberately to provide more suitable, higher, living areas.”

Further work occasionally revisited low-lying mounds or areas between mounds at Paso de la Amada. In the early 1990’s, an explicit goal of the research there involved demonstrating institutionalized hierarchical social inequality, or social ranking, and site variability was sought through excavation in different zones toward this goal (Blake et al. 1992; Blake et al. 1993; Clark et al. 1990). In the excavations away from the main mounds, researchers encountered non-elite occupation areas dating to the Early Formative, providing information crucial to evaluating social organization. Later trench excavations at the site further investigated off-mound areas and revealed small buried residences clustered on low ridges between *bajos* (John E. Clark, personal communication 2007; Lesure 1997). These residential groups may indicate corporate groups located near *bajo* resources, probably surrounding larger platforms during the Early Formative Locona phase (Clark 1994; Lesure 1997). Despite these finds, more recent studies of residential groups at Paso de la Amada have focused on architecture, activity areas, and artifact distributions by comparing only the materials from mound platforms (Blake 1991; Blake and Clark 1999; Blake et al. 2006; Clark 1991; Lesure 1999; Lesure and Blake 2002). It is argued here that important data on settlement diversity are being overlooked in these cases. Furthermore, the discovery of buried deposits at both Paso de la Amada and Chiquiuitan verifies the need for subsurface testing at sites on the Pacific coast (Blake et al. 1992:41; Morgan 2008).

Subsurface Testing and Early Coastal Settlement

Subsurface testing is an important means for gaining diachronic settlement information in areas such as the Pacific coast of Guatemala, where Formative structures are unobtrusive and alluvial deposits can quickly conceal visible evidence of occupation and activity. This specific research method has provided the means to better understand the spatial component of past life at Chiquiuitan, and reassess the extent and density of settlement at the community level. The results of this project have affirmed the assumption that ancient inhabitants of Chiquiuitan lived on top of the mound platforms and not in the low-lying areas between the mounds, supporting the proposal that the land was seasonally inundated in the past as it is today (although probably not to the same extent, as it is has been established that the climate was dryer in the past than it is today [see description of climate in Chapter Two]). Furthermore, the positive test pits that were located near the mounds but off their edges suggest that some activities were taking place between the mounds, perhaps during the dry season, especially in the case of the midden located near Mound 35.

Additionally, this research revealed an area of occupation or activity previously unknown, located on the hill south of the site. These results demonstrate previously unrecognized variability within this particular Formative period settlement, illuminating an important component of the ancient community. The identification of cultural material concentrated on the high area south of the site core could indicate occupation, special activity areas, or the accumulation of debris. At this point, the discovery of obsidian tool fragments and ceramics in the same deposits in 5 of the 26 positive shovel tests in this space and the higher elevation of the area would better support a scenario of occupation on desirable high ground in which many domestic practices took place, rather than an activity area specializing in a particular resource use or the unlikely accumulation of such a high density of debris. However, no architectural remains were located, and future work is needed to answer questions regarding the nature of the use of space in this section of the site. While further research will clarify how these spaces were used, the multiple activity areas (on mounds and atop this higher area) indicate variability in social spaces. If the areas atop the sandy dune do prove to be residences, as expected, it would suggest that positioning of residence was a significant distinguishing aspect of identity between social groups within the community. This would advance an interesting question on the differences between the social roles of mound inhabitants as opposed to those that lived on the natural rise without mounded platforms.

In general, the new data gained from the test pit sampling program has indeed presented a better picture of occupation and use of space at Chiquiuitan. It is clear that elevated living surfaces were the desirable locations for ancient houses. This knowledge supports the hypothesis that mound building first occurred at Chiquiuitan as an adaptation for working and living in a swampy environment, in which platforms would provide higher and drier ground for work spaces and homes in addition to the natural hill to the south of the site. Furthermore, should these areas prove to be non-platformed residences, their investigation and comparison to residential units located on the mounds would provide an important opportunity for studying household variation and social organization at the site. This potential has been demonstrated previously at Paso de la Amada and probably exists at many coastal sites, if only investigators would apply subsurface testing techniques toward answering these questions.

Lastly, the data provided through the subsurface testing program supports the model for settlement of the community of Chiquiuitan presented in this dissertation. It seems clear that the Huiscoyol phase foundation and occupation of the site (most likely as a temporary resource exploitation locale) required a slight modification of the landscape and some amount of labor to construct platforms. These constructions were necessary, cooperative, habitual practices of community inhabitants at early Chiquiuitan, as they made temporary habitation out of natural spaces. They were part of the structure of society and were completed as a regular practice at this site by social agents that reproduced this norm throughout the Huiscoyol phase. What happened after this initial use involved interactions between people and a landscape that had a long history, probably one in which people had come to think of the slight platforms at Chiquiuitan as special places, beginning with initial sedentism when the area was converted into a socio-natural place. The Cangrejo and Tamarindo building events with larger additions to the mounds were then built atop long-used platformed areas as intentional symbolic statements of social endurance, converting the landscape once again, this time into a primarily cultural landscape. Thus, the results of investigations into the hidden settlement domain support the interpretation provided in this dissertation for initial mound building and provide critical information regarding the uses of spaces at the site with which to test this model.

CHAPTER V

MOUND EXCAVATIONS

The site of Chiquiuitan is composed of 22 broad and flat earthen mounds varying in size between 50-150m in diameter and 1-4m in height. The site layout comprises a center of 20 mounds arranged in an irregular fashion in this relatively flat area of the coastal plain, including Mound 13, located slightly to the west, and two other mounds slightly removed to the east (Figure 5-1). The northern and western boundaries of the site are created by an artificial road and canals that delineate the southern extent of a man-made irrigation system that may have destroyed additional mounds of the site. The layout of the site appears not to display any organized or planned design, although this cannot be demonstrated with certainty due to the possibility that additional mounds once existed to the north.

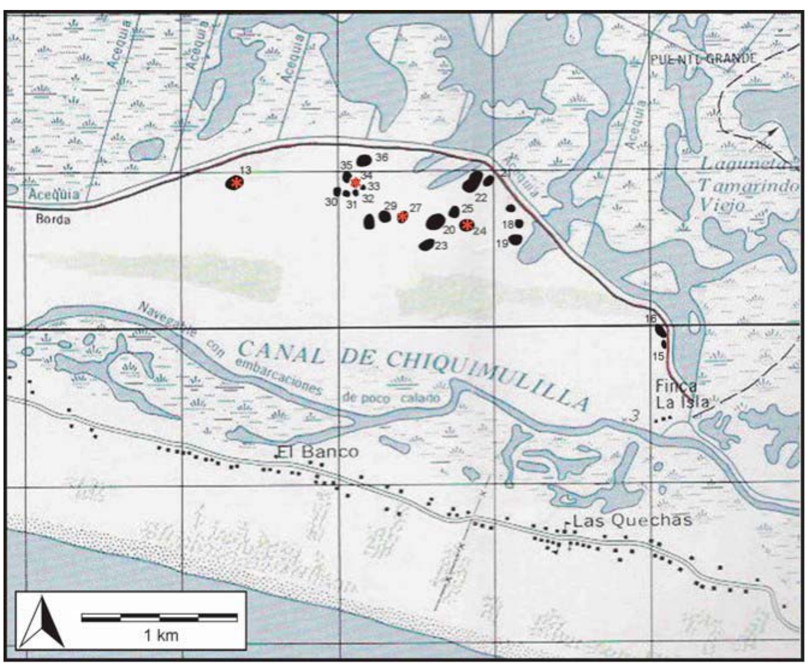

Figure 5-1. Map of Chiquiuitan and surrounding area with numbered mounds and red stars indicating the locations of PACHI excavations.

Excavations were conducted in the mounds at Chiquiuitan to investigate mound formation and function and to gather data regarding domestic practice. Excavations sought evidence for architecture, household ritual, food preparation, tool production and maintenance, and other residential activities. Test pit units of 1 x 2m or 2 x 2m were placed in four mounds at Chiquiuitan, 24, 27, 34, and 13 (see Figure 5-1). Horizontal expansions were made to follow architectural features in Mounds 34 and 13. This chapter summarizes the methods and results of these investigations.

Excavation Methodology

According to Estrada Belli (1999), the earliest mounds at Chiquiuitan include five Huiscoyol phase (1450-1250 B.C.) platforms: Mounds 13, 24, 27, 34, and 36. PACHI investigations targeted four of these mounds to better understand the Early Formative period within this community (Figure 5-1). Excavators worked in natural levels in nearly all excavations, with the exception of Operation 4 at Mound 24, where natural stratigraphy was disturbed through faunalturbation and excavators dug in arbitrary levels of 10cm. All dirt was sifted through 6mm mesh screens.

All materials and activities were recorded using a site key for organization that included the initials of the site, the number of the operation, the suboperation, and the lot or context (e.g. CHI 04-01-03). Operations were numbered beginning with Operation 4, in order to avoid confusion with the three test pits that were excavated by Estrada Belli (1998).

Dirt floor layers were treated with special care in cases in which they were securely identified and in a state of preservation that would allow for horizontal exposure. Floors were drawn and photographed in order to record all features visible on the surface. Then, floor areas were divided into 0.5 x 0.5m sections and 2-3cm of dirt was removed from the surfaces. The soil removed from these floors underwent flotation for organic remains and sifting through fine

(2mm) mesh screens. This extra attention allowed researchers to gather very small obsidian microdebitage, fish vertebrae, and other debris to be used for interpreting household activities (Figure 5-2).

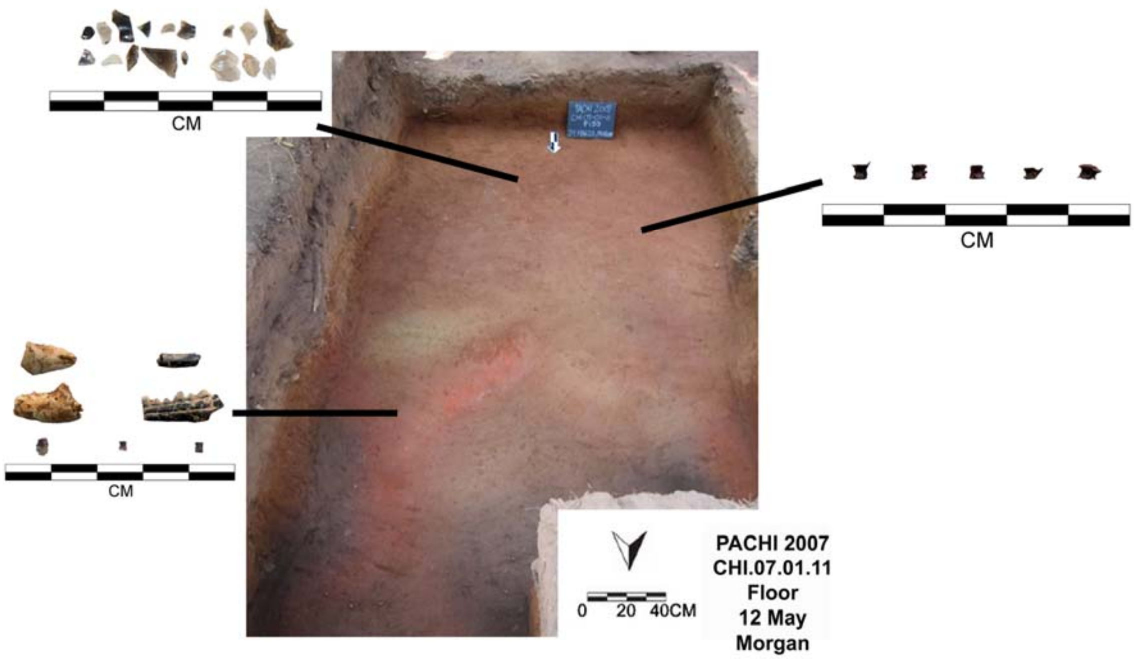

Figure 5-2. Photo of one of the residential dirt floors, with images showing small remains such as obsidian microdebitage (upper left), fragments of crab claws (lower left), and fish vertebrae (right) recovered through fine-mesh wet screening.

Field work collected several classes of archaeological materials including ceramics, lithics, marine shell, faunal remains, human remains, and carbon samples. These materials were collected in labeled plastic bags or aluminum foil (in the case of human remains and carbon), and either exported for analyses or stored in plastic bins at the Instituto de Antropología e Historía curation facilities (the Ceramoteca and Salon Tres) in Guatemala City.

Field notes were taken in write-in-the-rain notebooks and then organized on forms for each operation, suboperation, and context. Inventories were kept of photographs, features, burials, and bags of artifacts and samples. In addition to documentation in field notes, digital photographs were taken of each excavation and feature, as well as drawings in plan and profile. Locations of the northwest corner of each excavation unit were documented using a handheld GPS and tied into the wider topographic maps of each mound.

At the end of each field season, excavation units were backfilled using compact soil previously excavated from the units. These closed excavations were documented in photographs and approved by the Departamento de Monumentos Prehispanicos y Coloniales de Guatemala.

Operation 4: Excavations in Mound 24

Judith Valle supervised the excavation of a 2 x 2m test pit at Mound 24 in April, 2006 (Morgan and Valle 2006). This mound measures 55m north-south and 95m east-west, is shaped roughly ovoid, and has a height of 4m (Figure 5-3).

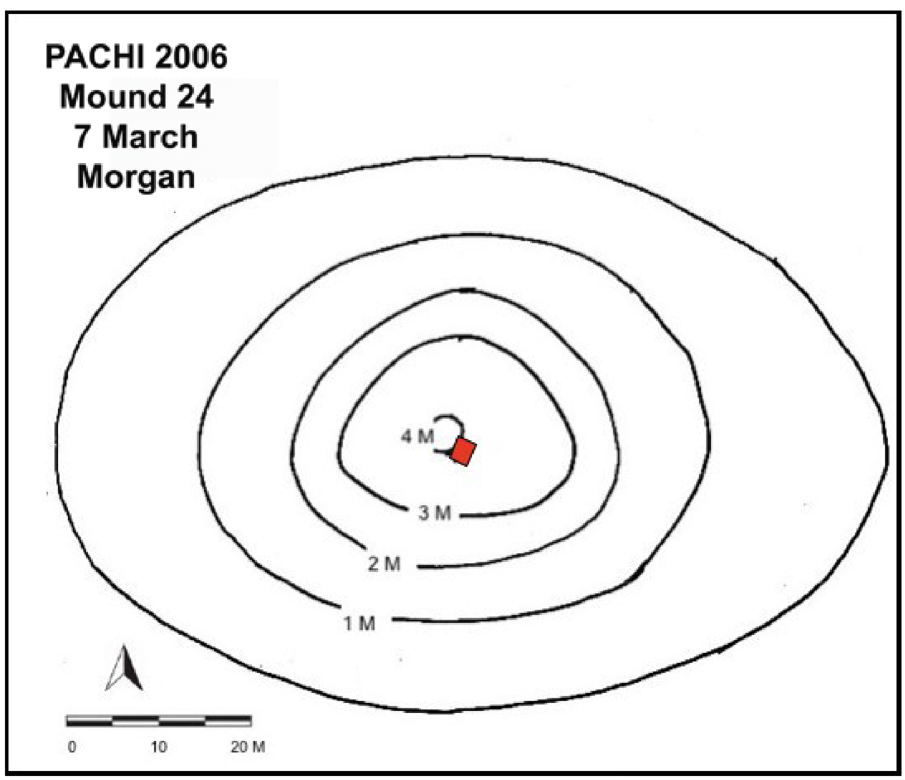

Figure 5-3. Topographic drawing of Mound 24 at Chiquiuitan showing a height of 4m and the location of Operation 4 test pit in the red square.

Table 5-1. Descriptions of contexts excavated in Operation 4 at Mound 24.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI 04-01-01	Soft, brown, sandy	0.028	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-02	Soft, light brown, sandy	0.068	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-03	Soft, light brown, sandy	0.03	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-03a	Soft, light brown, sandy	0.03	Tamarindo
Disturbed Mound Fill	CHI 04-01-04	Soft, reddish brown, sandy	0.03	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-05	Soft, light brown, sandy	0.03	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-06	Soft, light brown, sandy	0.03	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-07	Mixed, soft, brown	0.03	Tamarindo (Mixed)
Disturbed Mound Fill	CHI 04-01-08	Mixed, soft, brown	0.03	Tamarindo
Disturbed Mound Fill	CHI 04-01-09	Mixed, soft, brown	0.03	Tamarindo
Disturbed Mound Fill	CHI 04-01-10	Mixed, soft, humid	0.03	Late Cangrejo
Disturbed Mound Fill	CHI 04-01-11	Mixed, soft, reddish brown	0.03	Late Cangrejo
Disturbed Mound Fill	CHI 04-01-12	Mixed, soft, reddish brown	0.03	Late Cangrejo
Disturbed Mound Fill	CHI 04-01-13	Mixed, soft, reddish brown	0.03	Late Cangrejo
Disturbed Mound Fill	CHI 04-01-14	Mixed, soft, reddish brown	0.03	Late Cangrejo
Disturbed Mound Fill	CHI 04-01-15	Mixed, soft, reddish brown	0.03	No diagnostics
Disturbed Mound Fill	CHI 04-01-16	Mixed, dark brown, slightly compact	0.03	No diagnostics
Disturbed Mound Fill	CHI 04-01-17	Mixto, café obscuro, duro	0.03	Early Cangrejo
Disturbed Mound Fill	CHI 04-01-18	Mixed, dark brown, hard	0.03	Early Cangrejo
Disturbed Mound Fill	CHI 04-01-19	Mixed, dark brown, hard	0.03	Early Cangrejo
Disturbed Mound Fill	CHI 04-01-20	Mixed, dark brown, hard	0.03	Huiscoyol
Sterile	CHI 04-01-21	Hard, yellowish brown, sandy	0.03	No sherds

It was not possible to excavate this test pit in cultural levels due to a significant disturbance caused by iguana burrowing. For this reason, arbitrary levels of 10cm were followed. In total, 21 levels were excavated until sterile soil was encountered (Figure 5-4). After the first two levels, the unit was reduced to 2 x 1.5m to expedite investigations.

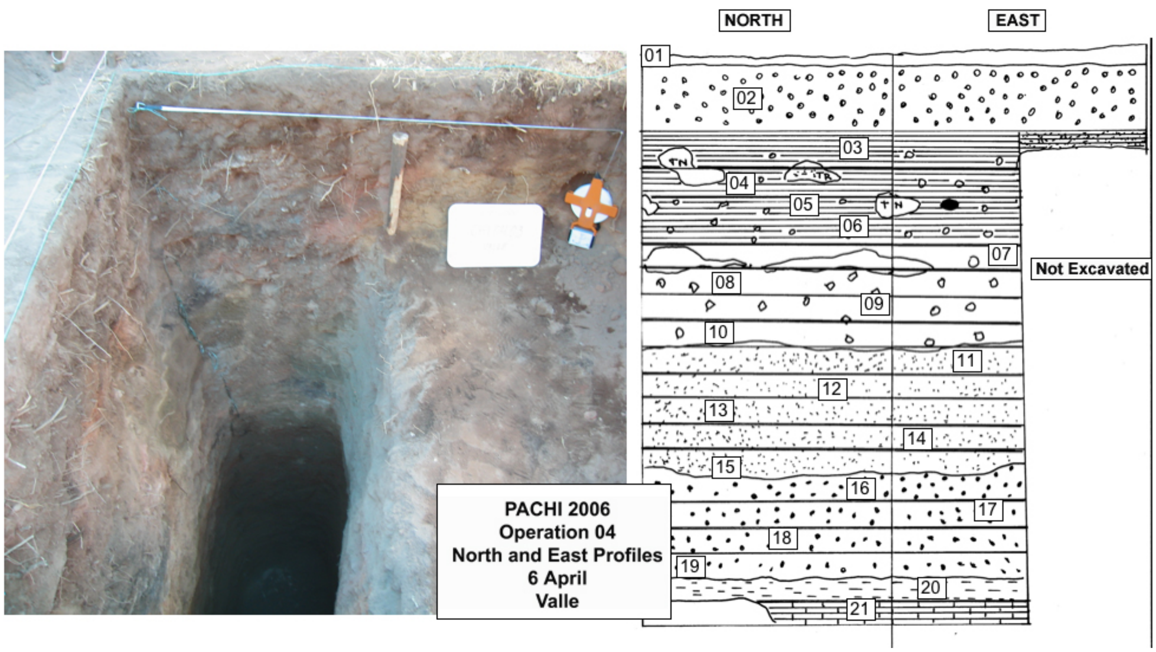

Figure 5-4. Photo (left) and drawing (right) of the profile of the excavation unit in Operation 4. Arbitrary levels are numbered in the drawing, indicating context assignments.

The identification of intact cultural strata was not permitted since the soil excavated from Mound 24 was disturbed through faunalturbation (Table 5-1). While the color of the soil occasionally changed throughout the excavation of arbitrary levels, inclusions and textures were fairly uniform, commonly described as soft, fine, sandy soil with inclusions of hardened clay, gray sand, and white particles. Three radiocarbon assays were performed on material from this excavation. First, a radiocarbon date of 996-906 B. C. (calibrated, 1-sigma; see Appendix A) came from the charred organic remains found in disturbed fill layer CHI 04-01-09. From charred materials collected in lower levels, CHI 04-01-17 provided a date of 1314-1192 B.C. (calibrated, 1-sigma; see Appendix A) and CHI 04-01-19 dated to 1215-1056 B.C. (calibrated, 1-sigma; see Appendix A). The slight inversion of these last two dates may be the result of overlapping standard deviations, or may further indicate a mixing of materials through disturbance.

Operation 5: Excavations at Mound 27

Operation 5 included a 1 x 2m test excavation at the center of Mound 27, supervised by Molly Morgan in April of 2006 (Morgan and Valle 2006). This mound measures is oval in shape and measures 45m north-south and 55m east-west, with a height of 1m (Figure 5-5).

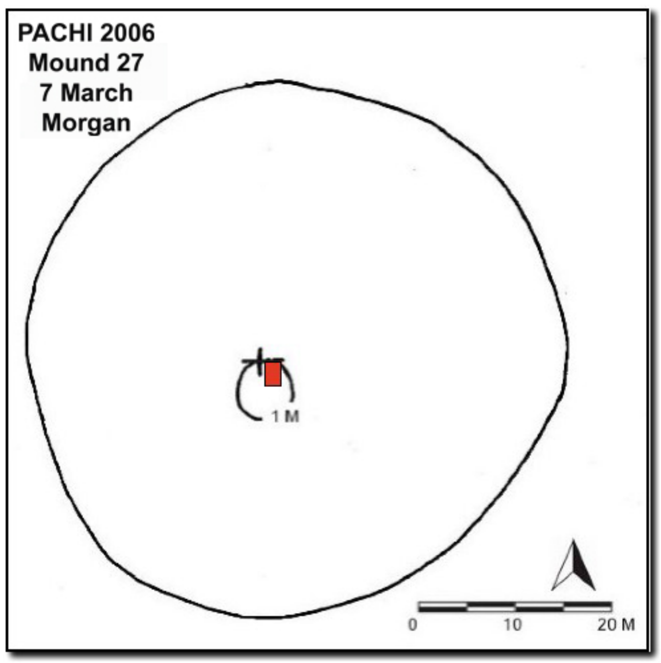

Figure 5-5. Topographic drawing of Mound 27 at Chiquiuitan showing a height of 1m and the location of Operation 5 test pit in the red square.

Excavations at Mound 27 revealed 21 stratigraphic levels (Figures 5-6 and 5-7). Four phases of construction can be detected in these layers, including several additions to the height of the platform as well as domestic features such as dirt platform floors, architectural features, and hearths. Materials recovered from this excavation include shell, faunal remains (including the skeleton of a small fish encrusted on the surface of a ceramic sherd), carbon samples, ceramic sherds, and fragments of obsidian artifacts.

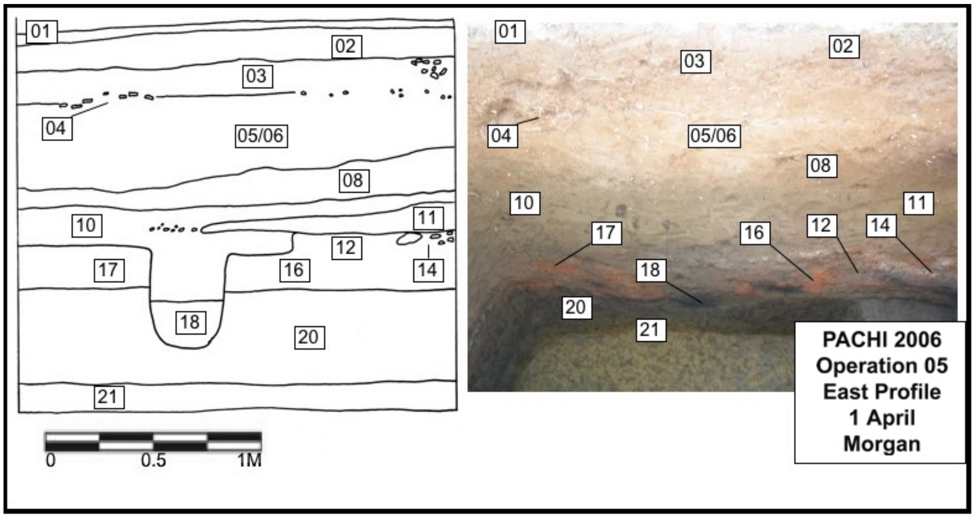

Figure 5-6. Photo (right) and drawing (left) of the east profile of the excavation unit in Operation 5. Context numbers are seen in boxes, illustrating the cultural strata encountered.

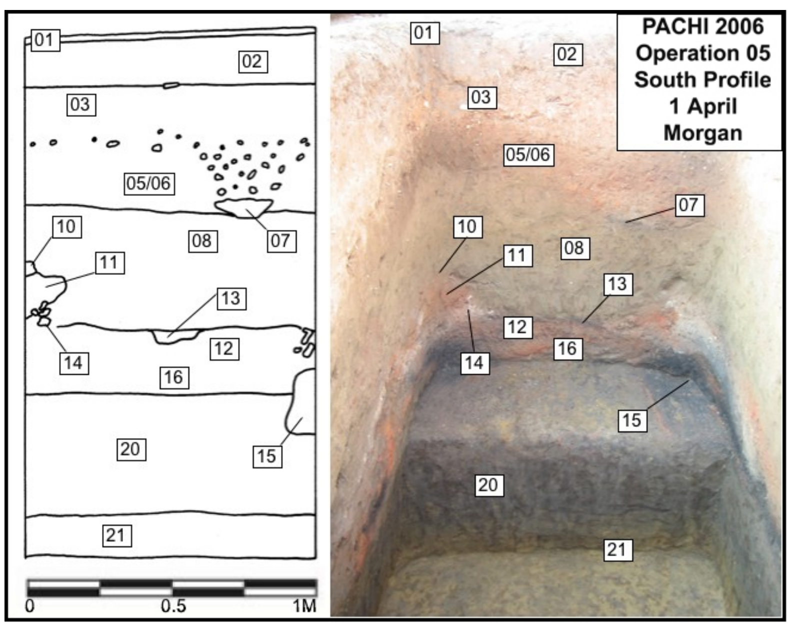

Figure 5-7. Photo (right) and drawing (left) of the south profile of the excavation unit in Operation 5. Context numbers are seen in boxes, illustrating the cultural strata encountered.

In the first phase of construction, the platform surface was raised 40cm above the surrounding soil. This is seen in the piling of context CHI 05-01-20 atop the sterile soil uncovered in CHI 05-01-21. This fill context CHI 05-01-20 was penetrated from above by a cut for a small storage pit that was filled with burned materials and labeled CHI 05-01-19 (Figure 5-8). A radiocarbon date of 1405-1305 B. C. (calibrated, 1-sigma; see Appendix A) came from the charred organic remains found in this feature.

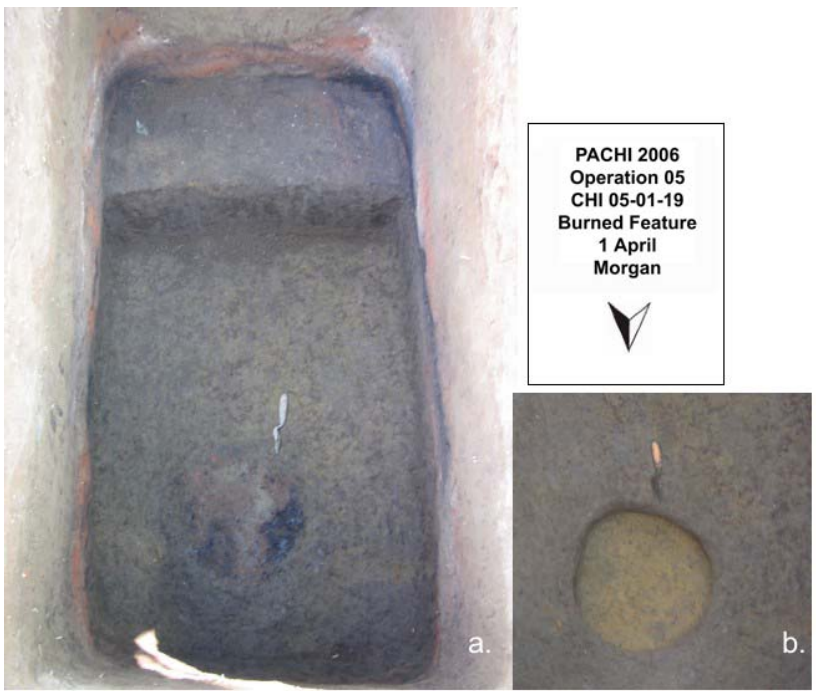

Figure 5-8. Photos of feature CHI 05-01-19. Photo a. shows the burned materials filling the cut and b. illustrates the empty cut that intruded into the yellowish context below.

Architectural features seen above this level suggest the edge of a raised platform running east-west (CHI 05-01-16), abutting the edge of a previous step or platform that had been burned (CHI 05-01-15). The platform CHI 05-01-16 revealed several features on its surface (Figure 5-9).

First, a hearth or other type of burned feature is seen in CHI 05-01-13. It was also suggested at one time that this feature could have been a post hole, due to its size and shape and the way that it intruded into the layer CHI 05-01-16 below. Second, a small patch of hard white material (CHI 05-01-14) was identified on the surface of CHI 05-01-16. Third, a red clay floor surface was found to the south of the raised portion of CHI 05-01-16, and was labeled CHI 05-01-12, with another burned feature, probably a hearth, seen in CHI 05-01-18.

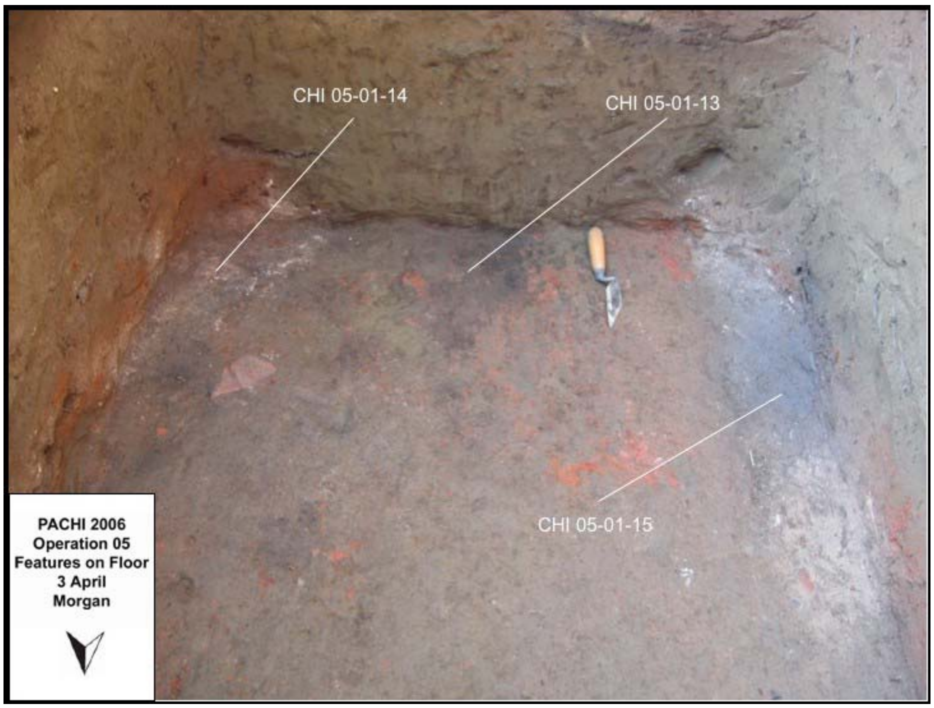

Figure 5-9. Photo illustrating features CHI 05-01-13, CHI 05-01-14, and CHI 05-01-15 located on the surface of platform feature CHI 05-01-16.

These features were covered by a subsequent construction phase, which included fill layers CHI 05-01-17, CHI 05-01-11, and CHI 05-01-10. This addition raised the surface of the mound by 20cm. While the living surface of this mound phase could not be detected in a distinct floor layer, the change in soil strata and presence of sherds lying horizontally (CHI 05-01-09; Figure 5-10) indicate the difference between these layers. A radiocarbon date of 996-904 B. C.

(calibrated, 1-sigma; see Appendix A) came from the charred organic remains found in this feature. No other features were associated with this phase of construction.

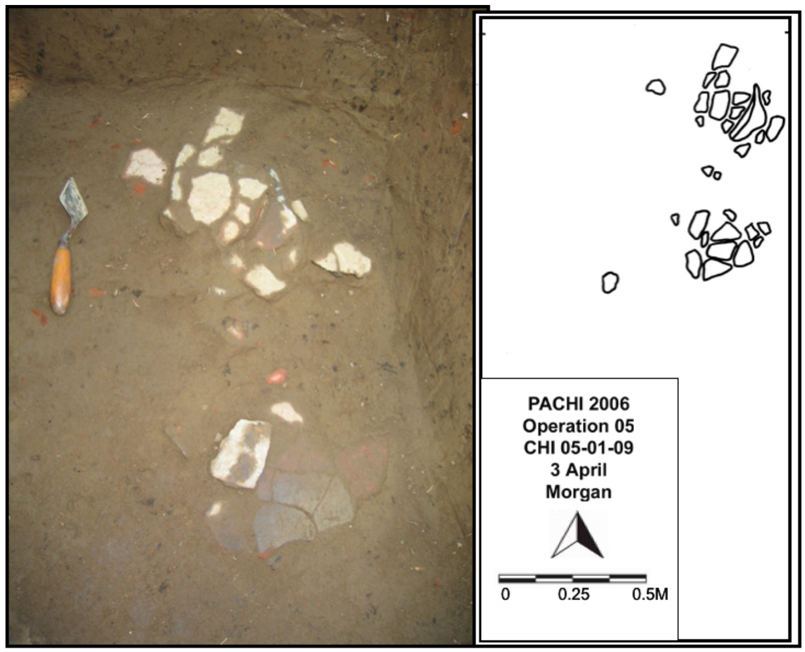

Figure 5-10. Photo illustrating feature CHI 05-01-09, a feature comprised of sherds lying horizontally on the surface of layer CHI 05-01-10.

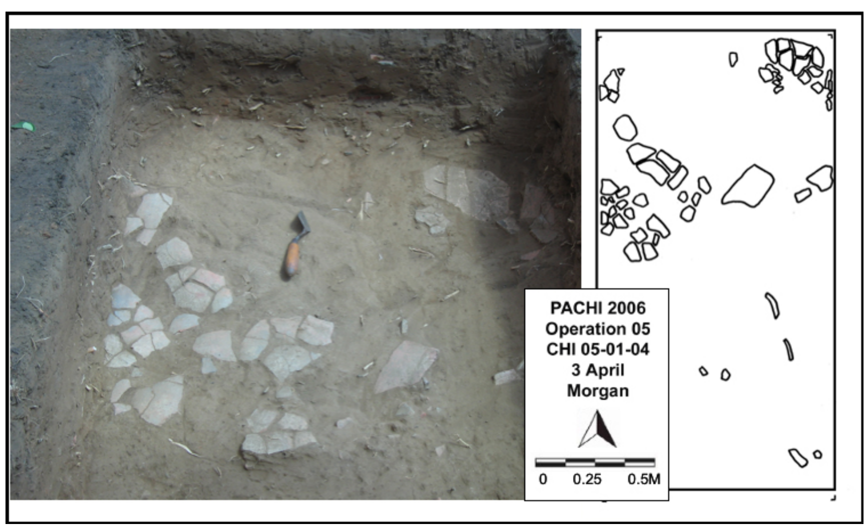

Figure 5-11. Photo illustrating sherds found lying horizontally on the surface of floor layer CHI 05-01-04.

In the third phase of construction, the surface of the mound was raised again, by fill layers CHI 05-01-08 and CHI 05-01-06, to a level nearly 50cm higher. A dirt floor, CHI 05-01-04, forms the surface of the platform during this phase. Sherds resting horizontally are also seen at the level of this floor (Figure 5-11). One other feature is associated with this floor, a burned feature, probably a hearth, seen in CHI 05-01-07 (Figure 5-12). A radiocarbon date of 1090-922 B. C. (calibrated, 1-sigma; see Appendix A) came from the charred organic remains found in this feature. The three dates obtained from materials in this excavation unit were well stratified and demonstrate an intact chronological sequence.

Figure 5-12. Photo illustrating feature CHI 05-01-07, a possible hearth associated with floor layer CHI 05-01-04.

The fourth construction phase raised the mound surface another 50cm, as viewed today. Above floor CHI 05-01-04, a fill layer is seen in CHI 05-01-03. It is possible that another dirt floor layer covers CHI 05-01-03, separating it from layer CHI 05-01-02, but this could not be determined in this small excavation. CHI 05-01-02 is another layer of fill, covered by humic layer CHI 05-01-01.

Table 5-2. Descriptions of contexts excavated in Operation 5 at Mound 27.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI 05-01-01	Sandy, fine, black	0.14	No diagnostics
Fill	CHI 05-01-02	Sandy, compact, dark brown	0.18	Tamarindo
Fill	CHI 05-01-03	Sandy, compact, dark brown	0.42	Tamarindo
Floor	CHI 05-01-04	Sandy, dark grayish brown	0.06	No diagnostics
Fill	CHI 05-01-05	Sandy, grayish brown	0.35	Tamarindo
Fill	CHI 05-01-06	Sandy, fine, reddish brown	0.16	Tamarindo
Hearth	CHI 05-01-07	Sandy, fine, black	0.002	No diagnostics
Fill	CHI 05-01-08	Sandy, fine, slightly clayey, yellowish brown	0.3	Tamarindo (Mixed)
Floor	CHI 05-01-09	Sandy, compact	0.04	Tamarindo
Fill	CHI 05-01-10	Sandly, slightly clayey, dark brown	0.3	Tamarindo
Fill	CHI 05-01-11	Mixed, reddish brown	0.4	Tamarindo
Floor	CHI 05-01-12	Sandy, slightly clayey, and reddish	0.3	Tamarindo
Burned Feature	CHI 05-01-13	Sandy, fine, reddish	0.003	No diagnostics
Unknown feature	CHI 05-01-14	Sandy, compact, brown	0.0015	No diagnostics
Architectural Feature	CHI 05-01-15	Sandy, compact, reddish, black, and brown	0.028	Tamarindo (Mixed)
Architectural Feature	CHI 05-01-16	Sandy, compact, dark grayish brown	0.063	Tamarindo
Fill	CHI 05-01-17	Sandy, slightly clayey, dark reddish brown	0.13	Tamarindo
Hearth	CHI 05-01-18	Sandy, fine, black	0.0575	No sherds
Fill for Storage Pit	CHI 05-01-19	Sandy, fine, dark reddish brown and black	0.028	Huiscoyol
Fill	CHI 05-01-20	Sandy, slightly clayey, compact, dark greenish brown	0.7	Huiscoyol
Sterile Soil	CHI 05-01-21	Compact yellowish brown sand		No sherds

Sherds from Mound 27 came primarily from the Tamarindo phase, although two lower levels, CHI 05-01-19 and CHI 05-01-20 were dated, through radiocarbon and ceramic identification, to the Early Formative Huiscoyol phase (Table 5-2). Thus it seems that the primary construction of a low mound at this location occurred in the Huiscoyol phase, with significant additional constructions occurring later, in the Middle Formative.

Operation 6: Excavations at Mound 34

The test pit excavation in Mound 34 was supervised by Antolín Velásquez López in March, 2007 (Velásquez López 2007a). This mound is circular in shape and measures 45m north-south and 40m east-west, standing slightly higher than 1m (Figure 5-13).

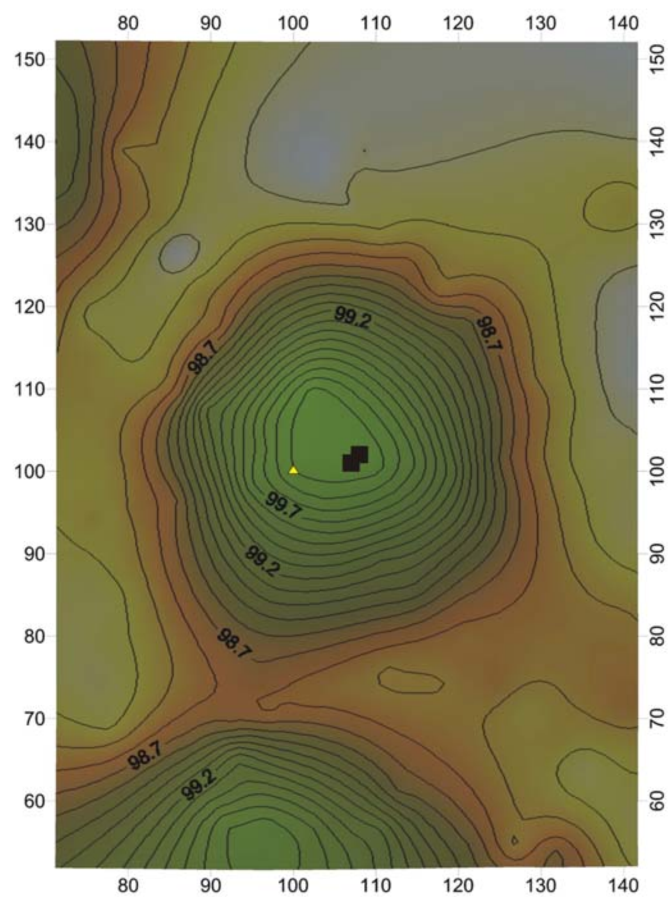

Figure 5-13. Topographic map of Mound 34, showing the locations of excavation units in Operations 6.1 and 6.2. Map by Jon C. Lohse, PACHI, 2007.

The excavation unit began as a 2 x 2m test pit in Suboperation 1, with an extension of 2 x 2m off of the southwest corner of the original excavation area in Suboperation 2. The excavation area was placed at the highest point of the mound surface. Nine stratigraphic levels were excavated (Figure 5-14). These layers include floors and fills, as well as other activity areas demonstrated by the presence of hearths and a round feature. These layers demonstrate sequential occupations of this mound. Materials collected from these excavations include ceramic sherds, obsidian, groundstone, shell, fauna, and carbon samples.

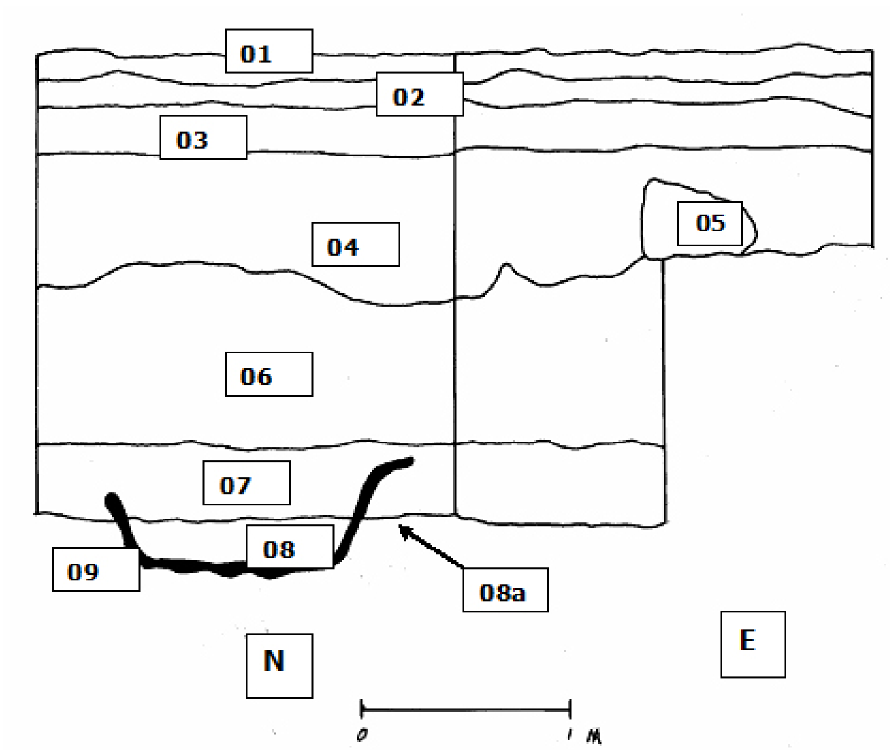

Figure 5-14. Drawing of the north profile of Suboperation 6-2 in which stratigraphic layers and round feature CHI 06-02-08a are visible. Drawing from Velásquez López 2007a.

Mound 34 demonstrates a series of occupations of which the earliest was not excavated in an attempt to conserve domestic architectural features for future investigations. For this reason, this section is organized in order of recovered strata, rather than in the order in which they were laid down.

The top two layers, CHI 06-01-01 and CHI 06-02-01 were humic layers mixed with eroded mound fill. The first evidence of architectural features on the mound was identified in contexts CHI 06-01-03 and CHI 06-02-03, a dirt floor of the platform. The fill for this platform construction comprises CHI 06-01-04 and CHI 06-02-04. One feature that was found in both suboperations, labeled CHI 06-01-05 and CHI 06-02-05, and appears to be a rich organic layer with frequent marine shell inclusions. This level could be a patch of rubbish within the fill for the platform or a midden at the edge of a living area atop the mound at this time. A radiocarbon date from charred organic remains in this context provided a date of 1058-976 B. C. (calibrated, 1-sigma; see Appendix A).

The construction phase previous to the uppermost layer is seen in the level of floor CHI 06-01-06 and CHI 06-02-06. This floor contains several features, including a burned orange surface in an oval shape, which extended into the west sidewall of the unit (Figure 5-15).

Figure 5-15. Photo of floor feature CHI 06-01-06a.

Another feature associated with floor CHI 06-01-06 is a hearth (CHI 06-01-06b), with a small midden at its side (CHI 06-01-06c). These features suggest that this floor supported domestic activities in which people created fires, probably for cooking, at this space on the mound and deposited fragments of unusable tools and the remains of organic materials nearby. One other midden was also located slightly to the northeast, labeled CHI 06-02-06b (Figure 5-16).

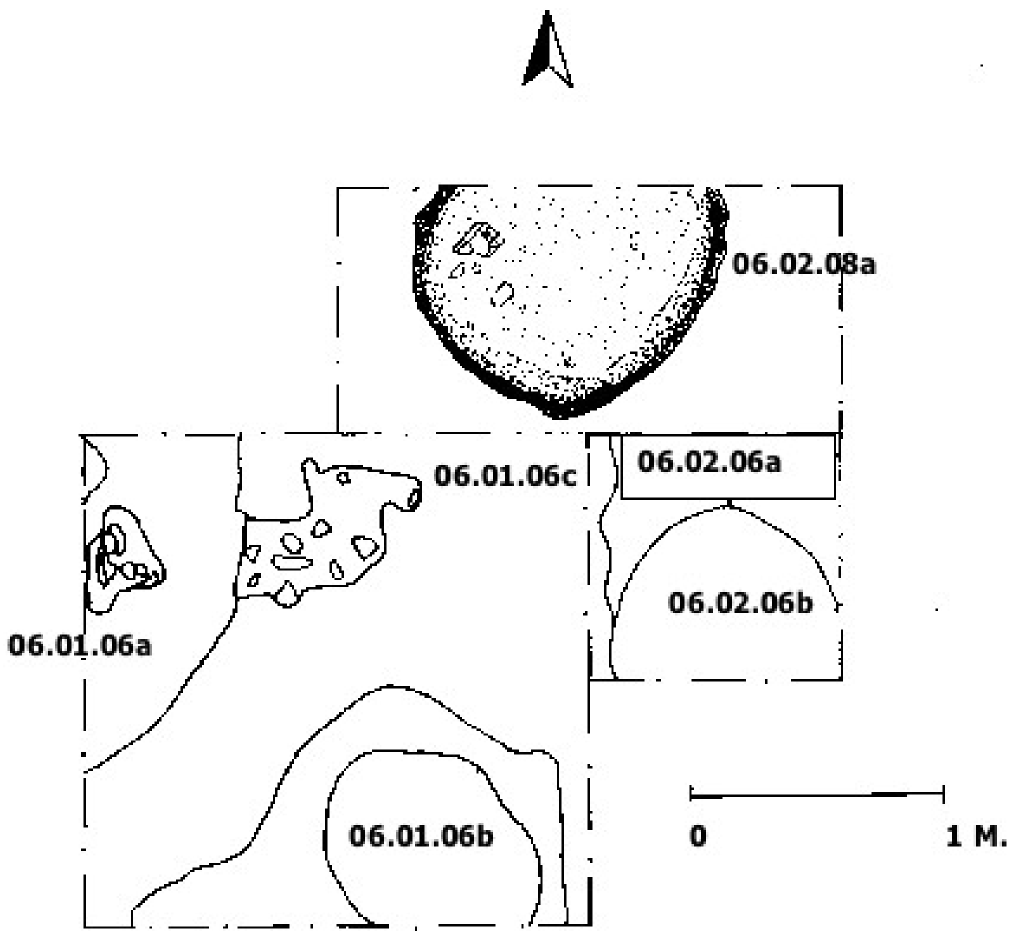

Figure 5-16. Plan drawing of the features associated with floor layers CHI 06-01-06 and CHI 06-02-06. The locations of hearths and middens discussed in the text are shown here. Drawing from Velásquez López 2007a.

Suboperation 6-2 was excavated to the northeast of the original excavation unit in order to continue investigating this area, without destroying the floor features found there. It was hoped that this area rich in information regarding domestic practice could be returned to for more intensive excavations, but this was not possible in the 2007 season.

Suboperation 6-2 did excavate below the floor layer CHI 06-02-06 to find a dark and sandy fill layer CHI 06-01-07, covering a remarkable circular feature, CHI 06-02-08a (Figure 5-17). This feature appears to be some sort of short container with open walls. It is made of a mix of gray dirt and sand with small inclusions of carbon. From within this basin, a layer of light colored earth and fine sand was removed. The feature had ceramic sherds stuck to its interior surfaces. It is not certain what this feature was used for, although at one time researchers considered its use for holding water, perhaps in some sort of ritual. It is now thought that the sandy nature of the basin walls probably could not have held water for an extended length of time, and that perhaps it was used for soaking or leaching plants. It resembles burned features located in the above floor CHI 06-01-06 level. Similar circular features were uncovered by Estrada Belli (personal communication, 2007) at Chiquiuitan, as well as at El Carmen, El Salvador by Barbara Arroyo (personal communication, 2007).

Figure 5-17. Photo showing circular feature CHI 06-02-08a and surrounding contexts.

Upon the discovery of this last feature, it was decided to halt excavations at this operation. This part of Mound 34 was obviously heavily used for domestic activities and should be investigated intensively in the future. However, in the 2007 PACHI season, the number of construction phases within the mound and extent of chronological occupation were not fully determined in order to preserve these features. From what was excavated, it appears that a significant addition raised the mound's surface about 75cm in the Late Cangrejo phase, as seen in the fill strata supporting floor CHI 06-01-06 and CHI 06-02-06. At least two activity areas were uncovered on that floor as well as the previous floor seen in CHI 06-02-07, exhibiting middens, floors, hearths, and basin-like features that demonstrate domestic practices dating to the Late Cangrejo phase (Table 5-3). A subsequent fill layer raised the surface of Mound 34 another 65cm as seen in fill CHI 06-01-04 and CHI 06-02-04, which supports floor CHI 06-01-03/CHI 06-02-03, also dating to the Late Cangrejo. Finally, it appears that the Tamarindo phase witnessed another addition to the height of the mound, adding about 12cm, but this layer may have been disturbed by modern ranching activities.

Table 5-3. Descriptions of contexts excavated in Operation 6 at Mound 34.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.06.01.01	Fine, loose, dark brown, sandy	0.32	Tamarindo
Erosion	CHI.06.01.02	Fine, loose, light brown, sandy	0.48	Tamarindo
Floor	CHI.06.01.03	Fine, slightly compact, dark reddish, sandy	0.8	Late Cangrejo
Fill	CHI.06.01.04	Fine, dark gray, soft, sandy	1.44	Late Cangrejo
Fill	CHI.06.01.05	Fine, soft, with inclusions of black burned earth, sandy	0.72	Late Cangrejo
Floor	CHI.06.01.06	Fine, hard, compact, light brown, sandy		No sherds
Floor	CHI.06.01.06a	Hard, compact, orange burned earth		No sherds
Hearth	CHI.06.01.06b	Sandy, black		No sherds
Midden	CHI.06.01.06c	Fine, soft, sandy, black		No sherds
Floor	CHI.06.01.06d	Hard, compact, sandy, brown		No sherds
Humus	CHI.06.02.01	Fine, soft, loose, dark brown, sandy	0.4	Tamarindo
Erosion	CHI.06.02.02	Fine, soft, light brown, sandy	0.4	Tamarindo
Floor	CHI.06.02.03	Fine, slightly compact, dark reddish, sandy	0.8	Tamarindo
Fill	CHI.06.02.04	Fine, soft, dark gray, sandy	2.8	Tamarindo
Fill	CHI.06.02.05	Fine, sandy, with inclusions of burned black earth	0.06	Tamarindo
Floor	CHI.06.02.06	Hard, compact, brown, sandy	2.96	Late Cangrejo

Floor	CHI.06.02.06a	Hard, compact, brown, sandy		Late Cangrejo
Hearth	CHI.06.02.06b	Dark gray dirt with black inclusions		Late Cangrejo
Floor	CHI.06.02.07	Fine, soft, brown, sandy	1.2	No sherds
Fill for Circular Feature	CHI.06.02.08	Fine, sandy, brown, with black carbon inclusions	0.1944	No sherds
Circular Feature	CHI.06.02.08a	Mix of sand and dirt, light gray, in the form of a shallow circular basin	0.0432	No sherds
Fill	CHI.06.02.09	Fine, soft, brown, sandy		No sherds

Operation 7: Excavations at Mound 13

Excavations at Mound 13 were supervised by Molly Morgan in March and April of 2007 (Morgan 2007a). Mound 13 is located at the western edge of Chiquiuitan (see Figure 5-1). The mound measures approximately 95m east-west, 85m north-south, and is 3m at the highest point. It is almost rectangular in shape. Excavation units were placed in various location across the surface of the mound (Figure 5-18), with the objective to study cultural and stratigraphic layers across several areas of the residential space. Five suboperations organized these excavations with units of different sizes and extents. Each of these suboperations is discussed in detail in this section.

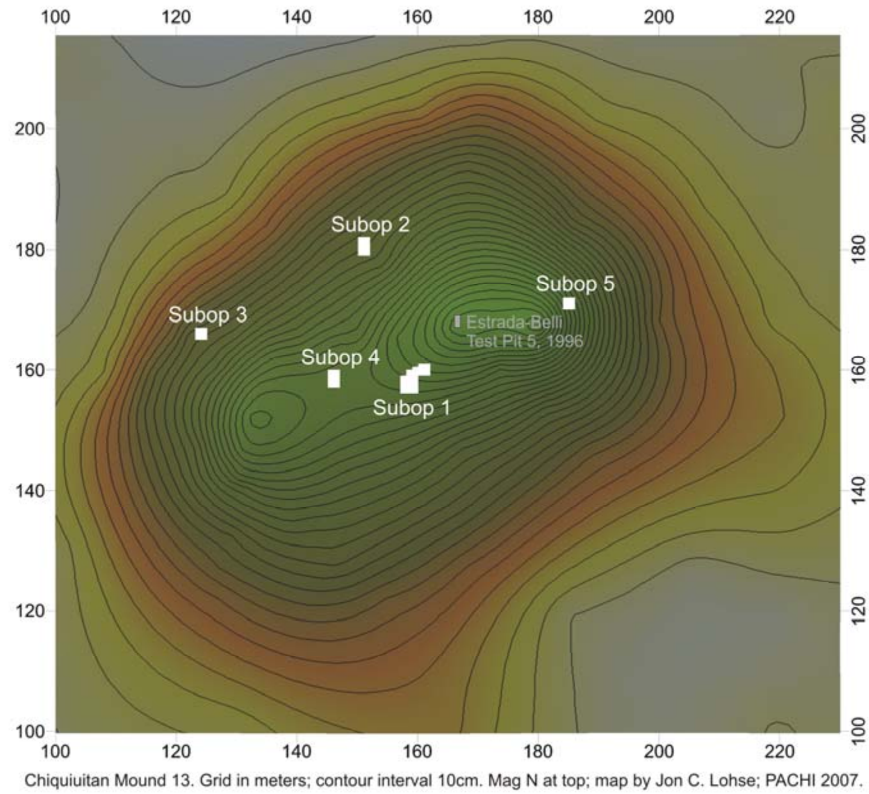

Figure 5-18. Topographic map of Mound 13 showing the locations of the five suboperations excavated in Operation 7. Map by Jon C. Lohse, PACHI 2008.

Suboperation 7-1

Suboperation 7-1 was located near the center of the mound, and revealed significant architectural features and cultural strata. The original excavation unit was 2 x 2m, but five additional extensions of this unit were made to follow architectural features. In total, the unit measured 8 x 7.5m (Figure 5-19). Early cultural strata located below the bottom layers of this excavation were not investigated because the water table was reached and auguring or other means of removing the water for continued excavations was not permitted within the time constraints of the PACHI 2007 season.

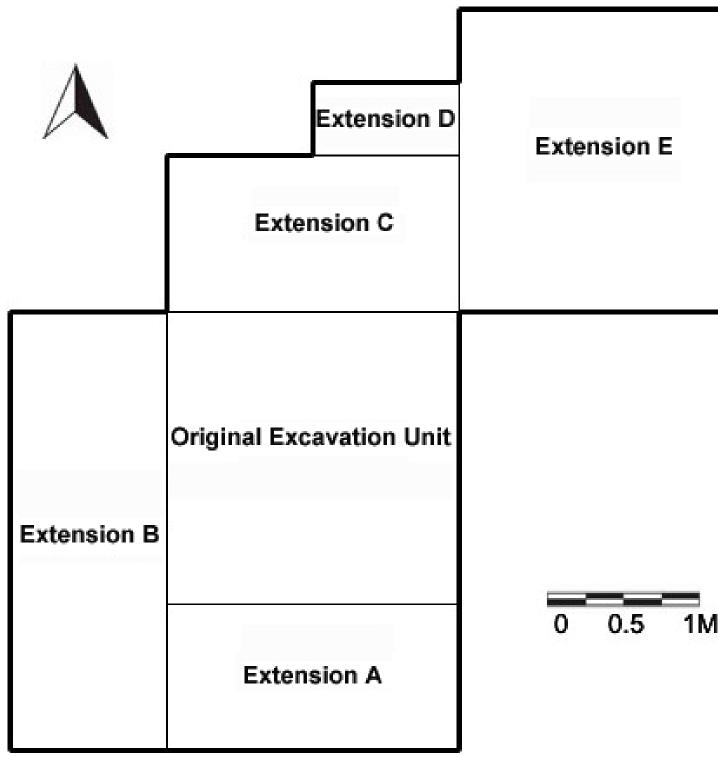

Figure 5-19. Map of adjascent excavation units investigated in Suboperation 7-1.

In total, 11 levels of mound fill, five dirt floors, and eight domestic features were encountered in Suboperation 7-1. All excavations were conducted in stratigraphic layers, and distinct cultural strata were clearly identified during excavation and are seen in profile photos and drawings (Figures 5-20 and 5-21).

The earliest construction events observed in this investigation were recorded from the lowest levels, excavated in a 1 x 2m unit located in the northern half of the original excavation pit (see Figure 5-19). Here, fill layer CHI 07-01-27 comprised the bottom of the unit, and was covered by another layer of fill, CHI 07-01-26. Above this layer of fill, a thick, hard, compact floor with many inclusions of hardened clay was identified and labeled CHI 07-01-24. This floor had one feature, a patch of dark brown dirt (CHI 07-01-25) on the southwest corner of its surface in this unit. A radiocarbon date of 1450-1378 (calibrated, 1-sigma) was determined from a sample of charred organic material embedded in floor layer CHI 07-01-24 (see Appendix A).

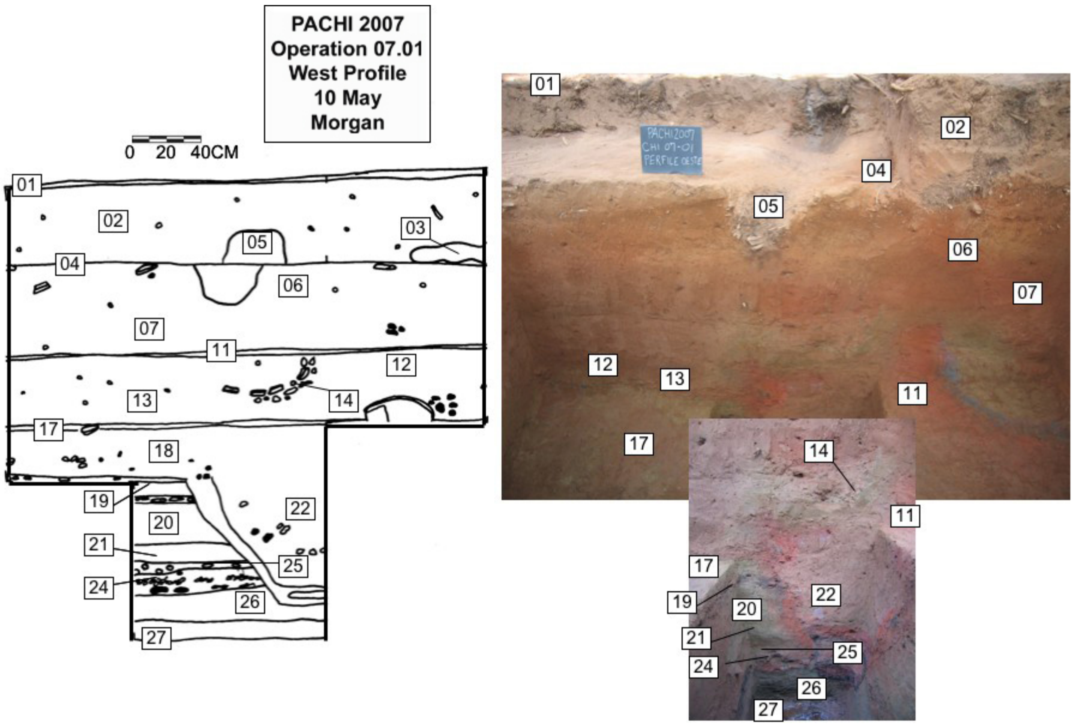

Figure 5-20. Photos (right) and drawing (left) of the west profile of the Suboperation 7-1 excavation unit, showing stratigraphic and cultural levels.

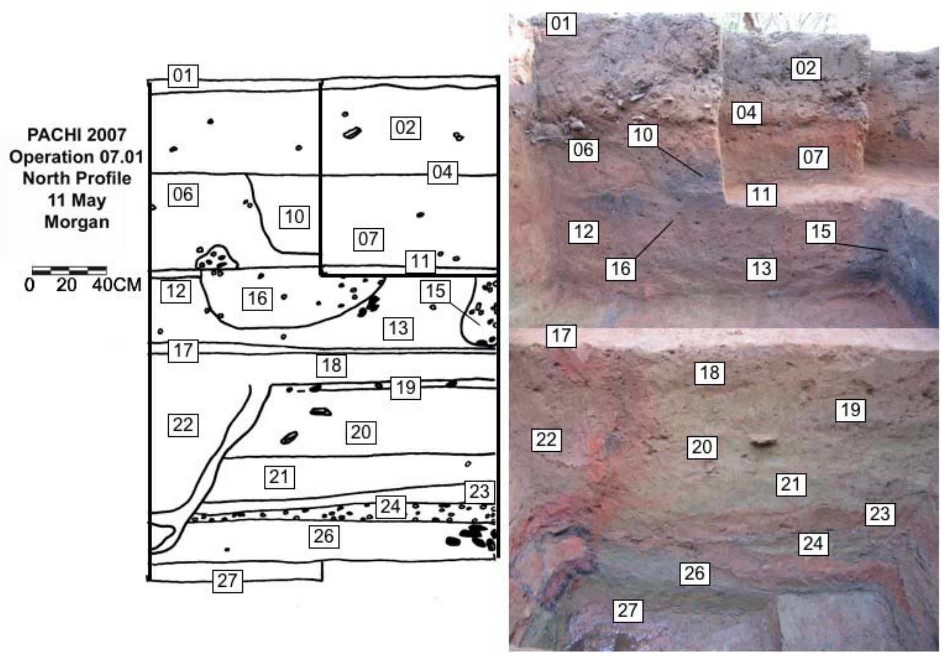

Figure 5-21. Photo (right) and drawing (left) of the north profile of the excavation unit in Suboperation 7-1, showing cultural and stratigraphic levels.

Floor layer CHI 01-07-24 was covered by three additional layers of fill, CHI 07-01-23, CHI 07-01-21, and CHI 07-01-20. Atop these levels, another floor layer was identified and labeled CHI 07-01-19. This floor had an interesting feature associated with it, a pit lined with burned clay (CHI 07-01-22). This pit is 1m in depth and in a cone shape (Figure 5-22). Its walls were composed of thick, red clay and a large amount of burned, black organic material was found in the bottom section of the pit. It is thought that this feature could be a storage pit that was burned or some type of deep hearth or oven. A radiocarbon date from charred organic remains in this context provided a date of 1312-1192 B. C. (calibrated, 1-sigma; see Appendix A).

Figure 5-22. Photo showing the east profile of Suboperation 7-1 in which the feature CHI 07-01-22 can be seen.

Floor CHI 07-01-19 and its associated feature CHI 07-01-22 were covered with a layer of mound fill designated CHI 07-01-18, which was subsequently topped by floor layer CHI 07-01-17. This floor exhibited stains of different colors, one particularly interesting because of its rings of blue and yellow, seen in the northwest corner of the excavation unit (Figure 5-23). Floor CHI 07-01-17 was seen in the original 2 x 2m excavation unit, a well as the bottom limit of the excavation in Extension C (see Figure 5-19).

Figure 5-23. Photo (below) and drawing (above) of floor CHI 07-01-17 in Suboperation 7-1. The photo illustrates the different colors of stains on this compact sandy floor.

Floor CHI 07-01-17 was covered with fill CHI 07-01-13. This fill was topped with a dirt floor, labeled CHI 07-01-11 (Figure 5-24). Like the earlier floor CHI 07-01-17, this floor was also stained with different colors. It was found in the original excavation unit, as well as Extensions C and D (see Figure 5-19).

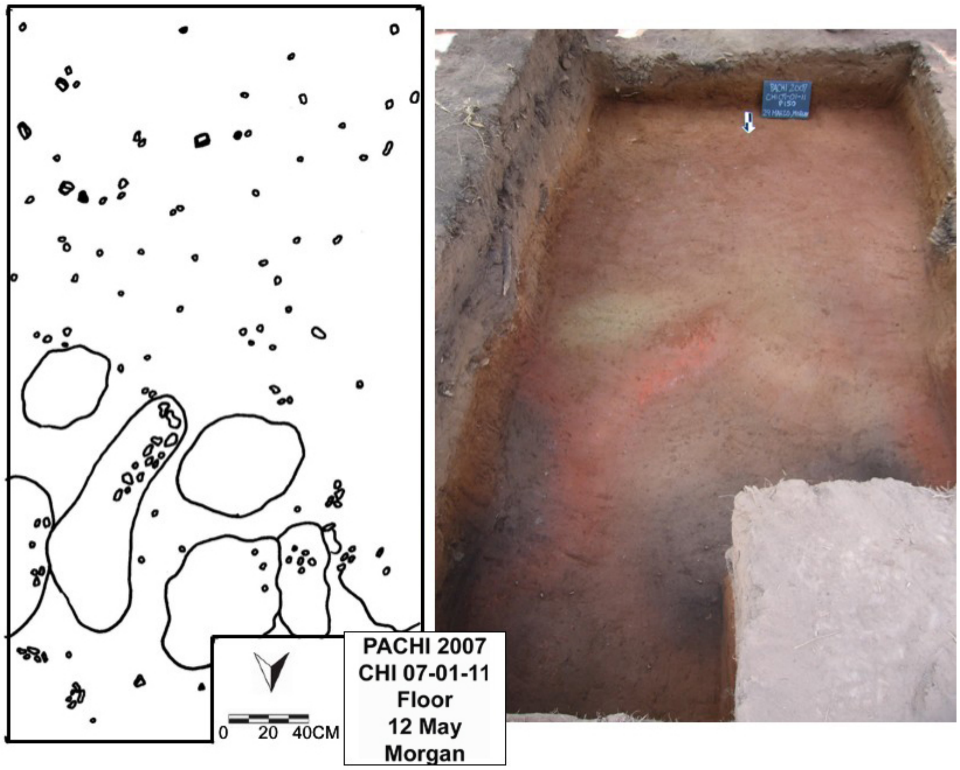

Figure 5-24. Drawing (left) and photo (right) of floor CHI 07-01-11.

Four features were identified associated with floor CHI 07-01-11. The first is a storage pit (CHI 07-01-08) filled with different colored chunks of sand and black dirt. This pit was located in Extension E and capped with ceramic sherds (Figure 5-25).

Figure 5-25. Drawing (left) and photo (right) of storage pit CHI 07-01-08.

The second storage pit excavated from the floor level CHI 07-01-11 was filled with fine gray sand and recorded as context CHI 07-01-16. It was located in much of Extension C, continuing under the northern side wall and slightly into the original unit (Figure 5-26).

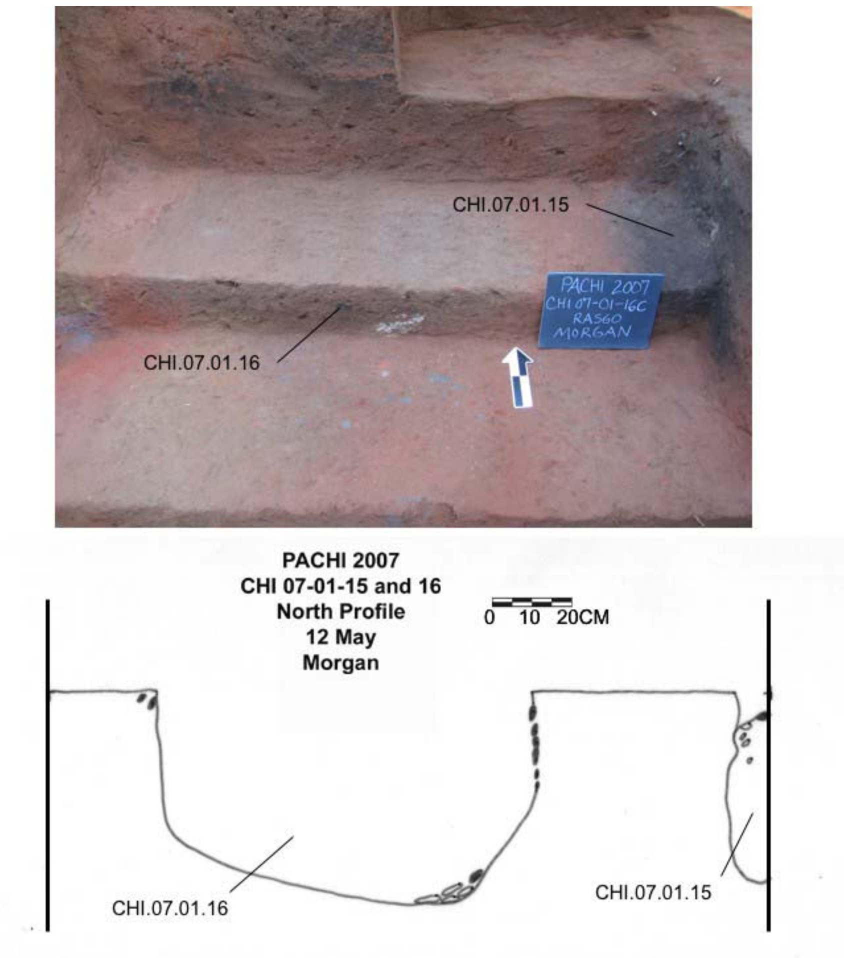

Figure 5-26. Photo (above) and drawing (below) showing the northern profile of the excavated storage pits CHI 07-01-16 and CHI 07-01-15 that penetrated from floor level CHI 07-01-11.

One other storage pit, CHI 07-01-15 was identified in the northeastern corner of Extension C, just east of the large pit CHI 07-01-16 (Figure 5-26). This pit was filled with loose black dirt, with many white inclusions and chunks of colored sands. A radiocarbon date from charred organic remains in this feature provided a date of 1120-1000 B. C. (calibrated, 1-sigma; see Appendix A). The three dates obtained from materials in this excavation unit were well stratified and demonstrate an intact chronological sequence.

The last feature associated with floor CHI 07-01-11 was a human burial. This is Burial 1 at Chiquiuitan and the context number is CHI 07-01-09. The burial was found in a tightly flexed position, perhaps bundled, and placed on this floor’s surface (Figure 5-27). It was buried in the fill that raised the subsequent level of the mound. Osteological analysis of this burial was conducted by Carrie Anne Berryman and is described in Appendix F.

Figure 5-27. Photo (left) and drawing (right) of human remains found in Burial 1, context CHI 07-01-09, placed on the surface of floor level CHI 07-01-11.

Floor CHI 07-01-11 and its associated features were covered by fill layers CHI 07-01-06 and CHI 07-01-07. Another floor was found, badly eroded, above these fills and recorded as CHI 07-01-04. This floor was very compact and made of light brown sandy soil, but the surface was quite bumpy and difficult to follow. That floor was subsequently covered with another layer of fill, CHI 07-01-02. Lastly, the humic layer CHI 07-01-01 topped all sections of this unit.

Table 5-4. Descriptions of contexts excavated in Operation 7-1 at Mound 13.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.07.01.01	Sandy, fine, soft, loose, dark brown, with organic inclusions	0.62	No diagnostics
Fill	CHI.07.01.02	Sandy, compact, light brown	6.9	Tamarindo (Mixed)
Animal Burrows	CHI.07.01.03	Loose, soft, mixed with organic inclusions	0.2	Tamarindo (Mixed)
Floor	CHI.07.01.04	Sandy, very compact, brown	0.21	Late Cangrejo
Root System	CHI.07.01.05	Loose, dark grayish brown, many inclusions of small and large roots		Late Cangrejo
Fill	CHI.07.01.06	Sandy, yellowish and reddish brown, with inclusions of white particles and various other colors	3.18	Late Cangrejo
Fill	CHI.07.01.07	Sandy, reddish brown, with inclusions of patches of sand of various colors	3.18	Cangrejo
Fill for Cut	CHI.07.01.08	Loose, black, with inclusions of many sherds, colored sand, and chunks of hardened clay	0.043	Cangrejo
Burial 01	CHI.07.01.09			Cangrejo
Fill for Cut	CHI.07.01.10	Soft, reddish brown, with inclusions of colored sands and chunks of hardened clay	0.0315	No diagnostics
Floor	CHI.07.01.11	Sandy, brown, very compact, with inclusions of colored sands	0.18	Cangrejo
Fill	CHI.07.01.12	Sandy and compact, mized with red and yellow sand	1.17	Cangrejo
Fill	CHI.07.01.13	Sandy, yellowish brown	1.17	Cangrejo
Clay Feature	CHI.07.01.14	Clayey dirt, compact, hard, yellow, in a distinct area		No sherds
Hearth	CHI.07.01.15	Loose, black, with white inclusions and colored sands	0.024	Cangrejo

Fill for Cut	CHI.07.01.16	Fine, gray sand	0.165	No diagnostics
Floor	CHI.07.01.17	Sandy, very compact, brown, with stains of different colors	0.18	Cangrejo
Fill	CHI.07.01.18	Sandy, reddish, yellow	1.26	Cangrejo
Floor	CHI.07.01.19	Hard, compact, gray sand	0.4	Cangrejo
Fill	CHI.07.01.20	Sandy, brown	0.55	Early Cangrejo
Fill	CHI.07.01.21	Gray sand	0.2	Early Cangrejo
Fill for Cut	CHI.07.01.22	Dirt of different colors and with inclusions of chunks of hardened clay	0.0306	Early Cangrejo
Fill	CHI.07.01.23	Sandy, reddish brown	0.14	Huiscoyol
Floor	CHI.07.01.24	Sandy, compact, brown, with many inclusions of clay, carbon, and white particles	0.3	Huiscoyol
Floor Feature	CHI.07.01.25	Dark brown dirt		No sherds
Fill	CHI.07.01.26	Loose, soft, yellowish gray	0.45	Huiscoyol
Fill	CHI.07.01.27	Gray sand	0.1	Huiscoyol

Suboperation 7-2

The Suboperation 7-2 excavation was located 14m north and 14m west of the center of Mound 13 (see Figure 5-19). The excavation unit measured 2 x 2m, and was aimed at investigating mound fill layers (Figure 5-28). This and other suboperations placed away from the mound's center sought information with which to reconstruct platform construction and determine the extent of domestic activity across the mound.

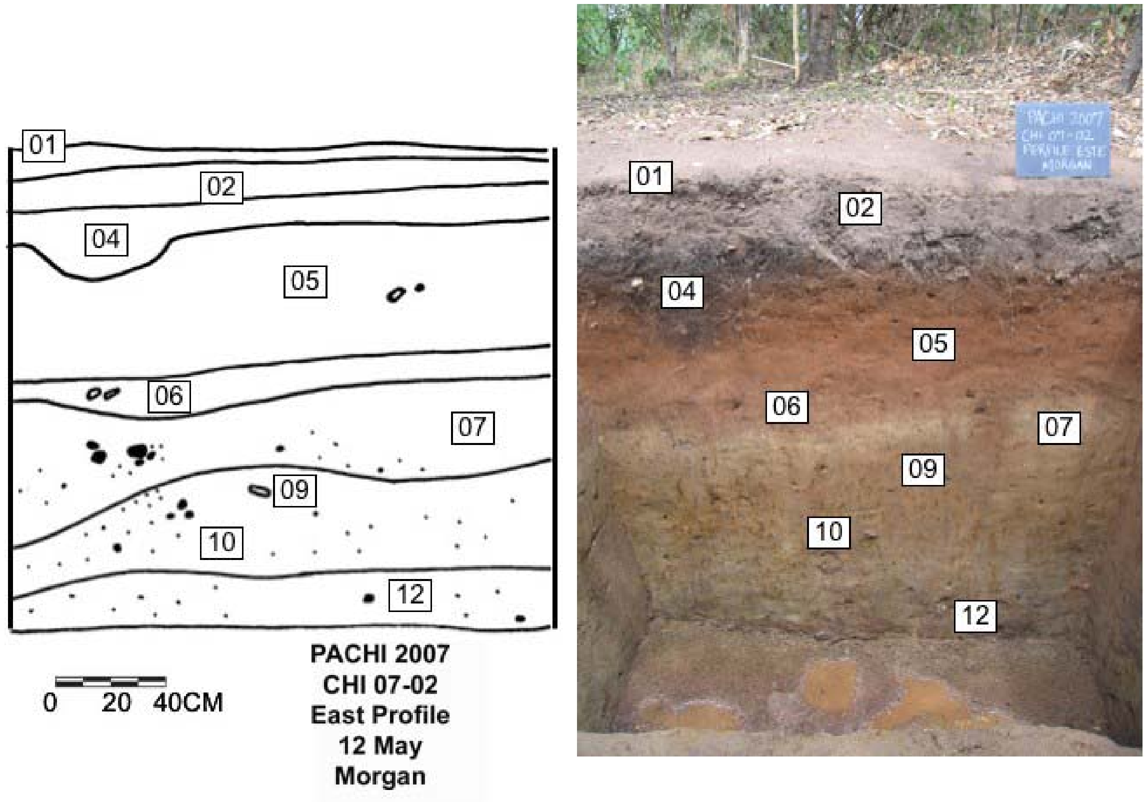

Figure 5-28. Photo (right) and drawing (left) of the east profile of Suboperation 7-2 showing stratigraphic and cultural strata.

Excavated strata included five layers of mound fill and one possible floor (Table 5-5). One extension, labeled Extension A, was excavated on the north side of the unit, in order to follow the surface of CHI 07-02-05, the possible floor at approximately 30cm below the surface, and look for any associated features.

The compact and hardened nature of the surface of floor CHI 07-02-05 resembles floors identified at other locations on the mound, but no architectural features or areas of activity were identified. All of the ceramic sherds from this excavation yielded diagnostic artifacts of the Cangrejo phase.

Table 5-5. Descriptions of contexts excavated in Operation 7-2 at Mound 13.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.07.02.01	Sandy, fine, loose, dark brown, with organic inclusions	0.15	No diagnostics
Fill	CHI.07.02.02	Sandy, compact, light brown	0.72	No diagnostics
Fill	CHI.07.02.04	Soft, humid, loose, and black	0.3	Cangrejo
Floor	CHI.07.02.05	Sandy, very compact, reddish brown	0.7	Cangrejo
Fill	CHI.07.02.06	Sandy, soft, humid, light reddish brown, with inclusions of patches of black dirt	0.36	Cangrejo
Fill	CHI.07.02.07	Sandy, humid, yellowish red	1.7	Cangrejo
Fill	CHI.07.02.09	Loose, humid, yellowish gray sand	0.42	Cangrejo
Fill	CHI.07.02.10	Loose, humid, yellowish gray sand with many inclusions inclusiones	0.7	Cangrejo
Fill	CHI.07.02.12	Gray, humid sand	0.48	Cangrejo

Suboperation 7-3

Suboperation 7-3 was supervised by Raúl Ortiz Valléjos, a student from the University del Valle of Guatemala City. Like Suboperation 7-2, this excavation unit was also placed off to the side, at 41m directly west of the center of Mound 13 (see Figure 5-19). Again, the objective was to investigate layers of platform construction and test the idea that most architectural construction and domestic activity took place at the mound's center. Eight layers of fill were identified below the humic layer (Figure 5-28). These layers comprised the western end of the raised mound platform. These mound fill strata were primarily comprised of sandy, loose, wet, light brown soil (Table 5-6). These excavations also yielded ceramic artifacts dating to the Cangrejo phase.

Figure 5-29. Photo of the south profile of Suboperation 7-2, including eight layers of fill for the construction of the platform Mound 13.

Table 5-6. Descriptions of contexts excavated in Operation 7-3 at Mound 13.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.07.03.01	Sandy, fine, loose, soft, grayish brown		No sherds
Fill	CHI.07.03.02	Sandy, grayish brown		Cangrejo
Fill	CHI.07.03.03	Sandy, very dark brown		Cangrejo
Fill	CHI.07.03.04	Sandy, yellowish brown		No diagnostics
Fill	CHI.07.03.05	Compact, hard, brown earth with white inclusions		No diagnostics
Fill	CHI.07.03.06	Slightly clayey, compact, greenish gray, with fine white inclusions		Cangrejo
Fill	CHI.07.03.07	Sandy, compact, himid, greenish gray		Cangrejo
Fill	CHI.07.03.08	Wet, gray sand with inclusions of gray and black chunks		Cangrejo

Suboperation 7-4

Suboperation 7-4 was located on the central elevation of Mound 13, 9m south and 19m west of the mound center (see Figure 5-19). The excavation was located in this area to investigate domestic activities in a greater region than what was exposed by Suboperation 7-1, and this region appeared promising due to its raised and flat surface, as visible in the topographic map in Figure 5-18. The excavation unit began as a 2 x 2m test pit, and expanded by 1m toward the south in order to follow floors encountered in excavation. In total, five fill layers, two floors, one burial, and a hearth were identified beneath the humus in Suboperation 7-4 (Figure 5-29).

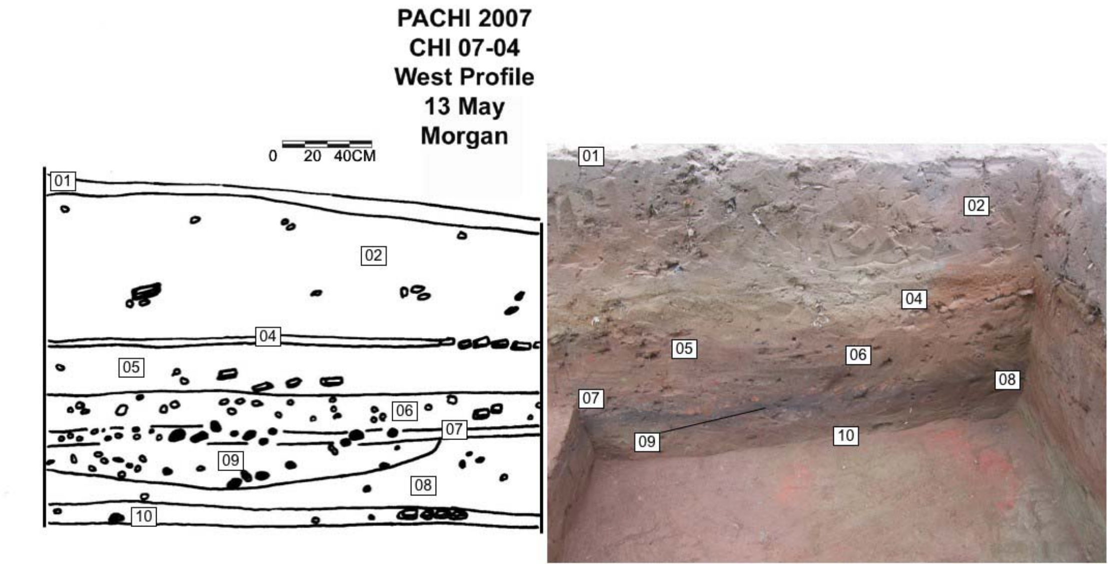

Figure 5-30. Drawing (left) and photo (right) of the west profile of Suboperation 7-4, showing distinct layers of mound construction fill, floors, and a hearth feature (09).

The earliest architectural feature discovered in Suboperation 7-4 is a compact dirt floor labeled CHI 07-04-07 (Figure 5-30). The floor surface demonstrates many stains of different colors. This floor was supported by two fill layers, but cultural features beneath 160cm below the surface were not investigated as this unit was closed before completion due to time constraints.

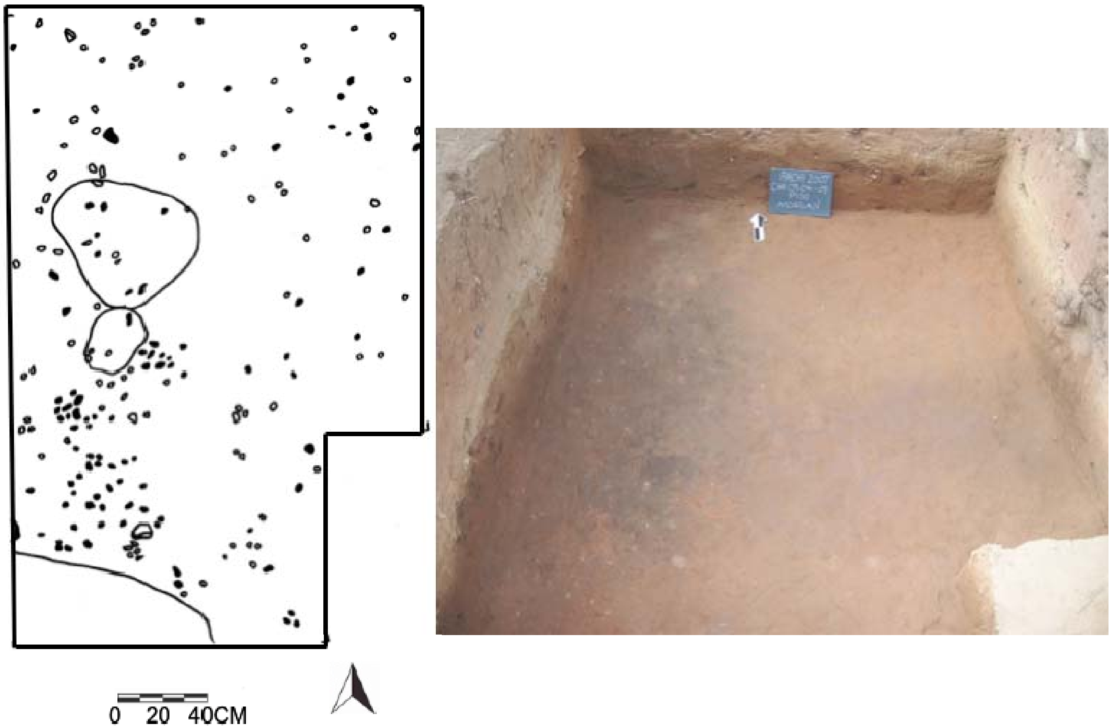

Figure 5-31. Drawing (left) and photo (right) of floor CHI 07-04-07.

Floor CHI 07-04-07 had one feature associated with it, a shallow black deposit visible on the western edge of the excavation unit from the floor's surface (CHI 07-04-09). This layer was 20cm thick, filling a cut in the floor. The soil inside the feature was loose and black, with several inclusions of hardened clay. This feature is tentatively identified as a hearth. A radiocarbon date from charred organic remains in this feature provided a date of 1316-1212 B. C. (calibrated, 1-sigma; see Appendix A).

Floor CHI 07-04-07 was subsequently covered by another fill and floor layer, CHI 07-04-04. This floor was also hard and compact, but in a poorer state of preservation and rather bumpy on its surface (Figure 5-31).

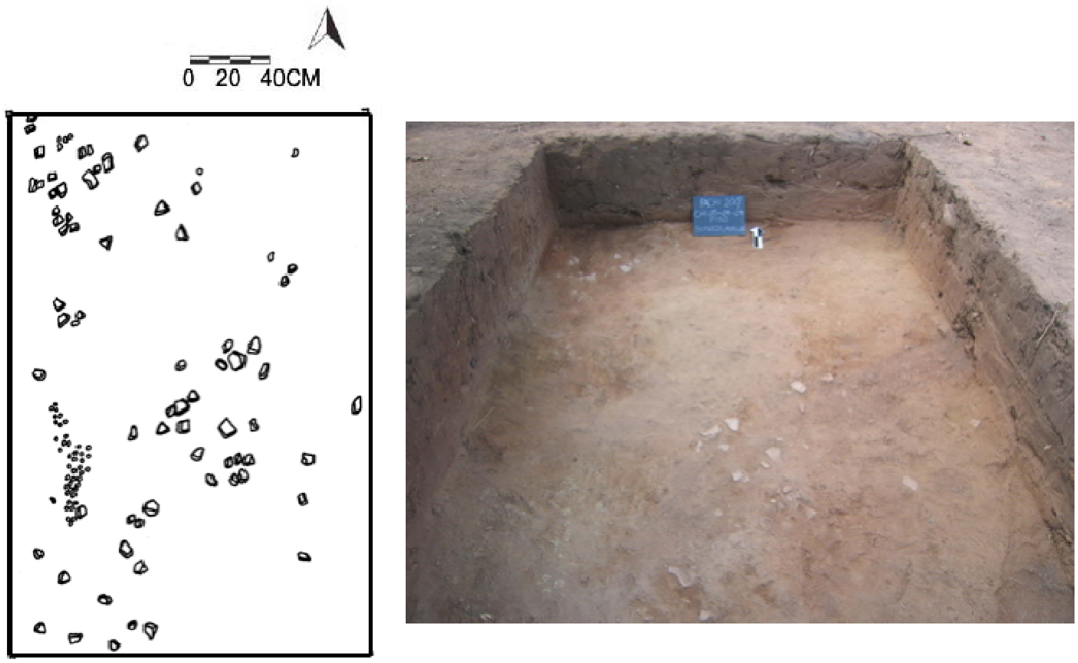

Figure 5-32. Drawing (left) and photo (right) of floor level CHI 07-04-04.

Chiquiuitan Burial 2 was found in poor condition of preservation and placed on the surface of this floor (positioned in a similar fashion to Burial 1 identified on a floor in Suboperation 7-1). There was no visible burial cut to suggest an interment of this bundle of human remains. Rather, it is thought that they were placed on the floor and covered with the fill layer CHI 07-04-03 in a dedication associated with a new construction addition to the height of the mound. The burial was extremely poorly preserved, and only bone fragments were collected for osteological analysis (Figure 5-32). That study demonstrated that the human remains located in this burial belonged to two individuals, one of an age older than 30 years, and the other between 6-14 years old at time of death. Osteological analysis of this burial is described in more detail in Appendix F.

Figure 5-33. Photo of the poorly preserved human remains in Burial 2.

Due to time limits only the upper layers of the mound were investigated in this excavation. Floors found here corresponded with those identified in nearby Suboperation 7-1. The stratigraphic layers and ceramic assemblages provided a clear chronological sequence for this excavation, spanning from the Cangrejo phase through the Tamarindo phase (Table 5-7).

Table 5-7. Descriptions of contexts excavated in Operation 7-4 at Mound 13.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.07.04.01	Sandy, fine, soft, grayish brown	0.12	Tamarindo
Fill	CHI.07.04.02	Sandy, compact, light brown	3.18	Tamarindo
Burial 02	CHI.07.04.03			Late Cangrejo
Floor	CHI.07.04.04	Sandy, very compact, brown	0.18	Late Cangrejo
Fill	CHI.07.04.05	Sandy, loose, reddish brown	1.49	Late Cangrejo
Floor	CHI.07.04.07	Sandy, very compact, brown	0.18	Cangrejo
Fill	CHI.07.04.08	Sandy, reddish brown	0.62	Cangrejo
Hearth	CHI.07.04.09	Black, loose soil	0.01	Cangrejo
Fill	CHI.07.04.10	Sandy, red and yellow	0.93	Cangrejo

Suboperation 7-5

This suboperation was conducted with the aim of investigating layers of construction on the eastern side of Mound 13. Similar to excavations in Suboperations 7-3 and 7-4, areas of domestic activity were not recovered, but sequential phases of platform construction were identified (Figure 5-33). This excavation was 2 x 2m in diameter and located 19m east and 3m north of the central point of the mound (see Figure 5-19).

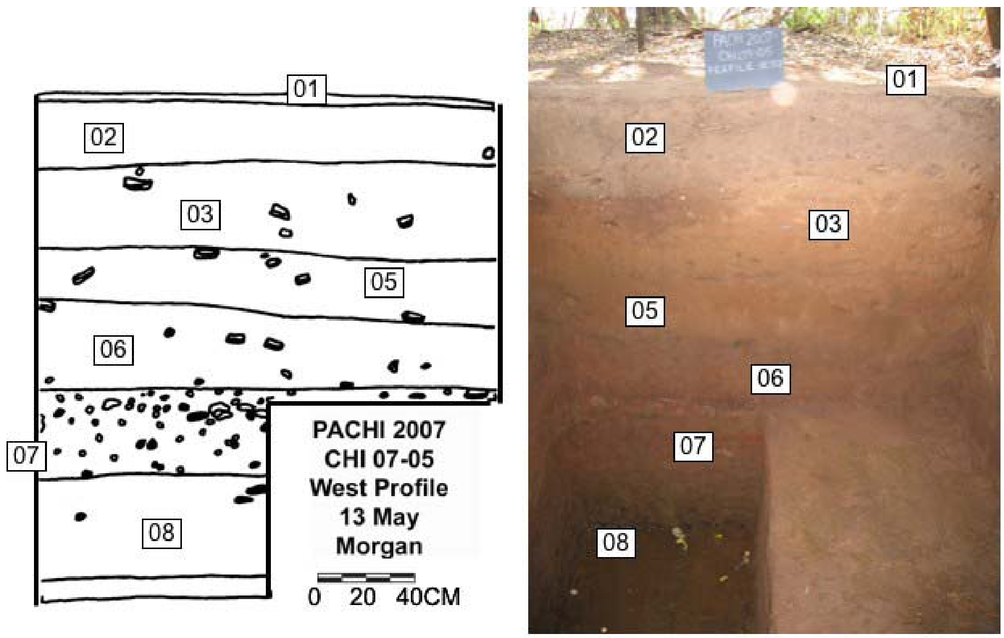

Figure 5-34. Drawing (left) and photo (right) of the east profile of Suboperation 7-5.

In total, six layers of mound fill were observed in Suboperation 7-5 (Table 5-8). Two well stratified radiocarbon dates came from charred organic remains collected from these fill levels. The sample from the lowest level, CHI 07-05-07 provided a date of 1133-1048 B.C. (calibrated, 1-sigma; see Appendix A). Higher up in the excavation, materials from CHI 07-05-03 provided a date of 997-896 B.C. (calibrated, 1-sigma; see Appendix A). These two dates demonstrate an intact chronological sequence.

An interesting aspect of the fill layers observed in this excavation can be seen in the photograph of the south profile of the unit (Figure 5-34). Several of these fills slope from west to east, following the inclination of the mound. These layers demonstrate the consecutive additions to the mound surface, which not only raised the height of the raised surface, but also expanded it horizontally on the east side (especially fill layer CHI 07-05-05). Furthermore, level CHI 07-05-07 had an unusually high quantity of ceramic sherds and marine shells. This layer is probably a midden that sloped off the side of one of the earlier platform edges.

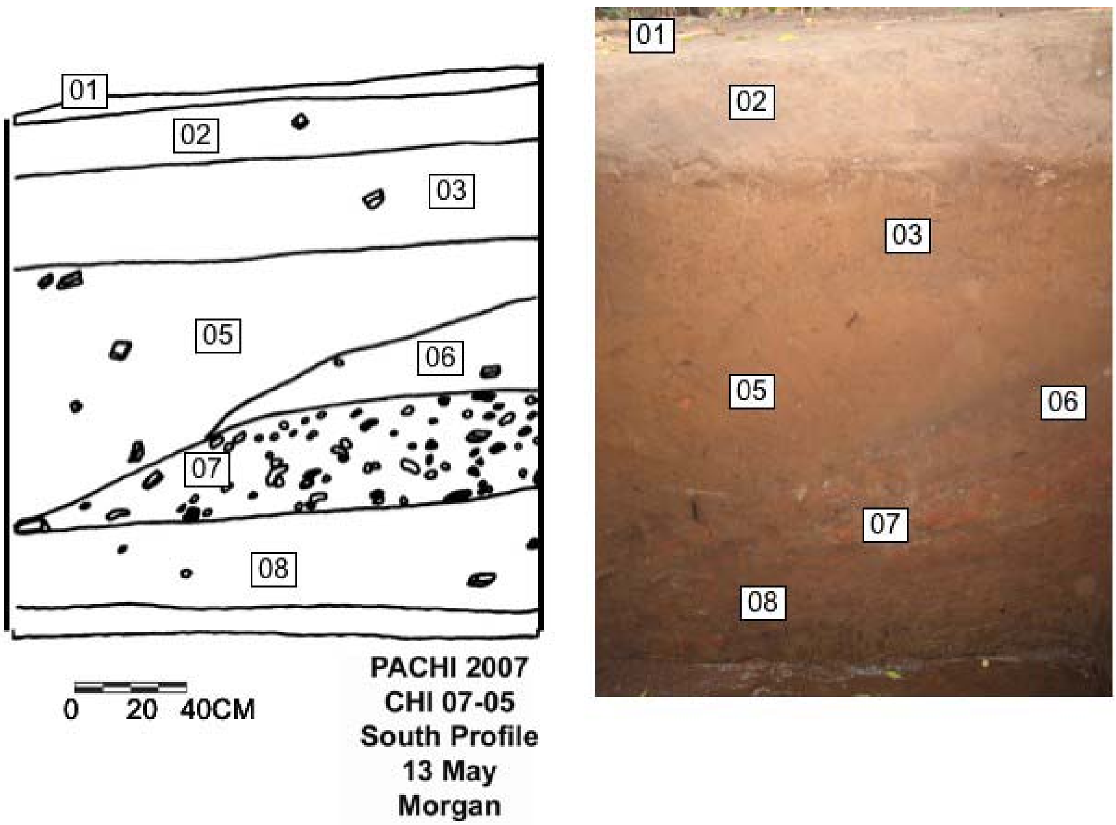

Figure 5-35. Drawing (left) and photo (right) of the south profile of Suboperation 7-5. Note the sloping fill layers seen in this profile.

Table 5-8. Descriptions of contexts excavated in Operation 7-5 at Mound 13.

Type of Context	Lot Number	Description	Volume of Dirt (cubic meters)	Relative Chronology
Humus	CHI.07.05.01	Sandy, loose, fine, grayish brown	0.24	No diagnostics
Fill	CHI.07.05.02	Sandy, compact, light brown	0.84	Tamarindo (Mixed)
Fill	CHI.07.05.03	Slightly sandy dirt, loose, reddish brown	2.74	Early Tamarindo
Fill	CHI.07.05.05	Sandy, reddish brown	1.86	Cangrejo
Fill	CHI.07.05.06	Sandy, loose, grayish brown	0.74	Cangrejo
Midden	CHI.07.05.07	Sandy, with many inclusions of different colored sands	0.98	Cangrejo
Fill	CHI.07.05.08	Sandy, wet, brown	1	Cangrejo

Summary of Operation 7

In Suboperations 7-2, 7-3, and 7-5, located to the sides of the Mound 13 platform, levels of construction fill were identified and interpreted as the results of subsequent piling events that raised the living surface of Mound 13. At least eight building episodes are visible that raised the height of the mound and/or expanded its horizontal area from the Huiscoyol phase through the Tamarindo phase. While the earliest of these platforms were low and flat, for example the platforms supporting floors CHI 07-01-24 and CHI 07-01-19 in Suboperation 7-1, later Cangrejo and Tamarindo constructions demonstrate a much grander scale, as seen in the massive fill layers CHI 07-05-05 in Suboperation 7-5, CHI 07-02-05 in Suboperation 7-2, and CHI 07-04-02 in Suboperation 7-4.

The two suboperations located near the center of the mound, Suboperations 7-1 and 7-4 demonstrated locations of primary activity for this household. These excavations showed dirt floors with stained surfaces, cuts in floors, pits, hearths, middens, and burials, indicating areas of significant activity. Together, the excavations at Mound 13 indicate that domestic practices were centralized in an area at the center of the summit, and did not spread to the edged of the platform, answering one of the questions regarding the uses of different spaces across the site.

Summary

In the first season, conducted in March and April of 2006, archaeologists excavated test pits in two of the mounds believed to be the earliest at the site (Morgan and Valle 2006). Excavations at Mound 24 penetrated 4m of disturbed soil, uncovering only mixed cultural materials that included sherds from all three ceramic phases. Excavations at Mound 27 located intact stratigraphic levels and were able to identify 21 superimposed floors, fills, and other architectural features. This platform appears to have been constructed in the late Huiscoyol phase and was occupied through the Tamarindo. The finds from this preliminary season aided in the augmentation of the site's radiocarbon chronology and provided material for initial ceramic analysis.

Research in 2007 included intensive excavations on the mounds to examine residential architectural remains and the debris from domestic practices (Morgan and Valle 2007b). Levels dating to the late Cangrejo and Tamarindo phases at Mound 34 revealed well preserved house floors, hearths, middens, and circular features made of clay (Velásquez López 2007a). Excavations were not continued to lower levels at this location in order to conserve architectural features in the hopes of future investigation. At Mound 13, five excavation units were placed over the mound to gain greater coverage of the horizontal space at this residence (Morgan 2007a). Three of these excavations revealed layers of construction fill for the platform. Two units encountered floors and were expanded to reveal larger surface areas of these features. Excavations at this mound uncovered intact stratigraphic deposits from all three occupational phases. Significant features include two flexed burials placed on floors and covered with construction fill, as well as middens, hearths, and storage pits. The data presented in this chapter demonstrate patterns in mound construction crucial to interpretations for mound building, community development, agency, and landscape presented in this dissertation.

Huiscoyol levels are few (only 7 total deposits are securely dated to this period, identified at Mounds 13, 24, and 27), but suggest occupation different than that of the Cangrejo and Tamarindo phases. The variation in fill layers between time periods supports a model for limited construction expenditures in the Huiscoyol phase, followed by substantial additions in the Cangrejo and Tamarindo. Based on previous work, it has been estimated that the mounds of Chiquiuitan numbered five in the earliest Huiscoyol phase (Estrada Belli 1998). They were dispersed across the area of the site.

This information could be used to draw two different conclusions regarding the occupation of Chiquiuitan during this early phase. First, it is possible that the lower levels of platform fill indicate the initial founding of a sedentary community. This model would suggest that early inhabitants built only short platforms for permanent houses at this time. The second option is to consider the transition to sedentism as occurring more gradually at this location, with the earliest mound constructions indicating only temporary use. This model sees occupants constructing short platforms at an important site where significant activities (in this case the exploitation of estuarine fauna and social gathering) taking place, but not yet living at the site full time. In this scenario people stayed at Chiquiuitan perhaps seasonally or for temporary gatherings but later moved away to other locations.

This dissertation favors the second model. Material remains demonstrate a limited number of activities being conducted at this time. Lithics, ceramics, and faunal remains all point to a higher diversity of activities being practiced in the later phases (see Appendix D, Chapter 6, and Appendix H, respectively). Ceramics are only found in the form of the *tecomate*, and only one stone tool dates to this phase. This does not seem to reflect a tool kit used by permanent residents engaging in a number of domestic activities. There are no clear architectural remains dating to this period, only sandy clay floors covering platform surfaces. Data from a study of the hardened remains of clay provide some possible results also pertaining to the early use of Mound 13. While the distinction may be a matter of differential preservation, the clay materials are smaller and seem to have impressions of grasses in the Huiscoyol phase, while larger clumps demonstrating a greater frequency of pole impressions are seen later on (Ortiz 2007). These lines of evidence seem to support the hypothesis that the platforms were used for temporary gatherings where a limited number of activities were practiced during the first phase of use in the Huiscoyol phase, and not as a permanent residence. The transition to a community of house mound platforms used by sedentary people living in wattle-and-daub structures only took place at the start of the Cangrejo phase at 1250 B.C.

Taking the scenario of residential mobility in the Huiscoyol phase, the material remains summarized here can be seen as revealing elements of social structure. Social norms involved living in mobile groups in dispersed and temporary settlements, exploiting a wide range of wild resources, and engaging in social relations through sporadic gatherings in particular places. These structures reflect some of the generalized characteristics for mobile peoples' relationship with the landscape described in ethnographic cases in Chapter Three. For example, it was illustrated that those places that were used repeatedly and for gatherings of a several groups of people held special significance, playing a role in the cultural symbolism passed down through oral tradition linked to landscape features. It is argued here that Chiquiuitan was one of these special places that held social memory even at this early phase. Significant events are expected to have occurred during occasions in which many groups gathered, such as exchange, socialization, negotiations of status, meetings of spouses, and ritual. People would certainly develop memories of these events that were linked to Chiquiuitan. Stories of events that occurred there may well have appeared in oral history narratives. In addition to its proximity to crucial estuarine resources and location on navigable waterways, the symbolic significance of the site probably contributed to the decision to settle in this place in the Cangrejo phase as well. These social structures appear to have been stable for about 200 years, throughout the Huiscoyol phase, from 1450 to 1250 B.C. Social agents reproduced these cultural norms until the start of the Cangrejo phase, at which time they elected to leave behind some of these practices and produce new social structures.

Excavations indicate that Mounds 13, 24, and 27 continued to be used in the ensuing Cangrejo phase, apparently in more intensive ways. Mound 13 is especially informative, as fill layers can be seen in all excavations from the Cangrejo phase, raising the height of the mound and expanding its horizontal space. Indeed, levels dating to the Cangrejo phase are found in all mounds excavated and are generally more substantial than in the previous Huiscoyol phase. Hearths, storage pits, middens, and floors with activity areas demonstrated by artifact scatters characterize deposits from this phase, suggesting domestic activities and the functions of the mounds as house platforms at this time. Artifact assemblages also demonstrate a wide variety of domestic activities, further supporting the interpretation of these mounds as residential in nature by the Cangrejo phase.

After this transition, Chiquiuitan turned into home for many people, becoming a different type of special place. The significance of a permanent community, different from the natural world, is reflected in the foundation of houses, which brought together kin in a cooperative and lasting way. Social relations aimed at smoothing interaction between household members and between households in the community would also have developed at this time. Social organization is reflected in the emergence of additional platform mounds spaced across the site, each supporting a distinct household group, probably representing a corporate kin group. Each one of these groups can be seen as social agents enacting changes and producing (and reproducing) social structures within their community. These agents created a socio-natural place at this time, erecting large cultural features in the form of house platforms among a largely natural environmental setting. Within this landscape, they inscribed notions of social relations. Especially through the remains of each house, the actions and identities of household agents are seen. Their aggregation and creation of the community within this place is seen in the proximity of the mounds, and perhaps even in the possibility of a planned central plaza.

Lastly, a transition is seen in residential mound construction at the end of the Cangrejo phase and the start of the Tamarindo phase, around 950 B.C. The amount of earth used to raise the summits of the mounds increases dramatically at this time. Domestic activity is still evident in the features associated with floors and activity areas, and ceramic and lithic assemblages demonstrate a variety of activities, suggesting that the mounds continued to be residential in function. One area where domestic practice may have made a transition is in the processing of food remains. Faunal remains become less diverse, grinding stones are important, and direct evidence of domesticated crops all point to an increasing reliance on food production, reflected in activities conducted within the home. Lastly, at the end of the Cangrejo phase, human remains found buried within mound construction indicate mortuary practices in which ancestors are ritually linked to the house mound.

The Tamarindo phase brought in new concerns for the residents of Chiquiuitan. In an increasingly competitive region and occurring at the same time as a shift to greater reliance on food production, the mounds became more than homes for household groups. At this time, social agents appropriated the impact that the mounds had on the landscape for specific political purposes. By creating more dramatic house platforms they were able to signal their ownership over the area and its resources. By burying ancestors in the mounds, they inscribed notions of their historical link to this place, further justifying those rights.

As explained in greater detail in the conclusion chapter, these modifications are seen as significant and purposeful transitions in the treatment of the landscape by the inhabitants of Chiquiuitan as the society advanced in complexity and acts aimed at portraying aspects of social identity and relations became more important. It is argued that the residential mounds founded during the Cangrejo phase had an effect on the way that people experienced spaces within their community by creating a socio-natural place with history, memory and identity. They recognized the significance of the mounds as they stood out against the flat landscape of the coastal plain. And they organized themselves within clearly defined social subgroups in households who demonstrated ownership of specific mounds, and perhaps of specific resources in other areas of this community too. Within this historical and social context, the mounds could be easily used to make symbolic statements in an atmosphere of increasing reliance on the land at the same time that competition may have been a growing concern as new and larger communities emerged along the Pacific coast. By augmenting the sizes of the mounds more noticeably and burying ancestors within them at the start of the Tamarindo pase, the households of this community could make powerful signs of their historical connection to the land and rights to the resources in this area, creating a more cultural place.

In summary, the results of excavations described above and material analyses from these contexts provide important data with which to approach the topics of social structure, agency, community development, and the relationship between people and the landscape at Chiquiuitan. Most informative are the data on relative sizes of construction events on the mounds through time. The increasing attention to creating permanent, visible, and impressive platforms for houses speaks to notions of identity that became inscribed into the cultural landscape as the community developed and household groups solidified at Chiquiuitan.

CHAPTER VI

CERAMIC TYPOLOGICAL CLASSIFICATION

Ceramic artifacts are by far the most frequently encountered material category at Chiquiuitan. Ceramic sherds found at Chiquiuitan were collected through stratigraphic excavation (Hammond 1991; Harris 1979), from contexts including mound fill, dirt floors, fills for cuts, hearths, and middens. In total, 26,886 sherds from ceramic vessels were analyzed, 25,081 of which exhibited measurable characteristics recorded as attributes. Almost all of these sherds suffer from extensive water exposure and are highly eroded. No whole vessels were encountered in the 2006-2007 research at Chiquiuitan. A classification of these artifacts is crucial to this dissertation because it provides an organization of the data gained from ceramic artifacts in a way that allows researchers to minimize variation and compare assemblages between sites and regions. This chapter summarizes the classification scheme for Chiquiuitan and compares it to other sites on the Pacific coast and in neighboring regions. It provides type descriptions, chronological information, general indications of Chiquiuitan's role in regional interaction systems, and a discussion of some of the observable patterns in specific attributes. All of the ceramic materials were uncovered under project direction of the author and this is the first ample study and report of this sample that has been conducted.

Methodology

This ceramic classification was developed at Chiquiuitan in the laboratory season (Morgan 2007b) through a modal analysis that recorded attributes of form, surface treatment, decoration, and paste (Appendices B and C). While a type-variety classification was also developed, the study of ceramic artifacts was primarily modal in methodology in order to focus on attributes important to understanding technological and stylistic transitions in pottery making through time. Surface treatment characteristics (presence of interior or exterior slip, munsell of slips, location of design on vessel body, presence and type of incised design, thickness of incision, presence and type of punctuated design, presence and type of appliquéd design, presence and type of molded design, presence and munsell of slipped band design, and thickness of slipped band) and vessel form characteristics (vessel part represented on sherd, overall vessel form, collar length, sherd profile thickness, rim form, rim bolstering, and rim diameter) were selected as important characteristics for answering questions of regional interaction and domestic practice and are discussed in greater detail toward the end of the chapter. These attributes were recorded as well as paste characteristics, any evidence of differential firing or burning, or other indications of use (scratching, mending, etc.). All attributes were coded for and recorded for all ceramics collected during excavation. As these characteristics were recorded, patterns began to come into view suggesting changing design and style through time. As categories for grouping similar artifacts emerged, type-variety assignments were made (discussed below), comprising the classification presented here.

This typology generally follows the type-variety system concepts (Smith, Willey, and Gifford 1960; Smith and Gifford 1965; Sabloff and Smith 1969), with a focus on surface treatment, vessel form, and paste attributes, to classify the Chiquiuitan pottery. According to this methodology, ceramics are classified into the organizational categories of group, type, and variety. A ceramic group is defined by common attributes of surface treatment and paste, and can be considered as roughly equivalent to the alternate ware system for ceramic classification (Hatch 1989). Types are distinctly recognized by specific visual characteristics. Following regional naming guidelines, they are often given descriptive titles. Varieties are further subdivisions within types, based primarily on surface treatment. In this general study, variations in form and decoration are listed, but not given names or assigned numbers. This particular classification departs from some of the type-variety system's specific criteria for assigning names to groups and types in order to follow regionally accepted approaches outlined by the Costa Sur Regional Project (Bove 1996) and encouraged by other coastal scholars (Arroyo 1994). For example, regional classifications avoid geographical names for types.

Huiscoyol Complex (1450-1250 B.C.)

The Huiscoyol Phase is chronologically equivalent to the Coyolate II and Tecojate phases at Tecojate (Arroyo 1994); the Ocos period at El Mesak (Pye 1995); the Ocos and Cherla phases further northwest and in Chiapas (Blake et al. 1995; Clark and Cheetham 2002; Lowe 2007); as well as the Bostan phase at El Carmen (Arroyo 1995); and the Tok phase at Chalchuapa in El Salvador (Sharer 1978). Two radiocarbon assays aid in fitting this complex into the site's chronology (both presented as 1-sigma ranges): Beta231368 – 1440-1390 B.C. and Beta226989 – 1400-1300 B.C. (see Appendix A).

This ceramic complex has been described as being dominated by large *tecomates*, mostly unslipped, with occasional surface decoration including red rim bands and loofah, shell, gouge, or fingernail punctations on the body (Kosakowsky, Estrada-Belli, and Pettitt 2000; Kosakowsky 2002). The Michis *tecomates* in particular are a good chronological indicator for the Locona and Ocos phases in the region. At Chiquiuitan, as in neighboring Escuintla, regional variants to the Michis type are found and require a new title given here as Chiquimichis.

Chiquimichis Group

Paste: Medium textured soft paste with fine ground sand and shell temper as well as coarse inclusions of quartz and occasionally ferruginous inclusions.

Forms: Globular and tear-shaped *tecomates*, sometimes exhibiting large, hollow supports.

Surface Treatment: Smoothed surfaces, plastic designs including gouge punctation, impressions, and appliqués. Frequent red band around the rim.

Comparisons: Tecomichis at Tecojate (Arroyo 1994:242); Michis at El Mesak (Pye 1995:70); Victoria Coarse at La Victoria (Coe 1961:49); Metalío at El Carmen (Arroyo 1995:202); and perhaps Michis Buff-and-Orange in coastal Chiapas (Clark and Cheetham 2002:19).

Chiquimichis Red-on-Black Type

This type is characterized by *tecomates* with a dark grayish brown appearance (Munsell 10YR 4/2) and a red (Munsell 7.5R 5/6) band around the rim. Compared to the Chiquimichis Natural, the paste appears finer and harder. Surfaces are smoothed and often treated with plastic designs including shell rocker impressions and gouged punctation, as well as occasional appliquéd designs such as balls or lines (Figures 6-1, 6-2). The *tecomates* are globular and tear-shaped. Vessel walls are relatively thin, between 4-8mm, while rim diameters typically range from 5-13cm. Rim forms are direct and either rounded or blunt. Red rim band widths are also relatively thin, with about 7-20mm appearing on the exterior and less than 5mm on the interior.

Figure 6-1. Examples of Chiquimichis Red-on-Black: a) globular *tecomates* with red rim bands, tool punctations, and an appliquéd and impressed ball decoration; b) tear-shaped *tecomates* with flat tool impressions and red rim bands; c) plain globular *tecomates* with red rim bands.

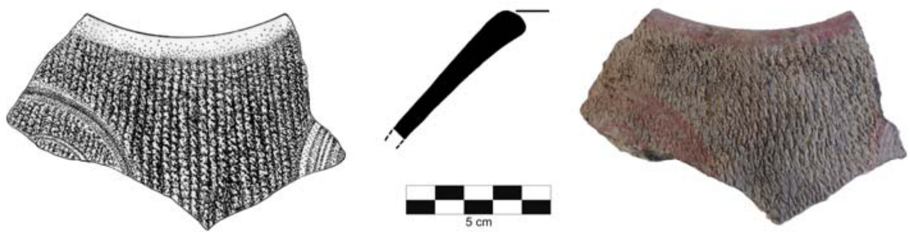

Figure 6-2. Chiquimichis Red-on-Black sherd with rocker shell impression, circular smoothing, and red slip.

Chiquimichis Natural Type

This type is similar to the Chiquimichis Red-on-Black, but the surfaces generally demonstrate a lighter brown (7.5YR 5/4) or reddish (2.5YR 4/4) color and the vessel walls are thicker (9-15mm). Hollow *tecomate* supports of 14-20cm in length, with thick (10-13mm) walls also appear in this type (Figure 6-3). Surface treatment involves smoothing and sometimes gouge or shell punctations (Figure 6-4). Red rims or single incised lines or grooves often decorate the rims. Zoned decorations (punctations or red painted designs) are seen in this type (Figure 6-5). Rims are rounded and blunt or direct.

Figure 6-3. Chiquimichis Natural support.

Figure 6-4. Examples of Chiquimichis Natural rim sherds with rocker shell impression.

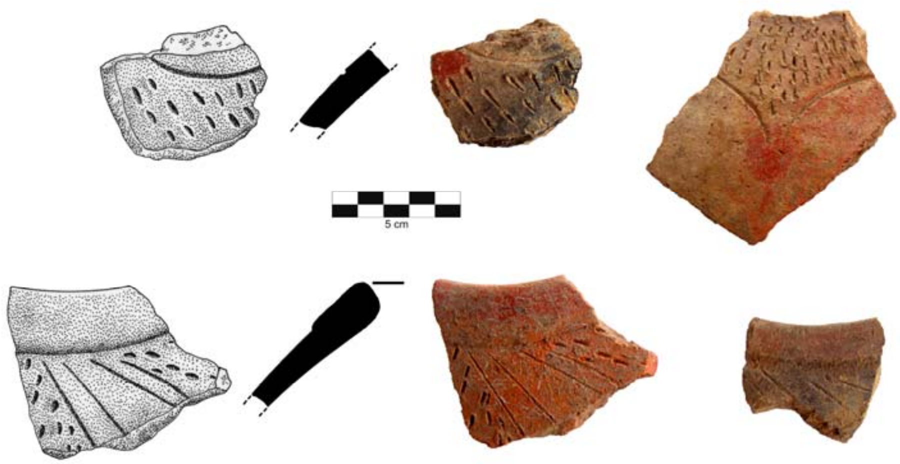

Figure 6-5. Chiquimichis Natural variety with zoned decorations.

Cangrejo Complex (1250-950 B.C.)

The Cangrejo phase is chronologically equivalent to Chacaj and Jocote in the Grijalva Region (Clark, Arroyo, and Cheetham 2005); the Tecojate phase at Tecojate (Arroyo 1994); the Cuadros and Jocotal periods at El Mesak (Pye 1995); the phases with the same names in Chiapas (Blake et al. 1995; Lowe 2007); and the Tok phase in El Salvador (Arroyo 1995; Sharer 1978). Six radiocarbon dates come from contexts of this phase (presented as 1-sigma ranges):

Beta226887 – 1310-1200 B.C., Beta226988 – 1260-1050 B.C., OXA7779 – 1260-1040 B.C., Beta231367 – 1120-1000; OXA7780 – 1220-990, Beta231366 – 1080-980 B.C. (see Apendix A).

The Cangrejo ceramic complex has been described as continuing the tradition of the *tecomate* form, but with an increasing appearance of appliquéd and modeled decorations in the shapes of crabs, other animals, or human faces (Kosakowsky, Estrada-Belli, and Pettitt 2000; Kosakowsky 2002). Furthermore, these authors suggest that local styles are expressed more strongly during this period, leading to distinct regionalization. This point is further emphasized by Arroyo, Neff, and Feathers (2002) in their discussion of the diverse ceramic complexes of the late Early Formative, including the Cherla transition from Ocos to Cuadros in Chiapas; the domination of Navarijo in western Guatemala; the Tecojate complex further east; and finally, the evidence for local differentiation found at Chiquiuitan. I would like to emphasize that while the *tecomate* continues to be a prominent form in the Cangrejo phase, several new forms including bowls and dishes become increasingly prevalent at this time, and often exhibit monochrome slips.

Chiqui Costeño Group

<u>Paste:</u> Medium textured soft paste with fine ground sand and shell temper as well as coarse inclusions of quartz and occasionally ferruginous inclusions.

<u>Forms:</u> Globular and tear-shaped *tecomates*, some with raised rim bands or collars. Strap handles appear in this group during the Cangrejo phase.

<u>Surface Treatment:</u> Smoothed surfaces, frequent appliquéd and modeled decorations, and occasional rim bands and/or plastic designs including gouge punctation and impressions.

<u>Comparisons:</u> While clearly seen as local variations at Chiquiuitan, similarities are seen in the Guamuchal Plain in coastal Chiapas (Clark and Cheetham 2002:24); Costeño at Tecojate (Arroyo 1994:242); Guamachal and Suchiate at El Mesak (Pye 1995:72, 74); Victoria Coarse at La Victoria (Coe 1961:49); Guamachal *tecomates* with convex rim bands at Salinas la Blanca (Coe and Flannery 1967:29); Coastal Undifferentiated Type I at El Balsamo (Shook and Hatch

1978:9); and Lamatepeque *tecomates* with modeled designs on the shoulders in the Tok phase at Chalchuapa (Sharer 1978:16).

Costeño Type

This type reflects many similarities to the Chiquimichis Natural type from the Huiscoyol phase (see description above). Although surface treatment still includes smoothing and punctation (Figure 6-6), red rim bands become less frequent. The signature decorations of this period are appliquéd and modeled balls, lines, lines with pie-crust modeling, and zoomorphic representations (Figure 6-7). Sometimes the surfaces are burnished to the point that a self-slipped appearance results. Rims are rounded and blunt or direct, with modifications including a raised band around the rim, one variety of which is decorated with modeled designs and red and white slip (Figure 6-8), and occasionally a short collar. Rim diameters range from 5-10cm. Wall widths are relatively thick, 7-14mm. Strap handles are added form components (Figure 6-9).

Figure 6-6. Cangrejo phase Costeño *tecomate* with impressed "deer print" design.

Figure 6-7. Signature appliquéd and modeled designs of the Cangrejo phase: a) animal parts, possibly crab; b) frog or lizard face; c) possible human face.

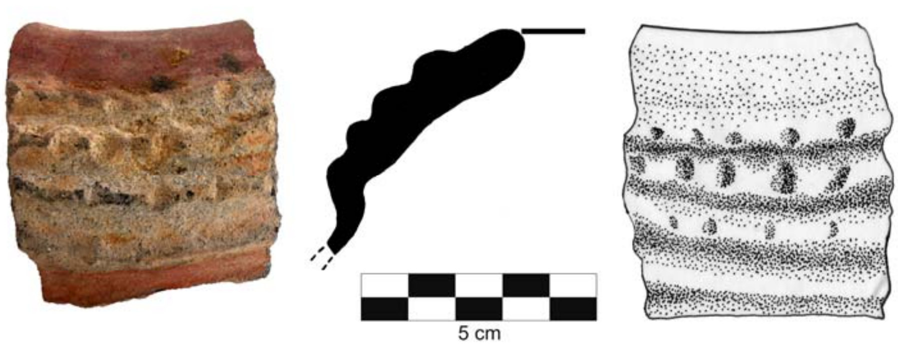

Figure 6-8. Raised and decorated rim band of a Cangrejo *tecomate*.

Figure 6-9. Strap handle.

Chiqui White-and-Black Group

Paste: Very dark gray or black in color (Munsell 7.5YR 2.5/1), medium to fine textured, with sand, quartz, and ground shell inclusions.

Forms: Bowls with out-flaring walls and plates.

Surface Treatments: Smoothing of the surfaces and differential firing that creates the white-on-black effect.

Comparisons: Bano Black-and-White in the Grijalva Region (Clark, Arroyo, and Cheetham 2005:41); Pampas Black-and-White in coastal Chiapas (Clark and Cheetham 2002:25); White and blackware at El Mesak (Pye 1995:73); Pampas Black-and-White at Salinas la Blanca (Coe and Flannery 1967:33); Differentially Fired White-and-Black Ware from the Ocos-Salinas la Blanca area (Shook and Hatch 1979:158); Coastal Undiferentiated Ware Type III at El Balsamo (Shook and Hatch 1978:17); and Macanse Black-and-White at Chalchuapa (Sharer 1978:15).

White-and-Black Type

The differentially fired white-and-black ceramics are easily recognized artifacts commonly found at sites on the Pacific coast in the late Early Formative period, and indicate interaction all across the region at this time. They are also called “white-on-black” or “white-rimmed-black” ware because the differentially fired white part is commonly located in a band at the rim of the vessel. At Chiquiuitan, the band is usually on the exterior of the wall of the bowl and 3-4cm in thickness. Sherds of this type are rare at Chiquiuitan. It should be noted that they often appear on the rare plate form (Figure 6-10). While one or two of the sherds could possibly be from imported vessels, most of them demonstrate the same pastes as typically found in other ceramic groups at the site and may be imitations of styles from other areas.

Figure 6-10. Chiquiuitan White-and-Black.

Cangrejo Natural Group

Paste: Generally medium paste with sand and ground shell temper and coarse inclusions of quartz, ferruginous particles, and occasionally hematite and mica. Colors include grays, reds, and browns (most common Munsells are 2.5YR 4/4, 7.5YR 3/2, 7.5YR 5/4, and 10YR 5/4)

Forms: Bowls, dishes, and occasionally plates with out-flaring walls and flat bases.

Surface Treatments: These surfaces are smoothed or sometimes burnished to the point that self-slip is apparent. The types include different decorative techniques including incision of decorations in the “Olmec style” (discussed below) and effigy vessels with modeled human faces.

Comparisons: Revolorio at Tecojate (Arroyo 1994:253); Jocotal flat-bottomed bowls at El Mesak (Pye 1995:75); Ocos Buff at La Victoria (Coe 1961:53); and Coastal Undifferentiated Type 1 at El Balsamo (Shook and Hatch 1978:8).

Cangrejo Natural Plain Type

This group closely resembles Chiquimichis Natural of the Huiscoyol phase as well as Chiqui Costeño *tecomates* in this phase. Bowls and dishes with out-flaring walls are the prevalent forms, with plates appearing occasionally. Most sherds are small and it is often difficult to determine wall lengths and rim diameters. Vessel wall sherds are relatively thick, typically 8-13 cm. Rims take many forms in this group, including direct rounded, blunt, and exterior tapered, as well as exterior bolstered and averted. This type includes surfaces that are smoothed or burnished, sometimes heavily producing self- or auto-slip. The only decorative design included in this type is the red rim band, typically thin (7-20mm) and appearing predominantly on the exterior of the vessel rim.

Cangrejo Natural Incised Type

The same as Cangrejo Natural Plain Type, but with incised decorations. These incisions often include one, two, or three incised lines (1-2mm width) around the interior or exterior of vessel rims or the exterior of vessel bases. A grooved variation is seen in 3-6mm line bands around the exterior of the rim of vessels. Another variety includes "Olmec style" (discussed below) designs including line breaks, clefts, and geometric designs, in which incisions are usually fine-lined (having widths of 1-2mm).

Cangrejo Natural Effigy Type

The same as Cangrejo Natural Plain Type, but with modeled effigy designs on the exterior of dishes and bowls. These effigies are in the form of human faces, and all have been found fractured down the center leaving only half of the face (Figure 6-11). The appearance of these designs probably began at the end of the Cangrejo phase and may have continued into the Tamarindo phase.

Figure 6-11. Cangrejo Effigies with human faces. The example on the top is a double-angled dish form while the bottom shows elaboration of a *tecomate*.

Cangrejo Black Group

<u>Paste:</u> Generally medium textured with coarse inclusions of quartz, sand, and ground shell. Colors range from dark gray to black (Munsell 10YR 4/2 and 7.5YR 2.5/1).

Forms: The most common form is the bowl with flaring sides and flat bottoms, but *tecomates* with black slipped exteriors are also seen.

Surface Treatments: Smoothing and black slip (Munsell 7.5YR 2.5/1) on the exterior and sometimes also on the interior of vessels. Post-slip incisions include straight and curving lines and sometimes geometric designs in the "Olmec style" (discussed below).

Comparisons: Jocotal flat-bottomed bowls with black slip at El Mesak (Pye 1995:75); Matasano Black at Tecojate (Arroyo 1994:258); Ocos Black at La Victoria (Coe 1961:54); Morena Black at Salinas la Blanca (Coe and Flannery 1967:52); and possibly Coastal Undifferentiated Type IV at El Balsamo (Shook and Hatch 1978:17).

Cangrejo Black Type

Most of the sherds of this type are vessel body sherds. They exhibit black slip, typically on the exterior, but sometimes on the interior of bowls and dishes as well. Rims are usually direct and rounded or blunt, and occasionally exterior bolstered.

Cangrejo Black Incised Type

The same as Cangrejo Black but with post-slip incision. Incised designs include lines around the rims appearing on the interior and exterior sides of vessels (but usually not both on the same vessel), as well as sometimes on the exterior at the base. Designs on the body of vessels include geometric decorations in the "Olmec style" (discussed below) as well as an array of straight and curving lines (Figure 6-12). One variation on a Cangrejo Black Incised sherd had a red band at the rim, over the black slip, about 12mm wide on the interior of the vessel.

Figure 6-12. Example of the Cangrejo Black Incised Type with a complex geometric design. It is possible that this design represents part of the common quatrefoil decorative motif.

Cangrejo Orange Group

<u>Paste:</u> Fine to medium textured grains with coarse inclusions of quartz, ground shell, and occasional ferruginous inclusions and hematite. Colors include browns and oranges (Munsell 2.5YR 4/4 and 2.5YR 5/6).

<u>Forms:</u> Bowls, dishes, and plates with out-flaring sides and flat bases.

<u>Surface Treatments:</u> Smoothing and orange slip (Munsell 10R 4/4) on both sides of the vessel.

<u>Comparisons:</u> Cuadros cream-slipped orange bowls at El Mesak (Pye 1995:73); and Matasano Orange at Tecojate (Arroyo 1994:263).

Cangrejo Orange Type

Sherds of this type are few and commonly body sherds. Orange slips often coat orangish pastes, suggesting that the slips may be self-produced by heavy and wet burnishing. A few sherds exhibit a streaky appearance fabricated through differential smoothing or burnishing with a wash or a slip (Figure 6-13).

Figure 6-13. Cangrejo Orange.

Cangrejo Orange Incised Type

The same as Cangrejo Orange but with an addition of incised designs on the exterior of the bowl or dish. It is difficult to discern if all of the incised decorations are post-slip; a few may have been created pre-slip. Decorations include simple bands and some geometric designs.

Cangrejo Red Group

<u>Paste:</u> Medium to coarse textured with inclusions of quartz, sand, ground shell, and sometimes ferruginous inclusions, with colors ranging from reddish brown to dark gray (Munsell 2.5YR 4/4, 7.5R 4/6, and 5YR 3/3).

<u>Forms:</u> Most commonly dishes and bowls with flaring sides and flat bottoms. Some *tecomates* exhibit application of red slip on the exterior of vessels.

<u>Surface Treatments:</u> Red slip on the exterior, interior, and sometimes both sides of vessels. Decorative designs include post-slip incisions and one sherd from an effigy bowl.

Comparisons: Jocotal flat-bottomed bowls with red slip at El Mesak (Pye 1995:75); Ocos Red Burnished at La Victoria (Coe 1961:51); Pacaya Red at Salinas la Blanca (Coe and Flannery 1967:36); and Coastal Undifferentiated Type II at El Balsamo (Shook and Hatch 1978:12).

Cangrejo Red Type

This is the most common of the slipped types during the Cangrejo phase. Red slip is found often on the exterior of vessels, sometimes on both sides, and occasionally only on the interior of dishes and bowls with wide angled flaring sides. Rims include direct rounded and blunt as well as exterior bolstered and averted.

Cangrejo Red Incised Type

The same as Cangrejo Red with post-slip incision. The incision is usually on the exterior, but includes bands around the rim of the interior. Other incised designs on the bodies of vessels include horizontal, vertical, and curving lines, as well as geometric designs, sometimes including "Olmec" stylistic elements (discussed below) including line breaks and clefts (Figure 6-14). Bowls and dishes of this type often exhibit differential firing so that the base is redder and the sides more dark brown in color.

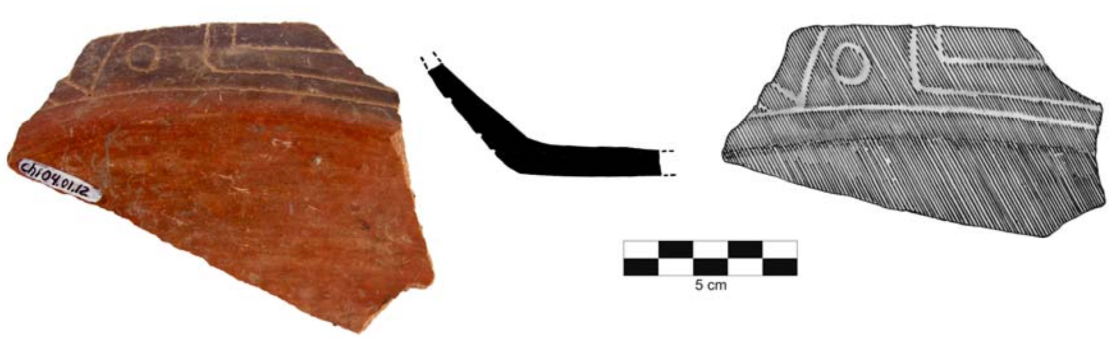

Figure 6-14. Cangrejo Red Incised with "Olmec style" design.

Cangrejo Red Effigy Type

The same as Cangrejo Red, but with a modeled human face on the exterior of the vessel. Only one sherd of this type was found at Chiquiuitan. The face is completely slipped in red, as is the interior side of the sherd (Figure 6-15). This face also exhibits a post-slip incised "Olmec style" eyebrow (the characterization of these types of decorations as "Olmec" is discussed in greater detail later in this chapter).

Figure 6-15. Cangrejo Red Effigy of human face with "Olmec style" eyebrow.

Tamarindo Complex (950-600 B.C.)

The Tamarindo phase at Chiquiuitan falls into the early Middle Formative and is chronologically equivalent to Chacte in the Grijalva Region (Clark, Arroyo, and Cheetham 2005); Conchas I at Salinas la Blanca (Coe and Flannery 1967) and La Victoria (Coe 1961); the Conchas and Duende phases in Chiapas (Blake et al. 1995; Lowe 2007); Conchas at La Blanca where Love defines the phase at 900-600 BC uncalibrated (Love 1993); the Sis Complex in Escuintla (Bove 1996); the Mazate phase at Monte Alto (Hatch 1989); Las Charcas at Kaminaljuyu (Hatch 2002);

and the Colos phase in El Salvador (Sharer 1978). While the phase has been established as covering the entire Late Formative period throughout this region by Kosakowsky and colleagues (Kosakowsky, Estrada-Belli, and Pettitt 2000; Kosakowsky 2002), I do not see evidence for the late part of this phase at Chiquiuitan. Radiocarbon assays from Tamarindo deposits clarify the latest occupation at the site (see Appendix A), and I place the ending date around 600 B.C. to parallel the neighboring Duende phase but exclude the later Escalón.

This phase has been described as exhibiting an absence of red painted rims and an elaboration of vessel form and decorative motifs (Kosakowsky, Estrada-Belli, and Pettitt 2000; Kosakowsky 2002), however I see many of these features, including the flat-bottomed bowl and incised designs appearing by the end of the Cangrejo phase. These observations are made by comparing the frequencies of Cangrejo phase attributes with appearances of new "Tamarindo phase" characteristics (many "Tamarindo" characteristics were found on sherds in contexts with Cangrejo sherd types) in contexts with good stratigraphic control, as well as with the use of radiocarbon results that have added chronological clarity to the understanding of stratigraphic contexts from which these ceramics were collected. These contexts with sherds demonstrating a mix of Cangrejo and Temarindo characteristics may suggest a Late Cangrejo or a Cangrejo/Tamarindo transitional phase. Overall, Tamarindo ceramics demonstrate an elaboration of vessel forms: the *tecomate* is rarer; the flaring-walled and flat-bottomed bowls and dishes continue, sometimes with more elaborate rim forms; and jugs or water jars, complex silhouette bowls, and bowls or possibly vases with divergent rims appear.

Tamarindo Natural Group

<u>Paste:</u> Generally medium paste with sand and ground shell temper and coarse inclusions of quartz, ferruginous particles, and occasionally hematite and mica. Colors include grays, reds, and browns (most common Munsells are 2.5YR 4/4, 7.5YR 3/2, 7.5YR 5/4, and 10YR 5/4).

Forms: Bowls, dishes, and plates with out-flaring walls and flat bases. Other forms include hemispherical bowls, jars often with long (50-70mm) necks, bowls with walls exhibiting sharp breaks, and straight-walled bowls or dishes (or possibly vases) with divergent rims.

Surface Treatments: These surfaces are smoothed or sometimes burnished to the point of self-slip. The types include different decorative techniques incised designs and decorations including modeled human faces.

Comparisons: Victoria Coarse at La Victoria (Coe 1961:62); and possibly Unslipped Conchas pottery in coastal Chiapas (Clark and Cheetham 2002:36).

Tamarindo Natural Plain Type

This type is very similar to the Cangrejo Natural Plain Type from the previous phase, but at this time there is an increase in vessel forms. New forms include jugs or water jars (Figure 6-16), bowls with closed walls, bowls or dishes with one or two sharp breaks, rims with interior bolstering, and straight walled vessels (Figure 6-17). Paste is relatively coarse and walls are thick (7-14mm). A rare variation of this type includes plain vessels with punctated decorations.

Figure 6-16. Tamarindo Natural water jug with strap handle.

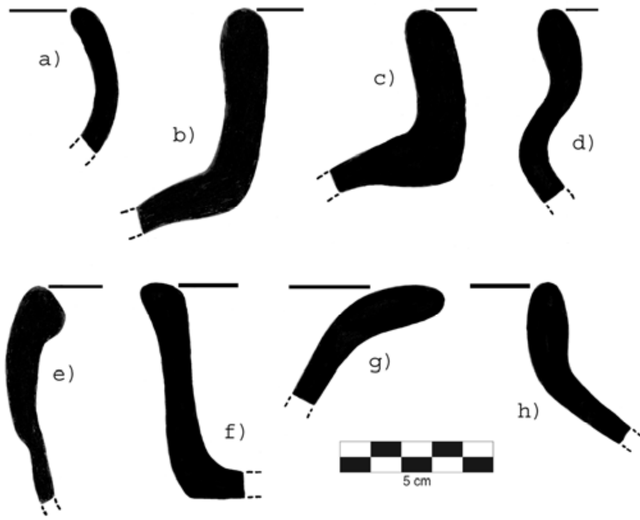

Figure 6-17. Vessel forms of the Tamarindo phase: a) closed or incurving-walled dish or bowl; b) water jar with tall neck; c) water jar with bolstered neck angle; d) double angle open dish or bowl; e) closed dish or bowl with exterior bolstered upper wall and interior bolstered rim; f) flat bottomed open dish; g) open-walled or flaring dish or bowl with averted lip; h) water jar with wide neck angle.

Tamarindo Natural Incised Type

This is the same as Tamarindo Natural Plain with an addition of incised designs on the exterior of most vessels, and sometimes on the interior of plates, bowls, or dishes with widely flaring sides. Incisions are line bands, but also more commonly straight lines forming geometric patterns and cross-hatching (Figure 6-18). Incised decorations are executed with more skill in the Tamarindo phase than in the Cangrejo phase, with more elaborate design motifs and straighter and finer incisions.

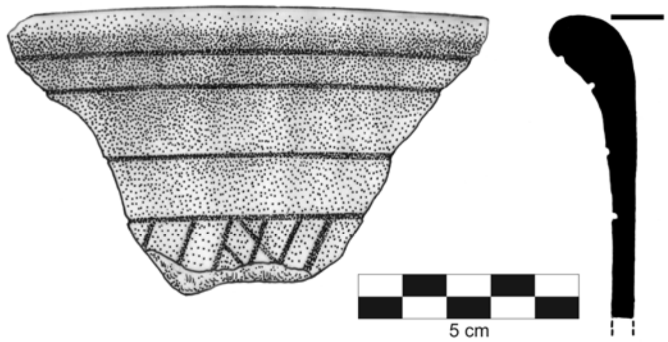

Figure 6-18. Tamarindo natural incised rim sherd from a vertical-walled dish or bowl and with horizontal lines and cross-hatching design.

Tamarindo Natural Red Type

A few of the Tamarindo Natural sherds exhibit very eroded red slip that is clearly differentiated from the harder and thicker slips of the Tamarindo Red Type. This red application may be limited to painted designs as it often appears on top of other decorative features including modeled designs or on the rims of vessels (Figure 6-19).

Figure 6-19. Modeled profile of a human face on the averted rim of a Tamarindo vessel. Red slip is visible on the figure's nose.

Tamarindo Black Group

Paste: Medium coarse paste with ground shell and sand temper as well as coarse inclusions of quartz and occasionally ferruginous particles and mica. Colors range from dark brown to gray to black (Munsells 5YR 2.5/2, 10YR 4/2, and 7.5YR 2.5/1).

Forms: Bowls and dishes with out-flaring or straight walls.

Surface Treatments: Application of black slip (Munsell 7.5YR 2.5/1) on entire vessel. This group includes an incised type with post-slip incision.

Comparisons: Ocos Black at La Victoria (Coe 1961:54); Morena Black at Salinas la Blanca (Coe and Flannery 1967:32); and Melendrez Black at La Blanca (Love 1989:206).

Tamarindo Black Type

This type is similar to the Cangrejo Black monochrome type, but the black slip is often much thicker and the sherds overall seem a bit harder. Rims are direct and rounded, blunt, or squared and sometimes averted or bolstered on the exterior. Also, one variation among this type is the application of a fugitive red slip that is typical of the Middle Formative.

Tamarindo Black Incised Type

The same as the Tamarindo Black Type, but with post-slip incisions. These occur on the exterior of vessels and are usually composed of straight lines sometimes creating geometric patterns. Again, the red slip is sometimes seen over the black (Figure 6-20).

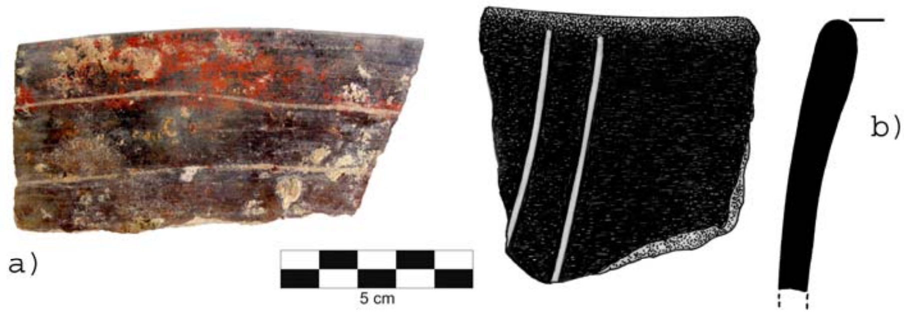

Figure 6-20. Tamarindo Black Incised rim sherds: a) photo of an open dish or bowl with fugitive red slip typical of the Middle Formative; b) drawing of a straight-walled, slightly closed dish or bowl with two vertical incised lines on exterior.

Tamarindo Orange Group

<u>Paste:</u> Medium to fine textured paste with inclusions of shell, sand, quartz, and occasionally hematite. Colors tend to be in the reddish brown to orange range (Munsells 2.5YR 4/4 and 2.5YR 5/6).

<u>Forms:</u> Bowls and dishes with flat bottoms and sometimes with complex profiles including sharp angle breaks.

<u>Surface Treatments:</u> Thick orange slip (Munsell 10R 3/4) applied to the exterior and interior of vessels. This group includes an incised type with post-slip incision.

<u>Comparisons:</u> Conchas Orange at Salinas la Blanca (Coe and Flannery 1967:48) or La Victoria (Coe 1961:76).

Tamarindo Orange Type

Sherds of this type are rare and are generally small, making it difficult to determine forms. Discernable forms include bowls and dishes with flat bottoms and bowls with two sharp breaks in profile angles. Rims are direct and rounded, squared, or blunt. Orange slips in this phase are thicker and less streaky than in the Cangrejo phase.

Tamarindo Orange Incised Type

This type is the same as Tamarindo Orange with an addition of incised decorative designs. These designs tend to be more complex and executed with more skill (straighter and thinner lines) than those seen in the Cangrejo phase (Figure 6-21). They include geometric patterns of the "Olmec style" as well as single line bands (again, the nature of this style is discussed below).

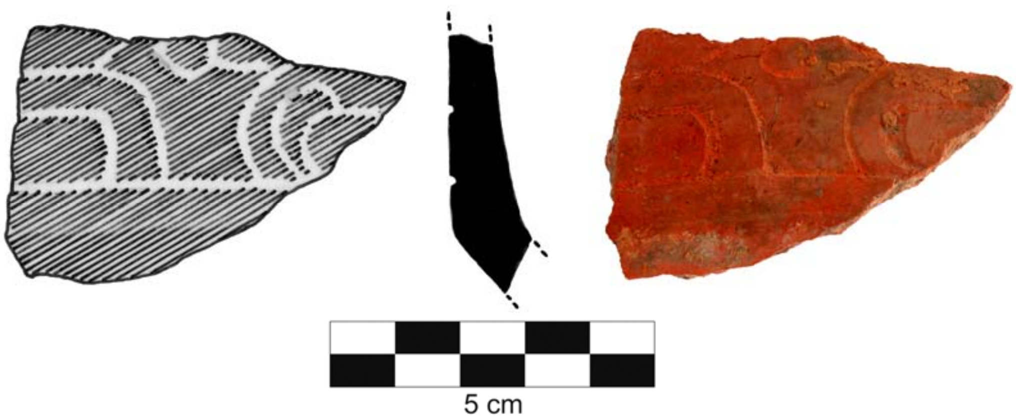

Figure 6-21. Tamarindo Orange Incised sherd.

Tamarindo Red Group

<u>Paste:</u> Medium to very coarse textured with coarse inclusions of sand, shell, ferruginous inclusions, quartz, and occasionally mica or hematite. Pastes tend to be reddish in color (Munsell 7.5R 4/6 to 2.5YR 4/4).

<u>Forms:</u> Bowls and dishes with flat bases and a variety of wall shapes including direct flaring, one sharp angle, two sharp angles, and often with diverted, bolstered, or averted rims.

Surface Treatments: Red slip on the exterior and almost always the interior of vessels. Slip color is often a deep red, almost purple color (Munsell 7.5R 4/8). This group includes an incised type with post-slip incision.

Comparisons: Conchas Red Unburnished at La Victoria (Coe 1961:63); Alamo Red at La Blanca (Love 1989:230); and perhaps Red Conchas pottery in coastal Chiapas (Clark and Cheetham 2002:36).

Tamarindo Red Type

This type is discerned from the Cangrejo Red Type because the red slip is applied in a thicker layer, appears less streaky, and is often a darker red color. These sherds are often burnished as well. Vessel walls have medium widths, ranging around 9-12cm.

Tamarindo Red Incised Type

This type is the same as the Tamarindo Red Type, however it exhibits post-slip incised decorations. These decorations are most frequently seen on the exterior of vessel walls, although single bands around the interior on flaring walled plates and dishes are also present. Some of the more complex designs include geometric patterns and curving lines or circles and reflect “Olmec style” characteristics (Figure 6-22).

Figure 6-22. Tamarindo Red Incised example with curving lines and circles decorating the exterior of the sherd.

Tamarindo Buff or Cream Group

Paste: Medium textured particles with fine inclusions of sand and shell as well as some coarse inclusions of quartz. The color ranges from light to dark browns (Munsell 7.5YR 5/4, 7.5YR 3/2)

Forms: Bowls and dishes with straight and flaring sides and occasional angles in the vessel walls.

Surface Treatments: Buff or cream colored slip (Munsell 10YR 6/3 and 10YR 6/4) on the entire vessel surface. This group includes an incised type with post-slip incision.

Comparisons: Perhaps Buff Conchas pottery in coastal Chiapas (Clark and Cheetham 2002:37); and Ocos Buff at La Victoria (Coe 1961:53).

Tamarindo Buff or Cream Type

Sherds of this type demonstrate a rich cream or buff color on most of the slipped area. However, it should be mentioned that differential firing of vessels with this slip produces orange, red, and brown colors in the same slip. Vessels include bowls and dishes with flaring and straight walls and include a range of rim forms including direct as well as exterior bolstered. One example demonstrates an angle at the joint of the walls and the base. Vessel walls are thin to medium thickness (6-10cm). The only other decorative element is a very rarely occurring red rim band, only about 2cm thick, covering the edge of the lip.

Tamarindo Buff or Cream Incised Type

Same as Tamarindo Buff or Cream Type with an addition of post-slip incision on the exterior walls of vessels (Figure 6-23). The designs usually include banded lines (2mm thick).

Figure 6-23. Tamarindo Buff or Cream Incised sherd.

Tamarindo White Group

Paste: Fine to medium coarse paste with fine inclusions of sand and shell and slightly larger inclusions of quartz. Colors are generally light browns and grays (Munsells 7.5YR 5/4 and 10YR 5/4).

Forms: Closed-walled hemispherical bowls, open-walled plates or dishes and bowls. Many vessels have averted rim forms.

Surface Treatments: White slips on interior and exterior of vessels, ranging in color from pure white (Munsell 10YR 7/2) to a dirtier off-white (Munsell 10YR 6/4). This group includes an incised type with post-slip incision.

Comparisons: Conchas White-to-Buff at La Victoria (Coe 1961:64); Nublado White in the Grijalva Region (Clark, Arroyo, and Cheetham 2005:101); Melendrez White at La Blanca (Love 1989:187); and perhaps White-slipped Cochas pottery in coastal Chiapas (Clark and Cheetham 2002:37).

Tamarindo White Type

These sherds are not common in the Chiquiuitan assemblage. Sometimes white calcite residues on the vessel surfaces appear similar to a white slip. The colors of the slips themselves also range between many shades of off-white. One pure white slip on a particularly hard sherd may represent an imported vessel. Forms as well as wall thicknesses vary (Figure 6-24).

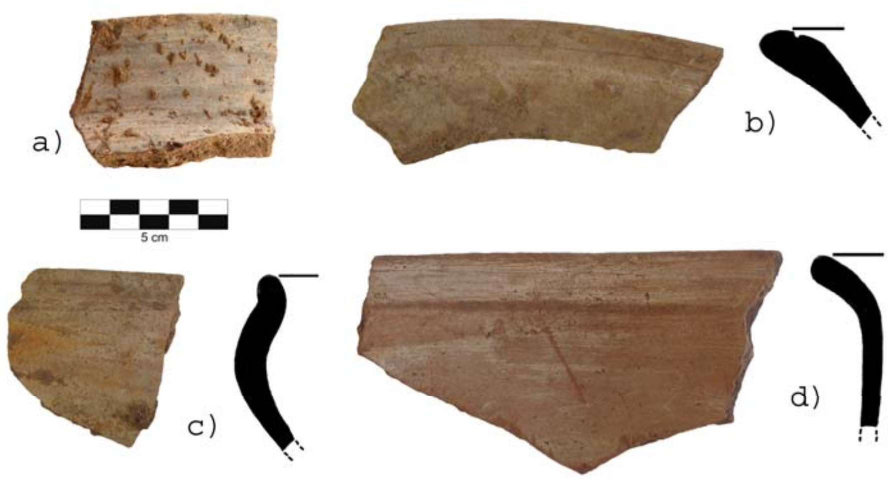

Figure 6-24. Tamarindo white-slipped rim sherds: a) water jar that exhibits the brightest white slip and may represent an imported vessel; b) open-walled or outward-flaring dish or bowl; c) closed dish or bowl with short collar; d) straight-walled bowl with averted lip.

Tamarindo White Incised Type

Like Tamarindo Black, Orange, and Red, Tamarindo White also comes in an incised type. Incisions are post-slip and include geometric designs composed of straight lines sometimes forming geometric patterns (Figure 6-25) as well as the more typical line band around the interior or exterior of the rim. Incisions are generally 1-2mm in thickness.

Figure 6-25. Drawing of a Tamarindo White Incised rim sherd.

Chiqui Polychrome Group

Paste: Medium paste with inclusions of sand, shell, quartz, ferruginous inclusions, and occasionally hematite specks. Paste colors vary in the reddish brown range (Munsell 2.5YR 4/4, 2.5YR 5/6, and 7.5R 5/6).

Forms: Bowls, dishes, or plates with out-flaring walls.

Surface Treatments: Application of slip to the entire vessel with an addition of a rim band of another color over the monochrome slip.

Chiqui White-on-Red Type

Sherds of this type generally display vibrant colors, with bright red (Munsell 7.5R 5/6) monochrome slip on the vessel's interior and exterior and a pure white (Munsell 10YR 7/2) band (Figure 6-26). The band typically covers more area on the interior of the rim of the flaring walls of the vessels (8-12mm on interior and less than 10mm on the exterior). Examples of this type are very rare and could be imported.

Figure 6-26. Chiqui White-on-Red of the Tamarindo phase.

Chiqui Black-on-Orange Type

There is only one example of a sherd of this type from the Chiquiuitan assemblage and it is noted for its uniqueness. The flaring wall of the vessel is further averted to the exterior at the rim and is slipped with a orange slip that approaches buff or cream in color on the interior. A black band of 22mm with a thin line interruption near the edge of the lip decorates the exterior of the rim (Figure 6-27).

Figure 6-27. Chiqui Black-on-Orange of the Tamarindo phase.

Chiqui Gray-on-Red Type

Like the Chiqui Black-on-Orange, this is an exceedingly rare polychrome type of the Tamarindo phase, with only one representative sherd (Figure 6-28). The open-walled dish or bowl exhibits streaky light red (Munsell 10R 4/4) slip on the interior and exterior, with an addition of grayish, almost tinted bluish slip (Munsell Gley 2 6/5PB) around the rim. From the rim, the gray coats 37mm on the interior and 34mm on the exterior of the vessel. It is possible that they gray was at one time a white slip and that this sherd belongs to the White-on-Red type, but that is difficult to say at this time.

Figure 6-28. Chiqui Gray-on-Red of the Tamarindo phase.

Chiqui Resist Group

Paste: Fine to medium textured paste with fine sand, shell, and quartz inclusions.

Forms: Bowl or vase with straight walls – possible cylinder vessel.

Resist ceramics are not frequent at Chiquiuitan; only one sherd was found with black-and-white resist (Figure 6-29). This sherd is a rim sherd of a cylinder vessel with straight walls. The walls are 9mm thick and it has a rim diameter of 6cm. The base is not present on this sherd. The resist technique produced horizontal streaking of a black color on the exterior surface of this vessel. The interior demonstrates very rough smoothing.

Figure 6-29. Chiqui Resist sherd from the Tamarindo phase.

Chiqui Fine Group

Paste: Fine and hard with fine inclusions of black sand and clear quartz. Colors range from tan to gray (Munsells 7.5YR 5/6, 10YR 5/4, and 10YR 4/2).

Forms: The only two discernable forms are a cylinder vessel with a flat base and a necked water jar.

Surface Treatments: Smoothing and decorative techniques including red slip and fine line incisions.

Chiqui Fine sherds are rare in the assemblage. They constitute one partially reconstructed vessel and a few other sherds. Due to their scarcity in the collection from Chiquiuitan and the different nature of the paste (finer and with fewer inclusions) and thinness of the walls, they may represent imported vessels. In one context the sherds compose a partial cylinder vessel (Figure 6-30). All of them are hard and thin (wall thicknesses about 3-5mm). The cores of these sherds are often oxidized black compared to the rest of the paste. All surfaces are well smoothed. Decorations include the application of monochrome red slip (Munsell 7.5R 5/6) and fine line incisions demonstrating curving and straight lines that compose a geometric pattern resembling the "Olmec style" (Figure 6-31). Since the sample is so small of this group of ceramics, I have not designated separate types.

Figure 6-30. Partial cylinder vessel of the Chiqui Fine Group.

Figure 6-31. Chiqui Fine Red incised sherd.

Chiqui Earspools

One other ceramic artifact type at Chiquiuitan is the earspool. These were found in Tamarindo contexts (Figure 6-32). These earspools are of fine paste in which it is difficult to discern paste inclusions. All surfaces of the earspools are coated with either a red (Munsell 7.5R 5/6) or black (Munsell 7.5YR 2.5/1) thick slip. All earspool artifacts were found in fragments, but whole pieces probably had diameters of 4-6cm, and standard width is 19-24mm.

Figure 6-32. Earspools found in Tamarindo deposits: top red, bottom black.

Symbolic Motifs

Iconographic motifs in various early Mesoamerican artistic styles have come under increasing scrutiny in studies of Formative period symbolic systems, especially the much debated "Olmec style" motifs. Christopher Pool (2007) argues that the use of Olmec symbolic motifs comprised political strategies in which leaders were able to draw upon easily recognizable ideological symbols and the power associated with their cosmological connections to legitimate their social position, advance in local networks, and acquire access to regional status goods. Julia Guernsey (2006) traces elements of the Izapan artistic style and its predecessors (including Olmec style) and contemporaries, especially in sculptural traditions, in order to demonstrate how iconographic motifs articulate political, cosmological, and mythological authority. Lastly, David Cheetham (2005) describes several of the artistic motifs identified in the Olmec style as diagnostics for the Cunil horizon in the Southern Lowland Maya region, suggesting that such design elements were adopted from non-Maya neighbors in the Preclassic period. These works indicate the continuous concern with evaluating the significance of these motifs and the meaning behind their wide-spread use in the Formative period.

At Chiquiuitan, symbolic motifs are seen in incised decoration as well as modeled and appliquéd ornamental elements. This discussion does not include more regular types of surface design such as monochrome or polychrome slips, plastic designs applied to partial or entire vessel surfaces, or zoned decorations. Rather I focus here on identifiable motifs that can be used to evaluate Chiquiuitan's role in a wider symbolic system.

It appears that incised decorations were added to the vessels before firing, when the clay was in the leather-hard stage, although it has also been suggested that many forms of incised designs were etched onto the surface of ceramic vessels after slipping and firing (Cheetham 2005). These designs were executed using pointed or flat tools such as sticks, antler, bone, or shell. In total, 719 sherds with incised designs were analyzed at Chiquiuitan. Only 81 examples had slip and incised designs, and in these cases the incision was executed after the application of the slip in 63 (78%) of the appearances.

Table 6-1. Ceramic incised design counts and totals for each design type from each phase.

	Huiscoyol	**Cangrejo**	**Tamarindo**	**TOTAL**
Simple Design	8	169	375	552
Single Line Break	0	1	7	8
Double Line Break	0	1	6	7
Cleft	0	1	3	4
Geometric Design	0	26	122	148
TOTAL	8	198	513	719

Some of the more simple incised designs include horizontal and vertical lines and grooves, curving lines, circles, herringbone, and cross-hatching. Geometric designs and the decorative elements of the line break and cleft are significant in that they have been identified as markers for the Olmec style (Pool 2007:182; Lesure 2000, 2004; or X Complex according to Grove 1989) as well as related traditions from more distant regions of Mesoamerica (Cheetham 2005; Flannery and Marcus 1994). Incised ceramics at Chiquiuitan include 148 generally defined geometric designs, 4 cleft motifs, 7 double line breaks, and 8 single line breaks (Table 6-1). The cleft motif is important because it is sometimes associated with the earth or were-jaguar (Flannery and Marcus 1994; Love 1991). Of the 30 complex geometric designs that combine several types of design elements such as straight lines, curving lines, and circles (Figures 6-14, 6-21, 6-25, 6-30), a few are especially notable due to their understood symbolic significance throughout Mesoamerica. One of these decorations may demonstrate the upper left portion of a quatrefoil motif (Figure 6-12), which has been associated with the quadripartite division of the prehistoric Mesoamerican universe and theme of centrality (Guernsey 2006) and is related to the well-known Kan Cross (Cheetham 2005). Another could be called a fragmented flame eyebrow or similar motif (Figure 6-23), a design element that appears in many forms and is sometimes associated with the Olmec dragon (Coe 1989), and as a wing on the avian-serpent (Cheetham 2005; Lesure 1994) or possibly in a similar fashion on bird costumes (Guernsey 2006:104).

While incised designs appear in the Huiscoyol and Cangrejo periods, they are most abundant in the Tamarindo. Especially in the cases of clefts, line breaks, and geometric designs, 138 out of 167 (or 83%) are from Tamarindo phase contexts. This pattern indicates an increasing embellishment of ceramic vessels with decorative designs in the late Early and Middle Formative period, as is seen along the coast and in other areas of Mesoamerica at this time (Cheetham 2005; Flannery and Marcus 1994; Love 1991; Pye and Demarest 1991).

Modeled decorations are shaped out of the clay that composes the ceramic vessel. They can be described as low-relief since they generally do not protrude extensively from the flat part of the vessel surface. Appliquéd designs are shaped from clay apart from the vessel and embellished on the vessel surface. Both types of decoration are executed pre-firing. Modeled and appliquéd designs include simple elements such as lines or ridges and balls. Often the ridges have pinched designs or indentations created by tools that create the "pie crust" or "tractor trail" appearances. Balls can also have impressions made by tools, vary in size and shape, and sometimes take on the appearance of a cacao bean. A few examples also illustrate more complex modeled and appliquéd designs. These include human faces and animals or animal parts. In the case of human representations, 35 examples were observed, while 66 animals or animal parts were identified. The three effigy vessels demonstrate the most elaborate depictions of human faces from the Chiquiuitan assemblage (Figures 6-11, 6-15). The only identifiable animal images include crabs and frogs (Figure 6-7).

As mentioned above, some of these designs are often associated with the Gulf Coast Olmec cultural tradition and the wide-spread occurrence of similar motifs outside of the Olmec heartland. The cultural origins, nature of heartland, extent of interaction, and direction of information flow have been laboriously debated in Mesoamerican literature (Benson 1968 and 1981; Campbell and Kaufman 1976; Pool 2007; Neff et al. 2006a and b; Sharer and Grove 1989;

Sharer et al. 2006). At Chiquiuitan these symbolic motifs represent local use of a supra-regional symbolic system. I use the term "Olmec style" in descriptions throughout this chapter only tentatively and for lack of a better term. The possibility of imported goods could speak more directly to the origins of vessels displaying some of these motifs and clarify Chiquiuitan's role in the networks that shared these designs. However, without source studies for these ceramics, it is uncertain which, if any, of the ceramics found at Chiquiuitan were imported. Earlier design motifs, such as molded animals, have similarities with the Soconusco, and a similar transition from more naturalistic representations of animals to the Olmec style motifs is seen in that region (Lesure 2000). Furthermore, these new design elements appear at other sites closer to Chiquiuitan around the same time (Love 2002; Demarest and Pye 1991). That Chiquiuitan potters employed these designs probably reflects the enduring contact with neighbors to the west and into the Soconusco, rather than direct influence from the Gulf Coast Olmec. The presence of an Olmec colony at Cantón Corralito in the Cuadros phase and the belief that Cantón Corralito was the Soconusco capital at that time demonstrate close ties between the Gulf and the Soconusco (Cheetham 2006,2007; Pye, Hodgson, and Clark 2008). The wide-spread appearance of particular artistic design motifs is believed to indicate some sort of interaction sphere and a common ancestral symbolic system of which Chiquiuitan was a clear participant (this interpretation follows ideas of the regional sharing of the symbolic structures outlined in Lesure 2004).

Vessel Forms

One of the ways that ceramicists have been able to interpret human behavior is through the association of different vessel forms with specific behaviors involved in food preparation and consumption. Such research tries to determine the manufacturing goals of the potter in creating a container with intentional features and a certain purpose (Arnold 1999; Lesure 1998b; Rice

1987). Along these lines, ceramic analysis at Chiquiuitan looked at morphological and technological attributes to determine the types of pots that made up assemblages from each of the three chronological phases. Of the 26,886 sherds that were studied at Chiquiuitan, forms could be securely identified in 3,239 or 12%, and no whole vessels were observed. A few specific forms dominate the assemblage and were probably used for a variety of purposes including transport, preparation, storage, cooking, and serving of foods and beverages. This section discusses how the frequencies of these forms change through time, and what these patterns indicate for human behavior.

As identified by Kosakowsky (2002; Kosakowsky, Estrada-Belli, and Pettitt 2000), the *tecomate* form nearly completely comprises the Huiscoyol phase, although it must be mentioned that only a few pure Huiscoyol deposits were encountered. Most examples are globular *tecomates*, though one tear-shaped *tecomate* sherd was observed from these levels. It has frequently been suggested that the *tecomate* replaced the gourd (more specifically, kettle gourds, tree calabashes, or certain squash; Lowe 1975:10), a more perishable container that had been used previous to the adoption of pottery technology (Arnold 1999; Clark and Blake 1994; Clark and Gosser 1995; Lesure 1998).

The *tecomate* is an interesting form because it is a vessel that can have variable functions. For example, the small orifice could function to hold liquids and some have suggested that *tecomates* were utilized as part of a beverage service (Clark and Blake 1994; Clark and Gosser 1995). Alternatively, cooking vessels generally are rounded to avoid thermal damage and expose more of the surface to heat, thin-walled to facilitate heat conduction, and have temper with low coefficients of thermal expansion (such as shell) and coarse surfaces to allow an amount of stress from heating (Rice 1987). This description characterizes many of the sherds from Chiquiuitan, suggesting that they may have been used for cooking. Moreover, some of the sherds exhibit a black or burned appearance, and hollow supports indicate that some pots were elevated; two details which further suggest use over a fire. While different carbon patterns were recorded from ceramic sherds, not enough information was gained to indicate any specific cooking behaviors (for example interior burning patterns that can suggest heating food in the absence of water, or the activity of boiling that produces a band of carbon across the middle of the interior; Skibo and Blinman 1999). Patterns of use-wear such as scratches or abrasions were not frequently observed either.

It has been suggested that the restricted orifice of the *tecomate* also may indicate transportability. Philip Arnold (1999) proposes that the widespread use and subsequent abandonment of the *tecomate* form across parts of Mesoamerican in the Early and Middle Formative periods correlates with trends in residential mobility. He cites the *tecomate's* mechanical performance characteristics, namely its rounded base, small opening, and high incurving walls to endure or even aid in transport and serve in a myriad of functions. These are interesting points to consider for the Huiscoyol phase at Chiquiuitan. The little evidence that is available from this early phase does not securely support the scenario of permanent sedentism, leaving open the possibility that these *tecomates* were being used early on at Chiquiuitan by more mobile people. Clear evidence for a domestic tool assemblage is lacking and we do not see a permanent house platform construction. While large amounts of hardened clay were found in these levels, analysis of the clay did not indicate wattle-and-daub architecture through stick or pole impressions as in later phases, but rather exhibit the impressions of smaller grasses, suggesting some other use (Ortiz 2007). Furthermore, it could be possible that Chiquiuitan had a specialized function and was only used on a seasonal or otherwise part-time basis during the Huiscoyol phase. Low diversity in the species of estuarine animals exploited at this time appears to support this hypothesis (see Appendices G and H). In this case, the *tecomate* as the dominant form could indicate a specialized function, similar to at Soconusco sites like El Mesak and El Varal, where *tecomate* and dish-dominanted assemblages have been interpreted as evidencing an economy specializing in the production of salt. These possibilities are discussed in more detail in the conclusion chapter of this dissertation (Lesure and Wake 2008; Pye 1995).

In the ensuing Cangrejo period, the *tecomate* continues to be a dominant form, representing 31% of the identifiable forms from this time period (Table 6-2). These *tecomates* include globular, tear-shaped, the new short-collared *tecomate*, and one indeterminate *tecomate* sherd. The *tecomate* form exhibiting a short collar is also seen in the Tecojate region to the west at this time (Arroyo 1994, personal communication, 2008) and at Chalchuapa to the east (Sharer 1978). The appearance of the collar could signal an additional desired function for these vessels. These features help to keep contents within the container, can aid in the pouring of liquids, and may facilitate the use of a lid or stopper. Furthermore, this thickening at the vessel lip may also strengthen the orifice rim, protecting it from breakage by accidental blows (perhaps during stirring) or thermal shock (Rice 1987).

Table 6-2. Observations in vessel form collected from rim sherds from all excavated contexts. Counts of rim sherds and percent of total from each time period are provided. These data demonstrate changing vessel form frequencies through time.

	Huiscoyol		Cangrejo		Tamarindo	
Tecomates						
globular	45	74%	233	19%	62	6%
tear-shaped	10	16%	72	6%	10	0.9%
indeterminate	3	5%	71	6%	14	1%
TOTAL	58	95%	376	31%	86	8%
Bowls/Dishes						
open walled	3	5%	619	50%	835	74%
straight walled			130	11%	103	9%
closed walled			11	1%	1	<0.1%
open with two sharp breaks					1	<0.1%
closed with two sharp breaks			5	0.4%		
open with a bolstered break			4	0.3%		
TOTAL	3	5%	769	63%	940	83%
Cantaros			78	6%	100	9%
Plates			5	0.4%		
TOTAL		61		1,228		1,126

Other new forms also join the Cangrejo assemblage. These forms include dishes or bowls that comprise 63% of the total assemblage (see Table 6-2). Dishes and bowls demonstrate different shapes including flaring or open walled, vertical walled, interior-curving or closed walled, closed with two sharp breaks, and open with a bolstered break. It is important to realize the difference between a dish and a bowl; in the case of a dish the height is more than one-fifth but less than one-third of its maximum diameter, while a bowl's height may vary from one-third the maximum diameter to equal the diameter (Rice 1987:216). Most of the ceramics collected at Chiquiuitan were too small to be able to differentiate between these two forms, so they are described as dish/bowl in form. These vessel shapes are associated with serving and eating. They vary in size, which would allow them to accommodate different types of foods as well as numbers of people being served. They have flat bases which allow for stability on a flat surface. Finally, their open walls allow for easy visibility and access to contents (Rice 1987).

A few examples can also be seen of other forms including water jars or *cantaros* (6%) and plates (0.4%). Water jars exhibit thicker walls, restricted orifices, high and sometimes decorated necks, and round bases. One large sherd has a *cantaro* neck and a strap handle, implying that these vessels may have been hung on ropes that were passed through the handle openings, perhaps for the purpose of carrying on a *mecapal* or tumpline. This idea is further noted in relation to the absence of flat bases, rather suggesting rounded bases that would be unstable resting on flat surfaces. This form is called the water jar because of the restricted orifice and tall neck which suggest a desire to reduce evaporation and spillage of a liquid content (Rice 1987).

Finally, deposits securely assigned to the Tamarindo phase consist of dishes and bowls as the dominant form (see Table 6-2). Dishes/bowls are seen with a representation of 83% of the assemblage at this time. They also appear to be more standardized in form, with fewer bowls with angled wall breaks, and a majority demonstrating either flaring or open walled or vertical or straight walled. It should be noted that these vessels demonstrate wide variability in size and do not appear to represent specific serving categories (individual-sized vs. family-sized, for example). These are also the forms that exhibit the majority of the more elaborate decorative designs, which are most common in the Tamarindo phase. Rarer shapes include the *tecomate* (8%) and water jar or *cantaro* (9%).

The changes in the frequencies of different vessel forms throughout the occupation of Chiquiuitan are significant in that they demonstrate considerable shifts (Figure 6-33) that reflect transitions in activities involving containers, perhaps in relation to a shifting subsistence base. The prevalence of *tecomates* in the Huiscoyol phase suggests that a versatility of function and perhaps transportability were desirable characteristics at this time. The extent of mobility in the Huiscoyol is not yet determined, and it is possible that the community only gradually developed full sedentism. If this were the case, transportable *tecomates* may have been useful to people leaving the village for hunting or gathering activities, or for those who visited Chiquiuitan from other locales. Lesure's (1998) describes the *tecomates* as a multifunctional tool for storage, transport, service, and cooking, as opposed to Clark and Gosser's (1995) hypothesis that they were used primarily for beverage service. The later interpretation does not seem likely at Chiquiuitan because we do not see other evidence here for hosting or feasting activities from these levels. Alternatively, the *tecomate* may have been used for a specialized purpose at this time, such as the processing or an estuarine resource like shellfish or salt. More research into Huiscoyol phase deposits is needed to clarify the activities that these ceramics were used in during the earliest phase at Chiquiuitan.

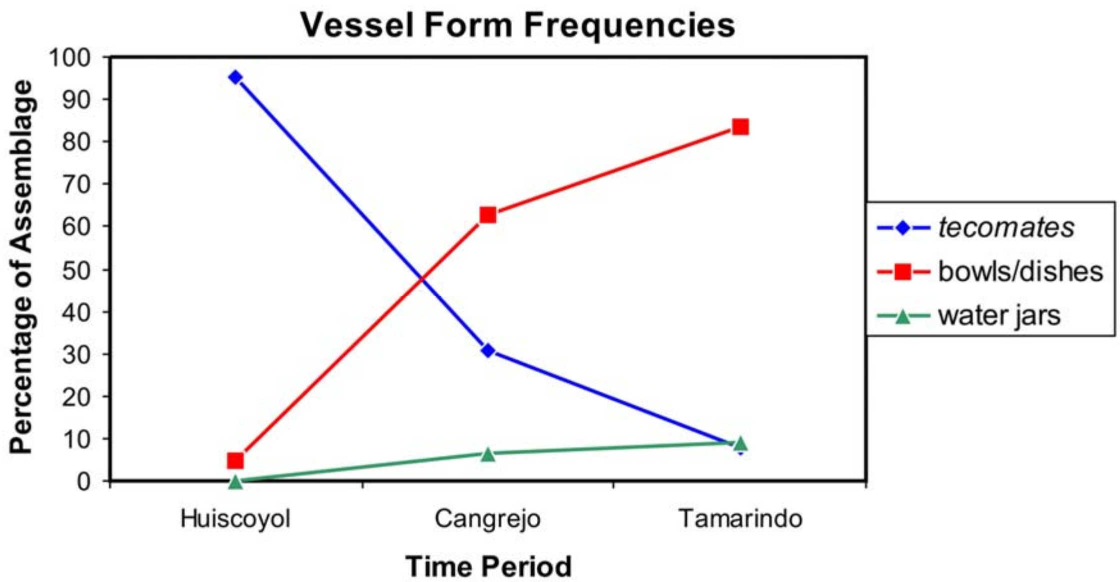

Figure 6-33. Line graph illustrating the changes in frequencies of vessel forms through time at Chiquiuitan, specifically showing shifts in percentages of *tecomates*, dishes/bowls, and water jars.

It is known that serving vessels are often highly embellished to use as display in social events, and at other sites along the coast these vessels have been described as status items used in the negotiation of power between emerging community leaders at competitive feasting events (Clark and Blake 1994). For this reason, the observations that dishes and bowls increase in frequency through time, and that in the Tamarindo period they exhibit the highest level of decoration that is seen in any assemblage at the site suggest a possible trend toward non-utilitarian or symbolic functions. At Chiquiuitan there is not yet a large enough sample or a wide enough representation of different community factions to test the hypothesis that these items were used to portray or confer prestige between individuals or groups within the community. However, the elaboration of form, increase in serving vessels, and rise in decorative elements suggests an interesting change in vessel function at the end of the Cangrejo and beginning of the Middle Formative period.

Conclusions

This chapter presents the results of a modified type variety classification to understand data from ceramic artifacts encountered at Chiquiuitan. In general, the ceramic sherds collected in 2006 and 2007 at Chiquiuitan demonstrate characteristics typical of the Huiscoyol, Cangrejo, and Tamarindo phases defined by Kosakowsky (2002; Kosakowsky and Estrada-Belli 1997; Kosakowsky, Estrada-Belli, and Neff 1999; Kosakowsky, Estrada-Belli, and Pettitt 2000).

The Huiscoyol phase is characterized primarily by the presence of the *tecomate* form, the majority of which exhibit a highly smoothed or burnished surface, and are unslipped or with evidence of self-slip. Some have a red painted band around the rim. Another class of surface treatment seen on Huiscoyol *tecomates* is plastic decoration including shell edge impressions on the entire vessel surface. Large thick supports are also encountered at this time, a diagnostic trait for the regional Ocos phase.

The Cangrejo phase also has *tecomates*, but in a diminishing frequency and with the occasional addition of a short neck or collar. Additionally, more dishes or bowls with straight or out-flaring walls appear. A few sherds of white-and-black are diagnostic of the Cuadros regional phase along the Pacific coast to the west. *Tecomates* with appliquéd designs in the form of human faces and animal or crab parts are typical in this phase, and it is for their presence that it has been named the Cangrejo phase. Another interesting feature of this phase is the presence of effigy vessels exhibiting decorative human faces. Toward the end of the phase, local designs of the “Olmec style” appear.

Lastly, the Tamarindo phase is characterized by an increase in vessel forms. The *tecomate* is still present but in a limited frequency. New shapes include bowls with closed or in-curving walls and dishes or bowls with out-curving walls. The red fugitive slip is a characteristic of the Tamarindo phase and is indicative of the Middle Formative elsewhere on the Pacific coast, as are strap handles. Some thin sherds and a partial vessel were found of a fine ware with red slip.

The first pattern in ceramic data worth noting is the transition in forms that occurs between the Huiscoyol and Cangrejo phases. In the Huiscoyol phase, *tecomates* indicate the only form found at Chiquiuitan. By the Cangrejo phase, several other forms are also seen. This is an important piece of evidence for considering the function of the site in the earliest time period. It supports the hypothesis that the site was not permanently inhabited by individuals that would require many vessel forms to conduct a variety of activities, but that it was instead used as an intensive resource exploitation locale within natural spaces. Under these conditions, only *tecomates* were used for a limited number of activities. The suggestion that *tecomates* were frequently used by mobile people (Arnold 1999) further supports this interpretation.

With respect to future work, more attention needs to be paid to the spatial distribution across the site of ceramics of different types and especially of ceramics bearing symbolic motifs. Identifying ceramic forms, uses, designs, and styles are key inroads to understanding household behavior and identity. By comparing and contrasting differing ceramics from various house contexts, significant aspects of social organization may be identified. Furthermore, the motifs identified in this chapter illustrate that the community of Chiquiuitan was involved in an extensive interaction sphere by the Tamarindo phase. In other areas, participation in and display related to this network of interaction has been used to explain the rise of social complexity and institutionalized hierarchical social inequality (Clark 1994; Lesure 1994). Based on the data thus far collected at Chiquiuitan, comparison of ceramic assemblages between mounds has not bore out evidence for social difference. However, the limited sample from different mounds makes such assessments difficult at this stage. Future investigations should focus on clarifying these issues.

Results point to important changes in society at the end of the Cangrejo phase and beginning of the Tamarindo. General interpretations can be made that link shifts in pottery material culture with other changes taking place at Chiquiuitan. This dissertation argues that the inhabitants of Chiquiuitan began to make outward signs of their identity through intensification of mound building practices at this time. In the ceramics, we can see that the end of the Cangrejo and the beginning of the Tamarindo also exhibit an increased tendency for display, although it is important to note that the new innovations are clearly combined with forms, pastes, and design features typical of the local style in previous phases. Considering the rise in serving container frequencies and the elaboration of these vessels with more complex stylistic motifs, I argue that status objects were important in symbolic presentation. As regional populations grew, people at Chiquiuitan began to make outward expressions of their identity, and in the case of ceramics, they began to do so through embellishment of the most visible container, the serving vessel, with motifs commonly recognized from a shared symbolic system. Furthermore, the appearance of earspools indicates a desire for personal adornment through new accoutrements. Ceramic implements provided another media, in addition to intentional alterations to the landscape through mounded platforms, with which to make outward declarations of their presence, identity, and endurance as a social group inhabiting this rich area of the Pacific coast.

Chapter VII

Conclusions

The cultural transitions that occurred in the Formative period in Mesoamerica do not only include the adoption of food production, the settlement of permanent villages, and the emergence of complex social relations. These adaptations are also accompanied by fundamental shifts in the ways that people understood the changing world around them. These ideological transitions include how people thought of the spaces that make up the surrounding landscape. As these perceptions shifted, so too did their interactions with the physical environment. This dissertation is rooted in the practice theory perspective as it considers elements of the natural and cultural landscape as fundamental parts of social structure. Furthermore, it borrows from landscape theory in attempting to identify shifting aspects of the relationship between humans and the landscape as important transitions occurred throughout the Formative period. At Chiquiuitan, evidence for this shift is seen in the gradual development from a natural space in the Huiscoyol phase into a socio-natural place through mound building practices in the Cangrejo phase, intentionally shaping a cultural environment out of the natural spaces surrounding it. This example is among the earliest known instances of humans adding a built component to the natural environment in Mesoamerica, dating to the same time as the early building on the Pacific coast of Chiapas, Olmec constructions on the Gulf Coast, and highland Mexican examples in Oaxaca.

This chapter brings together the information provided throughout the dissertation in a comprehensive summary of main ideas. First, a summary of cultural adaptations in the Formative period at Chiquiuitan is presented. This section focuses on aspects of social structure explained in Chapter Three, namely the transitions in sedentism, agriculture, and social relations. These adaptations are placed within a wider context of similar developments that were occurring throughout the Pacific coast. Second, known patterns in relationships between landscape and mobile versus sedentary groups are reiterated and evaluated in light of the data presented. An interpretation for mound building and community formation at Chiquiuitan is summarized in which the Huiscoyol phase is characterized as a special resource exploitation locale occupied on a temporary basis, whereas sedentism is seen in the Cangrejo phase, and a primarily cultural landscape with symbolism and history is detected by the Tamarindo phase. Finally, this chapter underscores the implications for investigating Formative period Mesoamerican sites through research designs that incorporate a practice theory perspective, while considering ancient sites as dynamic cultural landscapes.

Transitions in Social Structure: Sedentism, Agriculture, and Social Relations

The datasets outlined in the previous chapters and following appendices are used to reconstruct a localized sequence of cultural development that is critical to gaining a better understanding of the diversity in adaptations toward sedentism, food production, and the solidification of distinct social groups in early Mesoamerica. Revolutionary changes are seen in the Formative period at several sites along the coast, where people began producing ceramic containers for the first time, living in permanent villages, expanding in populations, and intensifying food production practices (Clark 2004a; Love 2007; Rosenswig 2006). As discussed in Chapter Three, this dissertation considers social structure by specifically targeting habitual practices in residential mobility, subsistence, and social relations. The following sections discuss these data from Chiquiuitan in relation to wider developments in the Early Formative, especially throughout the Pacific coast culture area, spanning from the Soconusco region in the northwest to just beyond the border of El Salvador in the southeast (see Figure 2-4).

Early Formative Settlement Transitions

Though modest, evidence from the Huiscoyol phase at Chiquiuitan supports some initial interpretations. Excavations in these early levels revealed a ceramic assemblage dominated by the *tecomate* form. As described in Chapter Six, diagnostic attributes found on ceramic artifacts from Early Formative Chiquiuitan reflect general trends in material culture that are witnessed all along the Pacific coastal region, but with clear indications of local characteristics. Evidence for a domestic tool assemblage and permanent house platform construction are lacking. While large amounts of hardened clay were found in these levels, analysis of the clay did not indicate wattle-and-daub architecture through stick or pole impressions as in later phases, but rather exhibit the impressions of smaller grasses, suggesting some other use (Ortiz 2007). It appears that Chiquiuitan had a specialized function and was only used on a seasonal or otherwise part-time basis by foragers during the Huiscoyol phase, offering a new interpretation for residential mobility in the earliest use of the site.

While Chiquiuitan is the only known site in the area between the Maria Linda and Paz rivers and exhibited platformed building surfaces during the earliest part of the Formative period (Estrada Belli 1999), it did not in any way reach the scale or precocity of some of its neighbors in the Soconusco. For example, at Paso de la Amada factors such as site planning, intensive labor projects, and communal areas including a ball court all point to the site's special significance as a ceremonial center with residential components (Clark 2004a; Blake and Clark 1999; Hill and Clark 2001; Lesure 1997, 1999; Lesure and Blake 2002; Love 2007). Furthermore, Paso de la Amada was a large site within a network of other smaller villages and hamlets. Chiquiuitan, rather, reflects a more modest development at this time, perhaps better paralleling adaptations seen at smaller estuary sites in Mazatán such as Los Alvarez.

Los Alvarez is a site of four mounds, dating to the Ocos phase and with evidence for abundant estuarine resource exploitation and round hearth features (Ceja 1999; Pye, Hodgson, and Clark 2008). The site also demonstrates a ceramic assemblage dominated by the *tecomate* form, which is thought to indicate a specific function for the use with estuarine resources. Ceja (1999) describes Los Alvarez as a temporary special function encampment for the procurement of mollusks, crustaceans, fish, and salt, and argues that it was under the influence of neighboring Paso de la Amada. Postulated settlement diversity, as well as the variable functions of early sites, reveal a more complex cultural landscape in the Soconusco than has yet been identified in regions further southeast during the first part of the Early Formative.

Chiquiuitan fits the trend along the Guatemalan coast for the establishment of early sites next to coastal estuaries and wetlands (Bove 2002). Considering that its location within the Chiquimulilla wetland system enabled optimal resource procurement within a rich environment, it seems possible that Chiquiuitan was only used for short periods of time in the Huiscoyol phase of the Early Formative, perhaps as a specialized resource extraction locale similar to Los Alvarez. A similar interpretation has been made at other small and more isolated sites (compared to the networks emerging in the Soconusco) in the adjacent regions such as in Suchitepequez and Sipacate (Arroyo 2004; Arroyo, Neff, and Feathers 2002), and at El Carmen in El Salvador (Arroyo 1995; Pye, Demarest, and Arroyo 1999).

Beginning with El Carmen, the only known site dating to the earliest phases of the Early Formative in El Salvador, Arroyo (1995) reports a ceramic assemblage comprised primarily of *tecomates*, paralleling what was found at Los Alvarez and early Chiquiuitan. Furthermore, the lowest layers of excavation uncovered oven or hearth features penetrating sterile soil at the base of the mound platform. This evidence is used to argue for a specialized function for the site during the Early Formative Bostan phase. Specifically, it is thought that El Carmen was only seasonally occupied for the exploitation of estuarine resources at this time.

To the northwest of Chiquiuitan, in the Tecojate region between the Madre Vieja and Coyolate rivers, sites dating to the first half of the Early Formative have been documented near the coastal estuaries. Revolorio, Medina, Landa, and Peta are sites that demonstrate intact stratigraphic layers from this time (Arroyo 1994). Located relatively close together (less than 1 km apart), these sites may indicate another settlement adaptation, with small permanent hamlets occupying estuarine locales. Different than at Los Alvarez, Chiquiuitan, and El Carmen, the ceramic assemblage from the Tecojate sites were dominated by the dish form, and exhibit only 30% *tecomates* during the Early Formative (Arroyo, Neff, and Feathers 2002). Architectural features such as floors and the large sizes of the mounds, along with the diverse ceramic assemblage, suggest early full time occupation of these sites (Arroyo 1994:100). Understanding whether full sedentism characterized the extent of the Early Formative or only the later phases requires more investigation within this region.

Moving along the coast to the northwest, Arroyo and colleagues (2002) have noticed interesting patterns in the ceramic assemblages from sites located around the Sesecapa Lagoon in Suchitepéquez. Vidal, the site nearest to the ocean in that area, demonstrates a homogeneous *tecomate* ceramic assemblage, while Leonidas, slightly further inland, has a more diverse array of vessel types. Arroyo, Neff, and Feathers (2002) suggest that Vidal could have been a specialized salt production site. The prevalent ceramic type referred to at these sites is the Manglera type, a thick-walled bowl with tall sides that are meant to break away after the processing of salt, leaving behind a salt cake at the bottom. This type was first described by Pye (1995) at El Mesak.

This summary reveals an Early Formative settlement pattern along the Pacific coast that may have involved mobile groups of people in the earliest phase. What remains unclear regarding the possibility of temporary occupation at early estuary sites is the nature of these groups of people that were using them. Were these sedentary agriculturalists making brief trips away from inland villages as in the Soconusco? Few inland sites have been found to support this model, and certainly none of the scale seen at Paso de la Amada. Those sites that are known, such as Leonidas, have not provided much information to clarify this issue. Could these then have been mobile groups that made temporary platformed encampments to harvest estuarine resources, more closely resembling Archaic adaptations? At present, more research is needed to target these earliest contexts and answer these questions, but it seems that the level of mobility was probably high in the start of the Early Formative, with people moving along the coast as well as between the highlands and the coast (Barbara Arroyo, personal communication 2009; Love 2007). This dissertation advocates a model for Chiquiuitan in which people were mobile during the earliest Huiscoyol phase and adopted sedentism by the beginning of the Cangrejo (around 1250 B.C.).

Toward the end of the Early Formative, the southeastern coastal region witnessed a developing site hierarchy with Chiquiuitan as the largest center, and smaller neighboring sites being established nearby (Estrada Belli 1999). Throughout the Cangrejo phase, Chiquiuitan increased in both the number and sizes of its mounds. Full sedentism seems to have taken place by this time, as evidenced by the intensified construction on several of the mounds at the site, described in Chapter Five. Ceramic technology also increased in sophistication as more forms and new decorative techniques were employed (see Chapter 6). Lastly, groundstone and obsidian tools, as described in Appendix D, increased in frequency from levels dating to this period, demonstrating a more varied tool kit appropriate to permanent domestic contexts.

In the Soconusco, a centralization of settlement around shifting regional capitals characterizes the second part of the Early Formative period. Contact with other groups outside of the region appears to have been directed northward, toward the Gulf Olmec, as evidenced at Cantón Corralito (Cheetham 2006; Cheetham and Clark 2006). Then, in the Jocotal phase, the Soconusco regional center moved again to Ojo de Agua (Pye, Hodgson, and Clark 2008). At the same time, Chiquiuitan and sites to the southeast seem to have been more inward-focused and developed increasingly localized ceramic characteristics as sedentary lifestyles were adopted.

There also appears to have been specialized salt production at Soconusco sites at this time. At El Mesak, in the Manchon estuary region at the southeastern end of the Soconusco, the end of the Early Formative is characterized as a time of intensive specialized salt production (Pye 1995; Pye, Hodgson, and Clark 2008). The local transition in the pottery assemblage seen at El Mesak is not one to more diverse forms and container decoration as at other sites, but to one dominated by the Mesak jar (similar to the Manglera jar described above for Suchitepéquez). This jar clearly had a specialized function, and its predominance at the site is a strong indication of production specialization during the Jocotal phase.

While El Mesak demonstrates permanent occupation by full-time salt production specialists (Pye, Hodgson, and Clark 2008), a different type of specialized site can be seen at El Varal (Lesure and Wake 2008). El Varal is an estuary site with important implications for late Early Formative developments in sedentism and specialization from the Mazatán region of the Soconusco. It appears that Mazatán had a stable adaptive strategy throughout the Early Formative, with inland residential villages linked to special resource extraction sites along the coastal estuaries. Based on site stratigraphy, artifact analyses, and faunal remains, Lesure and Wake (2008) have proposed that El Varal was a special purpose site for the exploitation of wild estuarine resources and the production of salt. The ceramic assemblage from El Varal is dominated by *tecomates*, indicating intensive exploitation of estuarine resources. The authors argue that the *tecomate* innovation allowed for the intensified processing of shrimp and other fauna, but that the demands of crop cultivation required permanent habitation at inland field locations, probably at San Carlos. Both subsistence practices were important in the Early Formative Soconusco. This pattern seems to follow similar adaptations to those seen earlier at the estuary site of Los Alvarez which was linked to inland Paso de la Amada. Finally, just at the transition to the Middle Formative (around 1000 B.C.) El Varal was permanently inhabited, and adopted a ceramic assemblage dominated by dishes.

In contrast to the temporary occupation of El Varal, sites along the southeastern Pacific coast, many of which are interpreted as having special functions during early use, began to take on the appearance of sedentary sites in the late Early Formative, as evidenced by more substantial platform construction and varied tool kits characteristic of full time residential occupation. It was described above that Chiquiuitan demonstrates evidence for full sedentism in the local Cangrejo phase. In the Tecojate region, settlement increased around the mangrove estuary edges (Arroyo

1995). In Suchitepéquez, Vidal and Leonidas seem to have been abandoned while Salinas Sinaloa emerged nearby (Arroyo, Neff, and Feathers 2002). At the eastern edge of the culture area in El Salvador, El Carmen's mound included seven additional Early Formative construction stages (Arroyo 1995). Compacted floors, fills of sandy clay, and storage pits all suggest permanent occupation of El Carmen at this time.

Ceramics from the later phases of the Early Formative have received much attention because they take on more localized characteristics at this time. As opposed to the widespread appearance of Michis and similar type *tecomates* previously seen in many areas across the coast, the ceramics of the later part of the Early Formative seem much more varied, with thicker walled *tecomates*, different forms of plastic design on the exterior, a variety of shoulders and short collars, and the appearance of new forms (Arroyo 1998; Arroyo, Neff and Feathers 2002; Clark 1991; Neff and Arroyo 2001). The one exception to this description may be seen at Salinas Sinaloa where typical Cuadros types have been documented (Arroyo et al. 2002). These artifact characteristics associate Salinas Sinaloa with sites in the Soconusco, and may represent an easternmost extent of a Cuadros phase culture area. The overall regional variety in ceramics is seen as further evidence for a less mobile residential pattern that would inhibit interaction between groups.

When all of the settlement data are compared, a dynamic picture of the Early Formative appears. Before about 1250 B.C. a complex settlement system characterizes the Mazatán area of the Soconusco. It includes small specialized sites such as Los Alvarez located near the estuaries that probably functioned as temporary special use sites for sedentary dwellers from inland villages like Paso de la Amada. In contrast, the eastern side of the coast sees the later emergence of small sites such as Chiquiuitan, El Carmen, and Vidal. These sites probably also functioned for resource exploitation, but with unclear links to any inland villages. The only possible example could be in the case of Vidal, which may have supported Leonidas, located just slightly inland along the same estuary system. Lastly, permanent sedentism may be seen at the cluster of early estuary sites in Tecojate.

Between 1250 and about 1000 B.C., settlement shifts can be seen that reveal a new pattern of occupation. Special resource extraction locales on the southeastern coast become permanent settlements, as at Chiquiuitan and El Carmen. Settlement expands as new smaller sites appear in El Salvador, around Chiquiuitan, in Tecojate, and Suchitepéquez. While specialized sites become residential villages there, intensive and specialized production and exploitation are seen through varying methods, at El Mesak and El Varal in the Soconusco. There, faunal resources and salt were part of a complex network of exchange, with Cantón Corralito and Ojo de Agua playing important roles.

Early Formative Subsistence Transitions

The question of the origins of agriculture finds no easy answer from the Pacific coastal region. While generalized trends are seen in cultural developments including sedentism, pottery production, and increased populations in many regions of Mesoamerica between the Archaic and Formative periods (although the previous section describes some local variability in the transition to sedentism within the Pacific coastal region), no such parallel is seen in the subsistence choices made by these groups (Lesure and Wake 2008). Rather, localized trajectories toward food production demonstrate the variable steps taken by agents acting in different communities and operating within a broad spectrum of subsistence resources.

The history of food production in Mesoamerica has largely revolved around the origin and domestication of maize. It is thought that domestication occurred in the Rio Balsas drainage in central Mexico, where it evolved from its wild ancestor, teosinte, *Zea mays* ssp. *parviglumis* (Buckler and Stevens 2006; Doebley 1990; Matsouka et al. 2002; Piperno 2006; Piperno and Flannery 2001; Wang et al. 1999; although see also Eubanks 2006). *Zea mays* and the agricultural technology associated with it were perhaps brought to the Guatemalan coast by mobile Archaic foragers and/or less mobile food producing groups with heavy interaction (Blake 2006; Blake et al. 1992b; Piperno and Pearsall 1998; Smalley and Blake 2003). While visible evidence for *Zea mays* ssp. *mays* and other domesticated flora is seen in parts of Mexico by 6,000-4,000 B.C. (Benz 2001; Flannery 1986; Piperno and Flannery 2001; Pope et al. 2001; Smith 2005), and maize cultivation is clear on the Pacific coast between 4,000-3,000 B.C. (Kennett, Voorhies, and Martorana 2006), an immediate shift to staple production by village-based farming economies did not occur. Rather, maize was incorporated at a low level into a broad diet (Chisholm and Blake 2006; Chisholm, Blake, and Love 1993; Clark, Pye, and Gosser 2007; Smith 2001).

It should be noted that maize was not the only domesticate that was important to early food producers. Other cultivated plants include the bottle gourd *Lagenaria siceraria*, the common bean *Phaseolus vulgaris*, avocadoes *Persea americana*, chili peppers *Capsicum annuum*, and squash *Curcurbita pepo*, not to mention the first domesticated animal, the dog *Canis* (Hayden 1990; Piperno 2006; Piperno and Pearsall 1998; Roberts 1998; Smith 1997, 2005; Smith 1986). Maize has been the focus of most analyses due to its increasing importance in later time periods, when it became the staple crop throughout Mesoamerica. However, other key plants contributed to subsistence adaptations in the Archaic and Early Formative periods, and future studies are expected to offer more information on the varied nature of early low level food production.

Turning more specifically to the Pacific coastal region, in the Chantuto area of Chiapas, Mexico, shellmounds represent the earliest recognizable cultural occupations and probably demonstrate special purpose locations for wild resource exploitation (Michaels and Voorhies 1999; Voorhies 2004). The central place foraging model has been proposed to explain subsistence and occupational trends (Kennett, Voorhies, and Martorana 2006) in which marsh clams were harvested and processed at coastal locales and other, locally-specific resources were collected from rivers and forests. Together, all of these resources supported more permanent populations occupying base camps in forest clearings near rivers further inland on the coastal plain.

The transition away from this foraging subsistence pattern toward food production has been interpreted in a variety of ways. Data recorded from sediment cores collected in several areas south of Chantuto have indicated general paleoenvironmental transitions in the Archaic and have been used to infer human impacts along the Pacific coast (Neff et al. 2006a). This work indicates that small and mobile human groups had important effects on the landscape through sporadic exploitation of resources available in different localized areas (Neff et al. 2006b, Voorhies and Metcalfe 2007), reaffirming patterns interpreted from Chantuto. Other activities such as clearing, burning, and some low-level cultivation of early domesticates also seem to have taken place (Neff et al. 2006a).

At what point maize became a subsistence staple that was intensively produced by coastal inhabitants through a village-based agricultural economy is a matter of debate. Neff et al. (2006b), focusing specifically on microbotanical data, argue that maize remained a low-level food item in a diverse diet throughout the Archaic, but that food production increased when drying events took place around 1800 B.C. However, other sites lack direct evidence for farming as a primary subsistence choice until the Middle Formative. According to stable isotope analyses of bone samples from the Soconusco, it appears that maize was not the primary staple of the Early Formative diet; rather, it was one of many resources exploited from a diverse subsistence base that may have been more focused on estuarine resources (Blake et al. 1992a, 1992b; Chisholm, Blake, and Love 1993; Smalley and Blake 2003). Settlement data discussed in the previous section underscore the importance of estuarine resource exploitation in the Early Formative. Thus, it is possible that intensive agriculture emerged only gradually, at different points in time as individual communities took their own steps toward intensified production.

For example, Arroyo (1995) argues for a continued wild subsistence base in the Bostan phase at the beginning of the Early Formative at El Carmen. She argues that the site was used to seasonally exploit local estuarine resources by hunter-gatherer-fisher groups. While maize cultivation is evidenced directly through corn cobs found in oven features, Arroyo suggests that food production did not become the primary subsistence strategy until later phases. The later shift to food production would correspond with developments at Chalchuapa in the Tok phase (Sharer 1974).

Arroyo (1994) offered similar interpretations for subsistence transitions in the Tecojate region. There, evidence for maize is seen in impressions on the surfaces of pottery vessels in the early part of the Early Formative (local Madre Vieja phase), yet other lines of evidence also suggest a reliance on estuarine resources, with intensified agriculture emerging only at the end of the Early Formative. By the late Early Formative (local Coyolate), Arroyo (1999) sees changes in the ceramics as indicative of new functions related to changing subsistence techniques at these sites. Specifically, the new, larger, thicker walled *tecomates* may have been used for cooking *elotes*, or corn tamales, instead of boiling shellfish as in previous times. A rise in population, perhaps in response a wider reliance on agricultural food production, is suggested by the increasing settlement density in the Middle Formative Tecojate Region.

At Chiquiuitan, the initial use of the site either as a permanent small settlement or a semi-permanent seasonal encampment appears to have occurred in order to better procure the local marine resources such as mollusks, gastropods, crabs, fish, and other local resources (see Appendices G and H), and does not necessarily indicate an immediate shift to an economy based on agriculture. While the landscape clearing indicated in the pollen record (Appendix E) may suggest food production, no direct evidence for domesticates has yet been found from the early phases.

It is possible that El Carmen and Chiquiuitan, as well as sites in the Tecojate region, represent locales with different degrees of occupation, but all located on the estuaries for the intensive exploitation of estuarine resources. If they were linked to inland agricultural villages, they would parallel the adaptive strategy found in the Early Formative Soconusco. There, Los

Alvarez is understood to be a resource extraction locale linked to Paso de la Amada, where agriculture is directly observed through macrobotanical remains (Clark 1994). However, inland villages have not been identified in the southeastern Pacific coastal region, and it seems probable that another settlement and subsistence pattern was in place there.

By the Cangrejo phase, Chiquiuitan and other southern sites demonstrate changes different from adaptations seen in the Soconusco. While the estuary site of El Varal remained a special resource exploitation locale linked with San Carlos further inland (Lesure and Wake 2008), Chiquiuitan and sites further south show clear indications of sedentary communities along the estuaries, and additional indirect evidence for food production. While subsistence practices continued to include the harvesting of marsh clam and other marine fauna (Appendix G), additional ceramic containers as well as new stone tools are found in residential deposits (described in Chapter Six and Appendix D, respectively). These new tools may have accompanied the incorporation of food production into the subsistence base as people began to occupy the site on a more full-time basis.

The picture of Early Formative subsistence adaptations seems equally diverse as the settlement data, with a gradual trend away from a diet based heavily on wild estuarine resources to one of maize-based food production. A precise model for how this occurred is less clear. People living in systems of low-level mixed food production responded to socio-ecological circumstances through a combination of collecting, cultivation, hunting, and fishing, resulting in the variable adaptive strategies outlined above. According to James Eder, this would be an expected pattern in subsistence and concomitant settlement transitions occurring in tropical forest environments. He notes that, “Such peoples today typically continue to hunt and gather but have also taken up agriculture and other new economic activities under the aegis of more complex, sedentary societies. The patterns of settlement and mobility associated with the multidimensional and ‘transitional’ subsistence economies of these peoples cannot be located along any simple continuum" (Eder 1984:837). He goes on to state, "these concepts each have multiple referents and are related in a problematic fashion that deserves greater attention by anthropologists" (ibid).

It is important to note that any subsistence reconstruction attempting to address this problematic relationship between subsistence, mobility, and other factors faces limitations in the nature of these data along the Pacific slope. While pollen and phytolith evidence is strong from areas of the Guatemalan coast and demonstrate human disturbance of the paleoenvironment from the Archaic period (Neff et al. 2006c, 2006d), linking these to archaeological patterns has proven difficult. Inland sites in the Soconusco have remarkably well preserved macrobotanicals (something not often found at estuary sites), but lack the microbotanical record often used to reconstruct regional paleoclimatic conditions at other locales. Finally, large swaths of coastal areas have not yet been given the archaeological attention necessary to provide data from any, much less all, of these time periods. What is needed now is the increasing clarification of precise localized trajectories, regional circumstances, and subsistence choices that stimulated this mosaic of developments in food production – the greater attention by anthropologists called for by Eder.

Early Formative Transitions in Social Relations

Models related to social relations have come primarily from research at Paso de la Amada in the Soconusco region, and largely address the transition to the development of institutionalized hereditary social inequality. First proposed by John Clark and Michael Blake, the theory argues for a natural tendency for inequality within social systems, which can come about as an unanticipated result of individuals seeking self-aggrandizement. Such aggrandizers build up their own prestige through contacts with other aggrandizers, forcing the transition to take place on a regional basis as competing chiefs arise simultaneously in several polities. Population is seen as an important factor, but one that increases with the transition, not before.

In applying this model to the Pacific Coast of Chiapas, Clark and Blake discuss the new ceramic technology as evidence for the emergence of aggrandizers and inequality. The finely made and highly decorated Barra ceramics display a new technological knowledge that may have been used by early chiefs to build status within their community. Furthermore, these *tecomates* appear to have functioned for drinking beverages, and are evidence of the type of public feasting that may occur in conditions when competing men are displaying wealth and attempting to increase their favor in the community and attract more followers (Gosser 1994; Clark and Blake 1994; Clark 1994).

Clark's (1994) doctoral dissertation thesis focuses on a similar, but more specific model for the evolution of institutionalized hereditary social inequality, the Friedman and Rowland's model (Friedman and Rowlands 1978). Like the theory described by Clark and Blake (1994), this model outlines a scenario in which an emerging chief partakes in activities to further his own status in the community. Significant feasting is expected as part of this activity, and an increase in population, marital alliances with asymmetrical bride payments, differences in household sizes, and circulation of valuables are predicted to occur as the transition takes place (see also Hayden and Gargett 1990). The evidence previously discussed in Clark's publications supports all of these predictions.

Richard Lesure wrote his own doctoral dissertation in the same year (1994), dealing also with Friedman and Rowlands' model, but his conclusions contradict those proposed by Clark (see also Lesure and Blake 2002). Lesure finds several problems in the lines of evidence that Clark uses to propose economic inequality and a chiefdom level society in the Locona phase (Clark 1991 and 1994). First, Clark proposes an unequal distribution of luxury goods, "stone bowls, large hollow figurines, napkin-ring clay earspools, mica, jade, iron-ore mirrors and earspool flares, and special trichrome pottery" (Clark 1991:19), but Lesure's analysis found that "there is absolutely no evidence of differentiation whatsoever" (Lesure 1994:245). In Lesure's conclusions, the imported goods listed here seem to mimic the distribution of obsidian from different sources, with each household having approximately equal access. Furthermore, Lesure points out that the burial data used to demonstrate ranking within mortuary contexts is based upon one grave, that of a child with a forehead mirror, and that this sample is not sufficient to make such claims (Clark 1994:408; Lesure 1994:324). In his conclusion, Lesure states that "The results of the analysis do not support Friedman and Rowlands' idea that feedback relation between feasting and the circulation of valuables generates hierarchical relations between kin-groups" (1994:329). He proposes an alternate theory, in which inequality still emerged within the Locona time period, but that it was conceptual rather than material. In other words, the incipient elite groups gained status not through control of economics, but through control of "key aspects of the community's cosmological charter," as evidenced through symbolic motifs on ceramics (Lesure 1994:323). This prestige allowed them to gain access to the economic sphere in the Late Ocos/Early Cherla phases, when he sees the emergence of material inequality.

While this theory focuses on interesting aspects of emerging social distinctions, it is difficult to discuss evidence that could back it up. A paper on Early Preclassic figurines from the coast of Chiapas discusses two specific figurine types that may represent social roles of respected elders acting as the community's spiritual leaders (Lesure 1997b). These explanations help to demonstrate possible avenues for non-material status negotiation in early Formative communities. Ideology and its role in society is clearly one of the most interesting paths for future investigation of status on the Pacific Coast, yet continues to be relatively unexplored.

Later, Clark and Blake readdress their model in the monograph *Pacific Latin America in Prehistory* (Blake 1999). They state, "the best indicators of emerging distinctions of social and/or political ranking during the Locona phase are: (1) a two-tiered hierarchy settlement pattern comprised of small villages and hamlets centered around large villages, (2) elite domestic architecture, (3) differential mortuary practices, (4) unequal access to sumptuary goods, (5) presence of patronized craft specialization centered around elite house mounds, (6) clues of increased public feasting, and (7) evidence of redistribution within each large village community (Blake and Clark 1999:56). Their chapter neither provides new evidence for the presence of these indicators, nor addresses the concerns stated previously by Lesure (1994). What their chapter does accomplish is to add to the theory previously developed. Here, Blake and Clark discuss the idea of a transegalitarian society, one in which egalitarianism is being replaced by hereditary social inequality (Blake and Clark 1999:57). In such a society, egalitarian maintaining mechanisms, such as social ostracism, the formation of groups that cross-cut normal social organization, and intra-group fissioning, are overridden by an emerging elite through processes such as alliances with rivals within the community or leaders in neighboring communities, a focused increase of labor in producing a predictable food base, and/or more weight placed on descent based support. Through these processes of change, Blake and Clark explain social constructs that enable an emerging chief to gain power in a society that was previously egalitarian.

More recently, Arthur Demarest also wrote a theoretical publication dealing with issues of institutionalized hereditary social inequality (Demarest 2002). Here, the author revisits some of the ideas previously proposed by other scholars relating to identity and the negotiation of status within competing societies (Blake and Clark 199; Clark 1994; and Lesure 1994). While restating the breakdown of egalitarian maintaining mechanisms as the root of inequality, he emphasizes the original natural state of society, that of hierarchy and competition. Demarest brings up interesting aspects of the argument, such as possible primate origins for social inequality and the existential arguments behind the nature of the human condition. These large-scale issues of what it means to be human have not been pursued in greater detail along the Pacific coast, as more recent projects have focused on clearly defining regional cultural development.

At Chiquiuitan, the highly elaborate Barra ceramics seen as indicators of aggrandizing behavior at Paso de la Amada are absent. It seems that the earliest part of the Early Formative along the southeastern Pacific slope witnessed more mobile residential patterns and a ceramic assemblage based primarily on the Michis types of *tecomates* that were only slightly decorated with red rim bands. Serving vessels or other evidence for large status display are not seen at this time. While the model for aggrandizers providing the impetus for the development of social complexity proposed by Clark and Blake has found favor among Pacific coastal archaeologists, it has not been tested at many places outside of the Soconusco. It seems to fit the data at El Mesak, as discussed by Demarest (2002), but does not work further to the southeast.

Furthermore, the versions of this model just discussed address only the transition to institutionalized hierarchical social inequality and do not address previous transitions in social relations taking place upon initial sedentism and village formation. The model lacks a direct historical approach that contextualizes Early Formative developments within wider cultural trends, for example, considering ideologies that were in place before these transitions occurred. A more recent version of the Clark and Blake model has been offered (Clark 2004b), through which agency is seen in the actions of community leaders as they worked to establish *communitas* through public works. While this approach sees only leaders as demonstrating agency in the past, this dissertation focuses more on household groups as agents of social practice, seeing everyday people as instrumental in creating social norms rather than relying only the presence of elite leadership. Lastly, the data used to discuss intra-household variation at Paso de la Amada focuses only on mounded residences and ignores off-mound contexts, leaving out a significant component of the early village population.

Of interest to this dissertation is the formation of the household as a fundamental social unit that solidified social relations at the onset of sedentism, thus taking on a more historically situated approach to understanding Formative transitions than models previously proposed have considered. General trends in the way that mobile hunter-gathering groups, as opposed to sedentists, interact with the landscape are discussed in detail in Chapter Three. While mobile foragers may demonstrate something resembling a household group (individuals that work together in basic economic activities and share a residence), the organization is a loose one that shifts as the residential base changes. Archaeological correlates for this type of household would be hard to come by. Through ethnography, we know that mobile peoples commonly spend parts of the year in small nuclear family groups while joining together in larger extended bands for other periods. The extended family unit is a fluid one that breaks apart when members desire to factionalize or are forced to do so when resources patches decrease in size. Relationships between group members are intimate, fluid, and inclusive, as the absence of permanent structures allows for people to observe one another constantly. However, within this intimate environment of social relation, escape in the case of conflict is always an option within the mobile lifestyle (Wilson 1988).

Alternatively, sedentary societies have specific social groupings that correspond with permanent residential places. While sedentism can be considered in terms of the individual, through which some level of mobility can still be detected in sedentary village societies (Eder 1984; Varien 1999), for the most part the onset of village life inhibits the large-scale movement of individuals and groups. This study does not focus specifically on the definitional debate between mobility and sedentism, nor does it assume that mobility is erased once sedentism takes place. Rather, the emphasis here is on the types of social relations that are in place when a permanent residential base is established and people live together in close proximity for extended periods of time, regardless of whether some level of individual mobility is still maintained. This type of relationship is more permanent as it becomes increasingly difficult for an individual or group to move away in the case of conflict. However, the social relationships that develop may be less intense as a degree of privacy can be found in sedentary societies behind the walls of permanent residential structures (Wilson 1988). In these communities, new types of social structures guiding interaction within and between household groups develop and take on fundamental roles in the maintenance of the community.

At Chiquiuitan, the solidification of social units within a sedentary society is demonstrated through the establishment of house mounds, the appearance of domestic features, and a wider tool kit appropriate to residential functions, all seen in the Cangrejo period. As described in Chapter Five, Huiscoyol layers do not suggest permanent sedentism or direct association with a household group. It is not until the Cangrejo phase that larger construction works raised permanent living surfaces above the seasonally swampy environment for full time occupation. Furthermore, the remains of hardened clay with stick impressions found in these layers could be the remains of daub used in the construction of permanent structures (Ortiz 2007). Chapter Six describes an increasingly varied ceramic assemblage and Appendix D reports on lithic tool maintenance, suggesting a wider variety of implements expected to be found in a house context. These material remains reflect the basic economic activities that would have been undertaken by cooperating household groups within village organization. Features such as storage pits, hearths, and middens (described in Chapter Five) also demonstrate the residential nature of these deposits. Chiquiuitan resembles characteristics of a sedentary community, similar to what was found at Paso de la Amada (described above).

In addition to the identification of house mounds as permanent residential units within the new village community of Chiquiuitan, the locations of structures across these mounds throughout the site suggests living areas of groups of people who resided in close proximity, yet some distance removed from neighboring households. The results of the subsurface testing program outlined in Chapter Four suggest that the areas between mounds were rarely used and not inhabited. Rather, residences were restricted to the tops of mound platforms, which were spaced across the site. Excavations described in Chapter Five were placed in the centers of four mounds and across the mound area at Mound 13. Estrada Belli suggested that each mound may support multiple household residential areas (1998:95-96), however this interpretation did not bear out in recent research. All of the excavations on the summits of mounds located architectural features in Cangrejo and Tamarindo levels, and sometimes were able to delineate the edges of central activity or living areas. On Mound 13, those excavations placed at the sides or toward the edges of the mounds did not reveal architecture, and only demonstrated activity areas in a few cases. This pattern suggests that residential and activity areas were nucleated toward the center of mound platforms. This reconstruction of house areas reveals a community comprised of distinct house areas located on the tops of platforms with spaces of at least 20m and sometimes as many as 50m between house platforms. This settlement pattern reflects the relationships of people inhabiting these areas, and seems to suggest separate social units. Furthermore, the semi-circular shape of the site layout may well indicate a planned site design. With the material foundation of house mounds, so too did Chiquiuitan witness the solidification of social relations into discrete groups of people working together as one cooperative unit to create a planned community.

While interaction within household groups can be generally characterized by looking at the places inhabited, assessing how different groups interacted throughout the site is challenging based on the limited data collected from diverse mounds at the site. Reconstructions of social dynamics such as those presented for Paso de la Amada (described above) are difficult to make for Chiquiuitan at this point. Architecture was intensively excavated through horizontal excavation only at Mound 13, and thus cannot be used to make significant comparisons. As described in Appendix F, human burials were only located on Mound 13. Based on small datasets from the other excavated mounds, it appears that distribution of wealth or status items (such as ceramics described in Chapter Six or obsidian summarized in Appendix D) was relatively equal throughout the site, suggesting that hierarchical social organization did not exist or cannot yet be identified. However, one interesting line of evidence that may indicate wider community trends can be detected from the LA-ICP-MS study of obsidian outlined in Appendix D. According to the finds of that study, Mounds 13, 24, and 34 may have been obtaining obsidian from different volcanic sources in the highlands of Guatemala. While admittedly scant, these data may indicate differential direct access to sources or to obsidian trade routes, indicating some differentiation between household groups.

The Middle Formative

Early Formative developments laid the groundwork for further cultural achievements in the Middle Formative period. Major transitions took place on the Pacific coast, and indeed all across Mesoamerica, around 1000-900 B.C. that have specific implications for changes in social complexity (Clark and Hansen 2001; Clark, Pye, and Gosser 2007; Love 2007; Rosenswig 2006; Rosenswig and Kennett 2008). In the Soconusco, towns in the Mazatán region including the center of Ojo de Agua were abandoned (Pye, Hodgson, and Clark 2008). At the same time the large site of La Blanca reached its peak, becoming one of the largest Middle Formative sites in Mesoamerica (Love 2007).

By the local Tamarindo phase at Chiquiuitan, the population reached its maximum (500-700 people estimated by Estrada Belli 1999). Appendix E outlines how *Zea mays* pollen and phytoliths have been positively identified at this time, and Appendix G summarizes mollusk consumption, which persisted but only to a limited degree. Indirect evidence suggests continuing changes in the tool assemblages, described in more detail in Appendix D. This evidence fits a theory for the gradual, step-wise adoption of maize agriculture with an intensification in the Middle Formative (Blake et al. 1992a, 1992b; Chisholm, Blake, and Love1993; Clark, Gibson, and Zeidler 2006; Clark, Pye, and Gosser 2007; Neff et al. 2006b; Rosenswig 2006; Smalley and Blake 2003). In addition to food production, other changing domestic practices are evidenced by the appearance of obsidian prismatic blade technology, an expanded assemblage of ceramic forms suggesting a wider range of functions, and the appearance of mortuary practices in which individuals were buried in the fills of construction additions to residential platforms.

Social concerns aimed at displaying the community’s prestige and participation in regional symbolic systems are first seen in Chiquiuitan’s late Early Formative and early Middle Formative practices. Enlarged and permanent residential platforms came to dominate the landscape. These structures symbolize a connection to that specific place through a visible and intentional sign of continuous presence, and serve as a direct link to the ancestors buried within them. Serving vessels, described in Chapter 6, bore the marks of regional symbolism, revealing the ability of the Chiquiuitan inhabitants to converse in that shared system. These signs indicate that Chiquiuitan had become a part of a cultural system undergoing important developments that reflect those that were occurring throughout Mesoamerica at this time.

It is probable that the residents of Chiquiuitan were responding to heightened social competition at this time, throughout the region as well as perhaps within the site itself. Settlement data indicate high populations at sites within the region at this time. Furthermore, agriculture was being practiced, as indicated through microbotanical evidence (appendix E). These conditions support a scenario for social competition over fertile soils. At the same time, social identity became a key concern for village residents. Identity seems to be something that people pay special attention to when their own roles are put in relation to those of others. This was certainly the case in the Middle Formative period, as the residents of Chiquiuitan participated in a regional symbolic system, putting them into greater contact with other groups and prompting them toward symbolic display. Two signs of symbolic display are discussed in the previous paragraph. Symbolic motifs on ceramics clearly link the people of Chiquiuitan with regional networks. Increased mound construction at this time is also thought to be symbolic in nature. It is known that the tropics experienced drying conditions at this time (Mayewski et al. 2004; Neff et al. 2006d), so increased mound construction was could not have been in response to higher flood levels. The burial of ancestors within platforms further suggests symbolism of mound additions. Lastly, one other element of display is seen in the appearance of ceramic ear spools at this time, the first direct indication for bodily adornment. Certainly part of this desire to define both individual and household level identity within the new interacting social network would have been for participating in some amount of status competition.

The Middle Formative began a new cultural trajectory in Mesoamerican prehistory. As food production was being adopted all along the coast and sedentism was supporting growing populations, a cultural system developed with increasing social complexity and a new cohesiveness throughout Mesoamerica. The new Mesoamerican system was fundamentally different from the Early Formative period, when communities were not yet well connected and developments were more localized. While including aspects of previous traditions, the Middle Formative communities now sought to associate those traditions to a wider network of symbolism, communication, and interaction. The history and memory associated with mounds that were once used to collect resources and settle a permanent village then were used as important means for drawing identity through social placement within an increasingly connected cultural system.

This dissertation argues that a new view of the landscape and an idea of appropriate ways for humans to interact with it also characterized the transitions occurring throughout the Formative period. By the Middle Formative, large mound constructions became important symbols within the developing cultural system. Not only at Chiquiuitan, but at other early communities (more notable examples can be seen at La Venta and La Blanca) the landscape began to be transformed through major construction events, moving away from simple residential construction and maintenance, and toward a different kind of practice that intentionally modified the natural environment in drastic and lasting ways. This transition marked only the beginnings of a trajectory of landscape modification that played out in the ensuing phases of cultural development.

Practice, Landscape, Mound Building, and Community Development at Chiquiuitan

The transitions in social structure, specifically in settlement, subsistence, and social relations, discussed in the previous section can be drawn together to better understand wider community developments in relation to the landscape and to address the issue of mound building. While the Huiscoyol phase is demonstrated through evidence from limited contexts, these contexts are found in superimposed cultural levels, suggesting that this was a place that was repeatedly visited and held special significance for early inhabitants of the area. As has been described, during the Huiscoyol phase, Chiquiuitan was first used by residentially mobile hunting, gathering, and fishing people and was visited intermittently as part of a complex settlement system. Returning to some of the theoretical ideas summarized in Chapter Three, the relationship between mobile groups and seasonal encampments like Chiquiuitan reflects what Tilley describes for Mesolithic populations in Britain. He states,

> ancestral connections between living populations and the past were embodied in the Being of the landscape and an emotional attachment to place that had a generalized power and significance in relation to human activities as a series of known, named, and significant places linked by paths of movement to which populations repeatedly returned during their seasonal activity rounds (1994:202).

Although we do not know if the inhabitants of Chiquiuitan buried the remains of their dead at the site during the Huiscoyol phase, the “ancestral connections” mentioned by Tilley could be in the form of ceremonial cemetery visits or, in this case, in the return to places imbued with social memory of the past, and were likely part of the oral traditions passed down from generation to generation. As a prominent resource exploitation locale (a natural space) where groups would gather for seasonal procurement of marine resources, the cultural place certainly had a “Being” or a humanized existence that involved stories of the distant past, memories of recent events, and expectation for future visits. It should be mentioned that these histories could have had an extremely long past, spanning back into the Archaic period when mobile groups occupied the Pacific coast (from the microbotanical record, see Appendix E), but of which very little cultural remains have been uncovered. These early visitors would have left a minimal impact on the natural space, only slightly raising mound surfaces and clearing away areas of vegetation for seasonal activities. These practices did not significantly alter the natural landscape, but instead built considerable ideological and cultural meanings for these spaces. At this time, the natural landscape was instrumental in shaping the subsistence adaptations, seasonal movements, memories, oral histories, and connections to the ancestors for the people who lived in or visited the area. Through time, the people that visited the site, held it in their memories, developed place attachments to it, and perhaps perceived of it as a special locale recorded through their traditions of oral history.

The Cangrejo phase saw a new settlement pattern, with Chiquiuitan becoming permanently inhabited and a restructuring taking place of the relationship between people and the landscape. While the mounds began to be used a new way, they already were the products of local historical conditions and communicated meaning to the people transforming them. The history of drawing on the site for the special purposes of exchange, socialization, and resource exploitation provided social structures that were easily altered by social agents wanting to change the way the site was used, transforming it into a permanent community. They chose the mounds of Chiquiuitan because they already held special significance and attachments, but they changed how they were used and produced new social structures. At this time a more intimate connection with one place was developed as settlement patterns became less mobile. As Wilson states, “The anchoring of a person that comes with domestication results in the identification of person with location and location with person” (1988:71). Chiquiuitan became a permanent socio-natural place. The maintenance of living areas became a habitual part of peoples’ lives as mounds were cleaned and refurbished and the repeated layering of mound surfaces was conducted. If not already strongly developed, a sense of ownership must have been felt by the inhabitants regarding the area of and surrounding Chiquiuitan.

At Chiquiuitan, the Cangrejo phase contexts that have been excavated on the mounds thus far all appear to be residential in function. The mounds comprise flat platforms from which impressed clay indicates wattle-and-daub superstructures and ceramic sherds from utilitarian vessels, fragments of lithic tools, subsistence debris, storage pits, and middens all demonstrate domestic activities. The house platform functioned as a place for the household to live and perform everyday tasks, but it also embodied that group’s identity. Mound maintenance appears to have been a repeated communal endeavor, as evidenced by the consecutive layering of dirt floors and expanded horizontal size of the platforms. The perhaps unanticipated results of horizontal and vertical accretion were that large platforms stood out against the flat landscape of the Pacific coastal plane. As they grew in size, these visible masses were physically experienced by the area's inhabitants, who recognized the power of material markers as signs for cultural permanence that distinguished the built community from its natural surroundings.

The solidification of household social groups is reflected in the material remains left behind in their domestic areas. It is argued here that the foundation of the household as a permanent social group and its endurance through time, both evidenced through the archaeological remains of house mounds, is one of the most important transitions of the Formative period. This follows from the writings of Peter Wilson, who states, "Domestication creates certain elementary and minimum conditions of empirical 'unit' independence or privacy in the sense that the household is physically, economically…, and to some extent sensorily separated from other households" (1988:97). This development enables the ensuing movement toward increasing political complexity as social difference is realized between the newly formed groups and individuals belonging to those groups.

Lastly, at the end of the Cangrejo phase and the beginning of the Middle Formative, another restructuring took place. As stated by Tilley in his description from Britain, "ancestral powers and meanings in the landscape now became actively *appropriated* by individuals and groups… These monuments served to make permanent, anchor, fix, and visually draw out for perception the connections between people and the landscape for the first time" (1994:202). I argue that these same processes were taking place at Chiquiuitan. Large construction additions were made to the tops of the mounds, creating visible markers not only to people living within the community, but also to outsiders. Considering the long-term affects of this enduring constructed landscape on the ensuing occupation of this area, it is argued that the ancient inhabitants eventually appropriated the mounds specifically for this cultural meaning and modified construction practices to augment the size of the platform and its physical impact in more drastic ways. The large construction events of the late Early Formative and early Middle Formative then served to signify the household's link to the terrain and their ancestors, and to justify their right to land and resources during a period of increased agriculture and competition in a region of growing population. The people were purposefully and actively controlling the cultural memory of the places that they inhabited for the first time.

Finally in the Middle Formative Tamarindo phase the politics of a sedentary social group can be seen in mound constructions. After sedentism was adopted, people were forced to learn how to deal with new elements of social structure including coping with neighbors and adapting ways of communal life. Within these growing communities emerged particular households, each with their own identities, which can be understood through studying the places that they occupied. Although the evidence for competing social groups within the community of Chiquiuitan cannot be evaluated at this time due to the limitations of the data from different mounds, it can be seen that some type of statement was being made through the large-scale constructions going into mound building at this time. Whether as statements to future generations of residents, other groups within the community, or aimed toward outsiders who visited the site from other villages, the message inscribed in the mounds seems to be one of permanence, endurance, ownership, and justified rights to territory.

Again, the structures already in place from the occupation of Chiquiuitan in previous times constrained and enabled social agents to reproduce those structures in similar, yet innovative ways. The house mound platforms that were previously maintained through repeated layering of dirt additions had started to alter the environment in lasting and noticeable ways. They indicated social organization of the community in distinct household groups, a social norm that was maintained and reproduced by Tamarindo generations. However, at this time, people were practicing agriculture in the immediate vicinity of Chiquiuitan, and within a region of increasing settlement and perhaps competition over the most fertile soils. In response, social actors initiated new social norms aimed at displaying their identity. By appropriating this activity for the conscious purpose of signaling their identity, the mounds were made into new symbols by residents of Chiquiuitan.

Within this climate of intensified social relations, the evidence for Saxe Hypothesis 8 further demonstrates the intentional marking of the landscape through cultural features, specifically through the interment of deceased ancestors within the visible mounds. Saxe's hypothesis links the deliberate disposal of the dead in distinct areas with the need to legitimize a corporate group's lineal descent and corresponding inheritance of rights to resources. This materialization of social relations through the placement of the remains of ancestors is often coupled with new demands for control over land associated with the emergence of agriculture. This burial practice provided another means through which social agents at Chiquiuitan could inscribe meaning into the earthen mounds, this time signaling their historical links to the area and resources. In summary, transitions in the relationship between the Chiquiuitan landscape and the people that inhabited it seems to have slowly moved away from a natural landscape inscribed with cultural symbolism and imposing upon the lives of mobile groups to a built landscape that was purposefully modified and inscribed with important cultural messages.

In this phase, it is possible to further see human agency in the construction of a primarily cultural place, in which the meaning inscribed onto landscape features and the memory drawing upon the history of the site came to overpower the natural components of this area. The mounds were large constructions clearly indicating human attendance. Their presence would have influenced the area in many ways, for example affecting floral and faunal patterns, water movements, and soil fertility. People creating these mounds stripped large amounts of dirt off the surface of the area to pile atop the mounds. All of these activities contributed to the transformation of the natural environment into a largely cultural one.

This is just the beginning of the trend in Mesoamerica for vertical expressions of monumentality. In neighboring areas such as La Blanca, much larger human-made constructions were taking place. In the following Late Formative period, huge temple complexes were seen in many parts of the Mesoamerican world, including the Maya site of El Mirador and at Monte Alban in Oaxaca, where they functioned as sources of power and social control by the emerging rulership. By the Classic period truly monumental constructions demonstrated aspects of civic identity and marked the connection between people and natural landscape features at places like Teotihuacan, as well as with beliefs in the order of the cosmos at Maya centers such as Tikal and Uaxactun. By these later dates, a complete switch had been made, from a landscape with natural features that shaped the actions and memories of groups of people, to one in which "the landscape was now understood in terms of its relationship to the setting of monuments" (Tilley 1994:203).

An interesting aspect of monumentality in Mesoamerica is the association of vertical monuments with mountains or volcanoes. At the Middle Formative Olmec site of La Venta, Mound C-1, also called the Great Pyramid, was once thought to mimic the volcanoes visible from the Tuxtla Mountains, although recent research has turned more toward an interpretation of the pyramid as a sacred mountain (Pool 2007; Reilly 1999). Evan Vogt has highlighted the importance of sacred mountains to modern Maya peoples and reflected upon the same interpretation drawn from archaeological examples of the Classic Maya (Vogt 1969:594-595). Vogt's research in Chiapas demonstrated the Maya belief that ancestral gods live inside the sacred mountains and documented the rituals performed by different lineage groups that claim ancestry and rely on the gods for protection. He associates these modern practices with the construction of pyramids in ancient Maya societies. Lastly, the central Mexican city of Teotihuacan was planned to incorporate reflections of the natural environment (Headrick 2007). The Moon Pyramid was built at the end of the Avenue of the Dead and directly in front of the extinct volcanic cone of Cerro Gordo.

At Chiquiuitan, the development of intensified mound construction took place on the flat Pacific coastal plain, with the backdrop of the volcanic cordillera of the Guatemalan highlands. On clear days, six volcanoes are visible from the site, two of which are often smoking. On clear nights, the orange blaze of hot lava can be seen glowing from the tips of the active volcanoes.

While it is impossible to say that the ancient inhabitants of Chiquiuitan were building their mounds taller in order to resemble the volcanoes that imposed upon the landscape that they inhabited, this cultural tradition that came to be such a fundamental part of Mesoamerican monumental construction must have started somewhere. The idea cannot be dismissed that these beginnings may have been during the Formative period and along the Pacific coast.

Conclusions

I argue that early inhabitants of Chiquiuitan first created elevated platforms to raise their living surfaces above the surrounding swampy environment at a time when the site was used only in temporary visitations. Through time these features came to be permanent house mounds and were significant aspects of the built environment symbolizing a connection to that specific place and functioning as a visible and intentional sign of the continuous presence of each household and the community as a whole. The transition to sedentism was not one that merely accompanied other aspects of social complexity, but it was a critical change that required a restructuring of the ideology of the people in order to understand the places that they occupied in new ways. The foundation of the house as a new feature on the cultural landscape, and the cementing of the household social group that was held together by this structure are crucial elements in this transition. Peter Wilson (1988:153) has summed up this idea:

> Domesticated society is founded on and dominated by the elementary and original structure, the building, which serves not just as shelter but as diagram and, more generally, as the source for metaphors of structure that make possible the social construction and reconstruction of reality.

Chiquiuitan had been a powerful place even when it was only occasionally visited by mobile people, but the significance was probably understood only abstractly through oral traditions and memories. With the movement to constructed symbols, physical objects came to represent in a more material way the histories of the people that lived there. In the face of increasing social competition and a heightened value placed on fertile agricultural lands, raising a visible outward expression, in which buried ancestors attested to the group's longevity, may have fulfilled an important goal of creating a material link between people and the landscape. There was a transformation of the residential platform as an adaptation for sedentism in a swampy area to a material sign with important social meaning indicative of the social group's endurance.

The social meaning inscribed onto the built environment reveals a changing relationship between people and landscape in the late Early and early Middle Formative phases that correlates with cultural transitions occurring across Mesoamerica at this time. Chiquiuitan was abandoned by 600 B.C., during the Middle Formative period, probably for inland sites that had more reliable rainfall needed by a fully agricultural society. Other sites in Mesoamerica were thriving at this time, especially at La Blanca located to the northwest along the Pacific coast, at La Venta in the Olmec heartland, and at several sites in the Maya lowlands. Cultural characteristics of a centralized Mesoamerican sphere solidified and are seen in developments in artwork, interregional trade, and monumental construction. However, as these wider cultural developments emerged, it is clear that certain aspects of society – the household as a basic social unit, certain symbolic motifs and meanings, and perhaps the desire for vertical statements in architecture – had their foundations in the small coastal sites of the Formative period, including at Chiquiuitan.

Appendix A

FORMATIVE PERIOD RADIOCARBON CHRONOLOGY

At the time of this dissertation completion, fifteen radiocarbon assays have been performed on samples collected from archaeological contexts at Chiquiuitan (Table A-1, Figure A-1). The first two samples of charred organic materials were collected by Estrada Belli and processed in 1998 at Oxford University (Kowaskowsky, Estrada Belli, and Pettitt 2000). The rest of the samples were collected by Proyecto Arqueológico Chiquiuitan team members in 2006 and 2007. Six samples of carbonized wood and sent by the author to Beta Analytic in 2007, funded by the New World Archaeological Foundation. Seven additional samples of carbonized wood were analyzed using NSF grant funds and processed at Arizona Laboratories in 2009. Lastly, two paleobotanical specimens and six archaeofaunal specimens are being processed by Arizona Laboratories in late 2009, and results should be forthcoming. All three laboratories used the Libby half life of 5568 years.

These dates help to refine the occupational chronology that has been previously proposed (Kowaskowsky, Estrada Belli, and Pettitt 2000) and that used ceramic stylistic correlations with well-known diagnostic attributes from neighboring areas. Dates processed early in the research firmly established beginning and ending dates for the Huiscoyol and Cangrejo phases of the Early Formative period (Morgan and Valle 2007a). The chronology resulting from more recent studies has targeted an ending date for occupation during the Middle Formative Tamarindo phase to augment stylistic comparisons.

The Huiscoyol phase is the earliest known phase at Chiquiuitan. It was identified at this site by Estrada Belli (1999, 2002), who determined that Chiquiuitan was the first and only site in the region at this time and placed the phase at 1350-1150 B.C., uncalibrated. Current refinement of the occupational chronology places the Huiscoyol phase at 1450-1250 B.C. calibrated. Two radiocarbon dates fit into this phase (Figure A-1), Beta-231368 and Beta-226989, with overlapping 1-sigma ranges of 1450-1378 B.C. and 1405-1305, respectively. Both of these samples were excavated from deposits that were securely dated to the Huiscoyol phase based on ceramic stylistic attributes. Three other dates demonstrate 1-sigma ranges that span the 1250 B.C. divide between the Huiscoyol and Cangrejo phases. These are samples AA86164 (1316-1212 B.C.), AA86163 (1312-1192 B.C.), and Beta226987 (1314-1192 B.C.). These three contexts were identified as Huiscoyol/Cangrejo or Early Cangrejo during ceramic studies.

Table A-1. Radiocarbon dates from Chiquiuitan discussed in the text. The calibration data provided here uses the most recent calibration curve available (Reimer et al. 2004) and were obtained through the online program available through Oxcal.

Laboratory Sample Number	Field Context	Material	Conventional Radiocarbon Age BP	Uncalibrated Date	Calibrated Years BP	Cal ^{14}C 1 Sigma	Cal ^{14}C 2 Sigma	Local Phase Designation
OXA7779	Test Pit 5 Layer 11	Carbonized wood	2935 +/- 65	985 +/-65 B.C.	3210-2996	1260-1046 B.C.	1318-974 B.C.	Cangrejo
OXA7780	Test Pit 7 Layer 15	Carbonized wood	2890 +/- 65	940 +/-65 B.C.	3084-2929	1134-979 B.C.	1270-906 B.C.	Cangrejo
AA86160	CHI 04-01-09 Mound 24	Charcoal	2793 +/- 34	843 +/- 34 B.C.	2946-2856	996-906 B.C.	1021-841 B.C.	Cangrejo/ Tamarindo
Beta226987	CHI 04-01-17 Mound 24	Charred Material	3000 +/- 40	1050 +/-40 B.C.	3264-3142	1314-1192 B.C.	1386-1123 B.C.	Huiscoyol/ Cangrejo
Beta226988	CHI 04-01-19 Mound 24	Charred Material	2940 +/- 50	990 +/-50 B.C.	3165-3006	1215-1056 B.C.	1314-1002 B.C.	Cangrejo
AA86161	CHI 05-01-07 Mound 27	Charcoal	2845 +/- 62	895 +/- 62 B.C.	3040-2872	1090-922 B.C.	1211-890 B.C.	Cangrejo/ Tamarindo
AA86162	CHI 05-01-09 Mound 27	Charcoal	2790 +/- 34	840 +/- 34 B.C.	2946-2854	996-904 B.C.	1016-840 B.C.	Cangrejo/ Tamarindo
Beta226989	CHI 05-01-19 Mound 27	Charred Material	3070 +/- 40	1120 +/-40 B.C.	3355-3255	1405-1305	1430-1256	Huiscoyol
Beta231366	CHI 06-01-05 Mound 34	Charred Material	2860 +/- 40	910 +/-40 B.C.	3008-2926	1058-976 B.C.	1131-914 B.C.	Cangrejo
Beta231367	CHI 07-01-15 Mound 13	Charred Material	2870 +/- 40	920 +/-40 B.C.	3060-2940	1120-1000 B.C.	1190-1140 B.C., 1140-920 B.C.	Cangrejo
AA86163	CHI 07-01-22 Mound 13	Charcoal	2998 +/- 40	1048 +/- 40 B.C.	3262-3142	1312-1192 B.C.	1386-1121 B.C.	Huiscoyol/ Cangrejo
Beta231368	CHI 07-01-24 Mound 13	Charred Material	3130 +/- 40	1180 +/-40 B.C.	3400-3328	1450-1378 B.C.	1496-1311 B.C.	Huiscoyol
AA86164	CHI 07-04-09 Mound 13	Charcoal	3011 +/- 35	1061 +/- 35 B.C.	3266-3162	1316-1212 B.C.	1386-1188 B.C.	Huiscoyol/ Cangrejo
AA86165	CHI 07-05-03 Mound 13	Charcoal	2781 +/- 39	831 +/- 39 B.C.	2947-2846	997-896 B.C.	1016-831 B.C.	Cangrejo/ Tamarindo
AA86166	CHI 07-05-07 Mound 13	Charcoal	2917 +/- 36	967 +/- 36 B.C.	3070-2946	1120-996 B.C.	1133-922 B.C.	Cangrejo

In the ensuing Cangrejo phase, Estrada Belli's (1999) regional survey determined that Chiquiuitan continued to be the largest site in the region, but was joined by neighbors at the newly established sites of Ujuxte, Pulido/Canal, Santa Rita, Aguadulce, and Palosadentro. Original publications of the site place this phase at 1150-850 B.C. uncalibrated (Estrada Belli 1998, 1999, 2002). It is now thought that the Cangrejo phase dates to 1250-950 B.C. calibrated. Six radiocarbon dates fit securely into this phase (Figure A-1). They provide a continuous string of overlapping 1-sigma ranges from 1260-976 B.C., illustrating the continuous occupation of the site throughout this phase. They were all collected from stratigraphic deposits securely placed within the Cangrejo phase according to stylistic assessments of pottery attributes.

Interestingly, some observations regarding changes in vessel form frequencies and surface decorations suggest the preliminary identification of early Cangrejo and late Cangrejo deposits. These observations are supported by chronometric results. Especially around the transition to the Tamarindo phase, new attributes are seen appearing with more traditional Cangrejo characteristics. Two radiocarbon dates were collected from contexts demonstrating these characteristics. They include AA86160 and AA86165. These two contexts have 1-sigma dates spanning the Cangrejo/Tamarindo divide at 950 B.C. Two other contexts also have dates within this range, and include AA86161, which did not provide any diagnostic ceramics and AA86162, which likely came from a mixed context. The identification of these patterns indicates that in the future further refinements of the ceramic sequence may enable more fine-grained chronological assessments including early and late facets of the Cangrejo phase.

The Tamarindo phase was previously estimated at 850-450 B.C. uncalibrated (Kosakowsky, Estrada-Belli, and Pettitt 2000; Kosakowsky 2002), but has recently been placed at 950-600 B.C., within the early part of the Middle Formative. At Chiquiuitan, I do not see diagnostic ceramic attributes similar to those from other sites dating to the later part of this period. Additionally, radiocarbon dates falling within the Tamarindo phase all group within the earlier part of the Middle Formative. In fact, the latest 1-sigma range provided in chronometric assays is 997-896 B.C. (AA86166). The uppermost excavation levels were not sampled for AMS dating because it was thought that the likelihood of disturbance would contaminate results, and for this reason later occupation probably exists at Chiquiuitan that is not represented in the chronometric results presented here. However, the lack of later dates probably demonstrates an earlier abandonment of the site than previously thought.

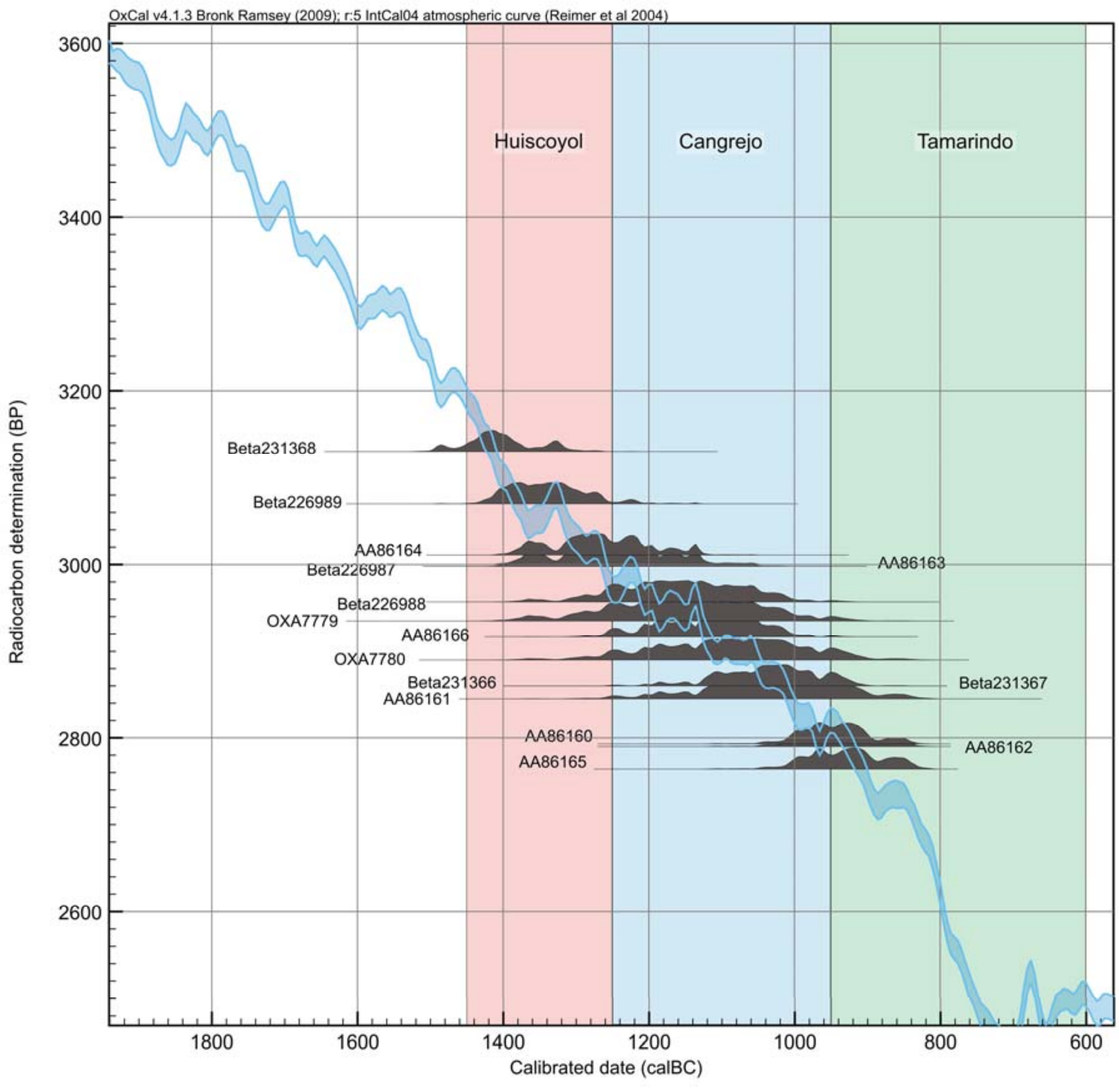

Figure A-1. Chiquiuitan radiocarbon chronology.

Appendix B

CODING MANUAL FOR THE CHIQUIUITAN CERAMIC ANALYSIS

Identification Information

Context

00 (Operation) 00 (Suboperation) 00 (Level/Lot)

Total Count (n)

Actual Raw Sherd Count

Weight (Wgt)

Measured in Grams

- One weight taken of all sherds of the same classification

Time Period for Specific Diagnostic Attributes (TP)

Based on Specific Diagnostic Attributes and Type Variety Classification

01 Huiscoyol

02 Early Huiscoyol

03 Late Huiscoyol

11 Cangrejo

12 Early Cangrejo

13 Late Cangrejo

21 Tamarindo

22 Early Tamarindo

23 Late Tamarindo

51 Huiscoyol/Cangrejo

61 Cangrejo/Tamarindo

99 Indeterminate

Attributes of Form

Vessel Part (VP)

01 Body

02 Rim

11 Collar

12 Collar and Rim

13 Collar and Shoulder

14 Collar, Shoulder, and Rim

21 Shoulder

23 Shoulder and Collar

51 Plain Strap Handle

52 Strap Handle with Three Lines/Grooves

53 Strap Handle with Four Lines/Grooves

54 Strap Handle with One Groove

55 Flat Handle

56 Flat Handle with Grooved Dot

57 Cord Handle

58 Knob Handle with Two Lines

59 Flat Handle with Grooved Lines

61 Flat Base

62 Ring Base

63 Flat Base, Wall, and Rim of Dish/Bowl/Basin

65 Round Base (Convex)

66 Concave Base

67 Round Base, Wall, and Rim

71 Support

99 Indeterminate

Vessel Form (VF)

01 Globular Tecomate

02 Tear-Shaped Tecomate

03 Tecomate with Collar

09 Indeterminate Tecomate

11 Water Jar / Cantaro

21 Vertical-Walled Dish/Bowl

22 Flaring/Open-Walled Dish/Bowl

23 Interior-Curving (Closed-Walled) Dish/Bowl

24 Open Bowl/Dish with Sharp Break

25 Open Bowl/Dish with Bolstered Break

26 Open Bowl/Dish with Two Sharp Breaks

27 Closed Bowl/Dish with Two Sharp Breaks

28 Bowl/Dish with Indeterminate Break

31 Plate

99 Indeterminate

Collar Length (CL)

Measured in Millimeters from the lip of the rim to the beginning of body

Sherd Profile Thickness (PT)

Measured in Millimeters

- Averages taken in the cases of multiple examples

- Measured below the rim on rim sherds

I Indeterminate

Rim Form (RF)

01 Direct Squared

02 Direct Rounded

03 Direct Pointed

04 Direct Blunt

11 Exterior Pointed

12 Exterior Tapered

13 Exterior Rounded

14 Exterior Bevelled

21 Interior Pointed

22 Interior Tapered

23 Interior Rounded

24 Interior Bevelled

99 Indeterminate

Rim Bolstering (RB)

01 Exterior Bolstering

02 Interior Bolstering

21 Exterior Everted

99 Indeterminate Bolstering

Rim Diameter (RD)

Measured in Centimeters on the inside of the lip

I Indeterminate

Surface Attributes

Exterior Surface Treatment (EST) – non-Slip

01 Burnishing/Polishing Sometimes Creating Self-Slip

02 Smoothing Indicated by Light Lines

03 Visible Light Lines and Application of Wash (Brush Lines or Smoothing)

04 Striation Indicated by Intentional Lines or Striping

09 Eroded

Interior Surface Treatment (IST) - non-Slip

01 Burnishing/Polishing Sometimes Creating Self-Slip

02 Smoothing Indicated by Light Lines

03 Visible Light Lines and Application of Wash (Brush Lines or Smoothing)

04 Striation Indicated by Intentional Lines or Striping

09 Eroded

Exterior Slip (ES)

01 Red

02 Orange

03 Black

04 White (could be some calcite residue)

05 Crème/Buff

06 Reddish Black

07 White (definite intentional slip)

08 Brown

09 Grey

11 Thin Red Wash

21 Special Slip over Design

Exterior Slip Munsell (ESM)

01 2.5YR 3/4 - Dark Reddish Brown

02 2.5YR 5/8 – Red

03 10R 3/3 – Dusky Red

04 10R 3/4 – Dusky Red

05 10R 4/4 - Weak Red

06 10R 5/6 Red

11 5YR 3/3 – Dark Reddish Brown

12 5YR 4/6 – Yellowish Red

13 5YR 6/6 – Reddish Yellow

14 5YR 6/8 – Reddish Yellow

21 7.5YR 6/6 – Reddish Yellow

22 7.5YR 6/8 – Reddish Yellow

23 7.5 YR 5/4 – Brown

24 7.5YR 3/2 – Dark Brown

25 7.5YR 2.5/1 – Black

26 7.5YR 7/6 – Reddish Yellow

31 10YR 6/3 – Pale Brown

32 10YR 6/4 – Light Yellowish Brown

33 10YR 7/2 – Light Gray

34 10YR 5/4 – Yellowish Brown

41 7.5R 5/6 – Red

42 7.5R 5/8 – Red

43 7.5R 4/8 - Red

51 2.5Y 8/2 – Pale Yellow

Interior Slip (IS)

01 Red

02 Orange

03 Black

04 White (could be some calcite residue)

05 Crème/Buff

06 Reddish Black

07 White (definite intentional slip)

11 Thin Red Wash

21 Special Slip over Design

Interior Slip Munsell (ISM)

(See Codes for Exterior Slip)

Design Location (DL)

-This does not include band of slip at rim

01 Exterior Body

02 Exterior at Rim

03 Exterior Collar

04 Exterior Shoulder

05 Exterior at Base

06 Exterior at Collar and Shoulder

11 Interior

12 Both Exterior and Interior

13 Interior at Rim

14 Interior at Base

21 Lip Edge

22 On Handle

99 Indeterminate

Incised Design (ID)

01 Single Line/Groove

02 Double Line/Groove

03 Triple Line/Groove

11 Line Break

12 Double Line Break

13 Cleft

21 Horizontal Lines

22 Vertical Lines

23 Cross-Hatching

24 Curving Lines

25 Straight Lines and Curving Lines

26 Indeterminate Straight Lines

27 Herringbone

28 Geometric

29 Complete Circles

31 Plain Zoning

32 Zoned Punctation

33 Zoned Cross-Hatching

34 Zoned Painting

35 Zoned Striation

Thickness of Incision (IT)

Measured in Millimeters

Slip and Incised Design (SI)

01 Incision Pre-Slip

02 Incision Post-Slip

99 Indeterminate Relationship between Incised Design and Slip

Punctated Design (PD)

01 Random Pointed Tool Impression

02 Random Squared Tool Impression

03 Random Blunt Tool Impression

04 Random Finger Nail or Half-Moon Shaped Tool Impression

05 Random “Drop of Water” or Watermelon Seed Impression

06 Random Shell Rocker Stamping

07 Random Flat Tool Impression

11 Patterned Pointed Tool Impression

12 Patterned Squared Tool Impression

13 Patterned Blunt Tool Impression

14 Patterned Finger Nail or Half-Moon Shaped Tool Impression

15 Patterned “Drop of Water” or Watermelon Seed Impression

16 Patterned Shell Rocker Stamping

17 Patterned Flat Tool Impression

21 Zoned Pointed Tool Impression

22 Zoned Squared Tool Impression

23 Zoned Blunt Tool Impression

24 Zoned Finger Nail or Half-Moon Shaped Tool Impression

25 Zoned “Drop of Water” or Watermelon Seed Impression

26 Zoned Shell Rocker Stamping

27 Zoned Flat Tool Impression

Appliquéd Design (AD)

01 Balls/Cacao

02 Lines

03 Animals or Animal Parts

04 Humans

05 Ball with Tool Punctations

06 Lines and Balls

11 Combination of Balls/Cacao and Balls with Tool Punctations

99 Indeterminate Appliquéd Designs

Finger or Tool Molded Designs (MD)

01 Human Face

02 Knob or Irregularly Shaped Lump

11 Single Ridge

12 Double Ridge

13 Triple Ridge

14 Quadruple Ridge

21 Single Pie-Crust Ridge

22 Double Pie-Crust Ridge

23 Triple Pie-Crust Ridge

24 Quadruple Pie-Crust Ridge

31 Waves/Short Vertical Ridges Creating Tractor Trail Design

41 Ring

42 Pie-Crust Ring

99 Indeterminate Molded Design

Slipped/Painted Designs (SD)

01 Red Band around Rim

02 Orange Band around Rim

03 Specular Red Band around Rim

04 White Band around Rim

05 Black Band around Rim

06 Buff Band around Rim

Band Slip/Paint Munsell (DM)

01 10R 3/3 – Dusky Red

02 10R 3/4 – Dusky Red

11 7.5R 4/6 – Red

12 7.5R 4/8 – Red

13 7.5R 3/6 – Dark Red

21 2.5YR 5/8 – Red

24 7.5YR 7/6 – Reddish Yellow

25 7.5YR 2.5/1 – Black

31 7.5YR 8/1 - White

32 10YR 6/4 – Light Yellowish Brown

Additional Slipped/Painted Designs (AS)

01 Additional Band around Rim

11 Geometric Designs on Body on Exterior

12 Floral Designs on Body on Exterior

13 Solid Dot on Exterior

14 Straight Lines on Exterior

21 Geometric Designs on Body on Interior

22 Floral Designs on Body on Interior

23 Solid Dot on Interior

Additional Slip/Paint Design Munsell (ASM)

01 2.5Y 8/2 – Pale Yellow

11 7.5R 4/6 – Red

21 5YR ¾ - Dark Reddish Brown

25 Black

Thickness of Rim Band on Exterior (EBT)

Measured in Millimeters from the edge of the rim

I Indeterminate Thickness of Band

Thickness of Rim Band on Interior (IBT)

Measured in Millimeters from the edge of the rim

I Indeterminate Thickness of Band

Paste Attributes

Paste Type (PT)

01 Fine (relative to other pastes at this site; generally a more medium paste)

02 Medium

03 Coarse

Paste Inclusions (PasteI)

000000001 Sand (Black)

000000002 Quartz

000000003 Ferruginous Inclusions

000000004 Pumice

000000005 Shell (calcite)

000000006 Mica

000000007 Hematite

000000008 Black Inclusions

000000009 Indeterminate Inclusions

0000000012 Sand and Quartz

(any combination possible)

123456789 Sand, Quartz, Ferruginous Inclusions, Pumice, Shell, Mica, and Indeterminate Inclusions

Paste Munsell (PM)

01 2.5YR 3/4 - Dark Reddish Brown

02 2.5 YR 4/4 – Reddish Brown

03 2.5YR 2.5/1 – Reddish Black

04 2.5YR 5/6 - Red

11 5YR 3/3 – Dark Reddish Brown

12 5YR 4/6 – Yellowish Red

13 5YR 6/6 – Reddish Yellow

14 5YR 6/8 – Reddish Yellow

15 5YR 2.5/2 – Dark Reddish Brown

21 7.5YR 6/6 – Reddish Yellow

22 7.5YR 6/8 – Reddish Yellow

23 7.5 YR 5/4 – Brown

24 7.5 YR 3/2 – Dark Brown

25 7.5YR 2.5/1 - Black

31 10YR 6/3 – Pale Brown

32 10YR 6/4 – Light Yellowish Brown

33 10YR 7/2 – Light Gray

34 10YR 5/4 – Yellowish Brown

35 10YR 4/2 – Dark Grayish Brown

36 10YR 6/2 – Light Brownish Gray

41 7.5R 5/6 – Red

42 7.5R 5/8 – Red

43 7.5R 4/6 – Red

51 2.5Y 5/3 – Olive Light Brown

Indications of Burning/Cooking/Differential Firing (IB)

01 Exterior Fire Clouding

02 Interior Fire Clouding

03 Fire Clouding on Both the Interior and the Exterior

04 Indeterminate Fire Clouding

07 General Black Burned Appearance on Exterior

08 General Black Burned Appearance on Interior

09 General Black Burned Appearance All Over Sherd

11 Interior Carbon Banding Pattern – Top of Vessel

12 Interior Carbon Banding Pattern – Middle of Vessel

13 Interior Carbon Banding Pattern – Base/Bottom of Vessel

14 Interior Indeterminate Location of Carbon Banding Pattern

21 Exterior Carbon Banding Pattern – Top of Vessel

22 Exterior Carbon Banding Pattern – Middle of Vessel

23 Exterior Carbon Banding Pattern – Base/Bottom of Vessel

24 Exterior Indeterminate Location of Carbon Banding Pattern

29 Interior and Exterior Indeterminate Carbon Banding Pattern

31 Interior and Exterior Carbon Banding Pattern – Top of Vessel

32 Interior and Exterior Carbon Banding Pattern – Middle of Vessel

33 Interior and Exterior Carbon Banding Pattern – Base/Bottom of Vessel

Differential Oxidation of Core (OC)

01 Nucleus Darker in Color

02 Nucleus Lighter in Color

Indications of Use (IU)

01 Scratches/Wear Abrasion on Exterior

02 Scratches/Wear Abrasion on Interior

03 Scratches/Wear Abrasion on Both Exterior and Interior

11 Scratches/Wear Abrasion on Interior of Rim

51 Disk Shape

99 Indeterminate Scratches/Wear Marks

Indications of Mending or Secondary Function (IM)

01 Mend/Kill Holes

21 Disk Shape

22 Possible Wasters

Chronological Assessment for entire Context/Lot (Chro)

EH Early Huiscoyol

H Huiscoyol

LH Late Huiscoyol

H(M) Huiscoyol Mixed

EC Early Cangrejo

C Cangrejo

LC Late Cangrejo

C(M) Cangrejo Mixed

ET Early Tamarindo

T Tamarindo

LT Late Tamarindo

T(M) Tamarindo Mixed

Appendix C

ATTRIBUTE DATA FOR CHIQUIUITAN CERAMICS

The following shows the attribute data collected from Operation 7 at Mound 13 at Chiquiuitan. The columns along the top of the pages each indicate different ceramic attribute information coded for in this analysis. Please refer to Appendix B for meanings of coded data. Surface treatment characteristics (presence of interior or exterior slip, munsell of slips, location of design on vessel body, presence and type of incised design, thickness of incision, presence and type of punctuated design, presence and type of appliquéd design, presence and type of molded design, presence and munsell of slipped band design, and thickness of slipped band) and vessel form characteristics (vessel part represented on sherd, overall vessel form, collar length, sherd profile thickness, rim form, rim bolstering, and rim diameter) were selected as important characteristics for answering questions of regional interaction and domestic practice and are discussed in Chapter Six. These attributes were recorded as well as paste characteristics, any evidence of differential firing or burning, or other indications of use (scratching, mending, etc.). All attributes were coded for and recorded for all ceramics collected during excavation. Only Operation 7 at Mound 13 is included here for reasons of page length. Data from other operations are available from the author.

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070101	002	00037		02	99		09	04		99	01	01								
070101	001	00029		02	99		17	04		99	01	01								
070101	001	00021		02	99		10	02		99	01						02	01	03	
070101	001	00023		02	99		10	04		11	01	01								
070101	001	00034		02	03	16	99	02		07	01	99								
070101	002	00014		01	99		07				01	01					11	01	02	
070101	001	00026		01	99		09				01	01					01			
070101	001	00006		01	99		05				01	01					01			
070101	001	00012		01	99		06				01	01								
070101	001	00008		01	99		09				01									
070101	042	00500		01	99		07				01	01								
070101	016	00125		01	99		10				01									
070101	002	00024		99	99															
070102	001	00054	01	02	02		11	04		05	01	01					02	01	02	
070102	001	00089	01	02	03	11	07	04	21	06	01	02					04			
070102	001	00083	03	14	03	52	08	04		05	01						03			
070102	001	00034	01	02	02		11	02		07	01						02	01	06	
070102	001	00146	01	02	02		07	02		04	01	01								
070102	001	00066	01	02	02		11	04		99	01						01			
070102	001	00058	01	02	02		09	02		05	01	01					01			
070102	002	00090	01	02	02		08	02		99	01	01					02	01	01	
070102	008	00496	01	02	02		12	02		06	01									
070102	002	00108	01	02	02		11	04		08	01						01			
070102	002	00078	03	02	03	17	09	02		06	01	01								
070102	006	00400	01	02	02		12	04		05	01	01					02	24	02	
070102	022	00600		02	99		11	04		99	01	01								
070102	004	00048		02	99		09	04		99	01	01					02	01	02	
070102	001	00023		02	21		10	02		10	01	01					01	22	02	
070102	016	00275		02	99		08	02		99	01	01								
070102	006	00205		02	22		07	02		09			01	11						
070102	002	00236		14	11	52	11	04		09	01	01								
070102	001	00126		14	11	53	14	02		10	01	03					03			
070102	001	00302		02	21		13	04		05										
070102	001	00052		02	22		10	04		13	01		01	43						
070102	002	00157		14	11	32	09	02		09	01	01					03	22	02	
070102	003	00131		02	21		10	02		07	01	01								
070102	004	00201		02	22		11	04	21	11	01	01								
070102	001	00026		02	22		16	02		99	01	01					01			
070102	001	00015		02	22		13	04	01	99	01	01					01	24	02	
070102	004	00078		02	99		08	14	01	99	01	01								
070102	007	00253		02	22		09	04	01	12	01	01								
070102	007	00296	11	51																
070102	004	00139		55																

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070101										02	000001257	24						no diagnostics
070101										03	000001235	13						
070101	07									02	000001258	02						
070101										02	000012356	02						
070101				01	13	02	02			02	000001235	35						
070101										02	000000125	35						
070101			99							02	000000125	02						
070101			21							02	000000012	02						
070101										02	000000125	25	09					
070101										02	000001235	25	09					
070101										02	000000125	02						
070101										02	000012358	02						
070101																		
070102		99								03	000001258	13						Tamarindo (Mixe
070102			21	01	11			10	21	02	000001257	02						
070102	04									02	000000125	02						
070102	03									02	000012358	02						
070102										02	000001257	04						
070102	04									02	000001235	02						
070102	06									02	000001257	02						
070102										02	000000125	02						
070102										03	000000125	02						
070102	03									02	000001235	02						
070102										02	000000125	23						
070102										02	000000125	02						
070102										02	000000125	02						
070102										02	000001258	02						
070102										02	000000125	24						
070102										02	000001258	02						
070102										02	000012358	33						
070102										02	000001235	02						
070102	04									03	000001235	23						
070102										02	000012358	04						
070102										02	000001258	04						
070102										02	000001257	24						
070102										02	000012358	25						
070102										02	000000125	02						
070102	03									03	000001257	23						
070102										02	000001258	04						
070102										02	000000125	02						
070102										02	000001257	02						
070102										02	000012357	02						
070102										02	000001235	02						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070102	006	00154		61			11													
070102	001	00017		61													05	02	01	
070102	006	00253		01	99		09					01			01	43				
070102	001	00022		01	99		08						01	43	01	43				
070102	001	00012		01	99		07				01	01					01			
070102	001	00056		01	99		08				01	01					01			
070102	015	00300		01	99		09				01						01			
070102	004	00079		01	99		08				01	01					01			
070102	001	00119		01	99		11				01	01					01			
070102	002	00056		01	99		10				01						01			
070102	004	00113		01	99		09				01	01					01			
070102	006	00116	11	01	99		07				01	01					01			
070102	007	00118		01	99		07				01	01					01			
070102	010	00160		01	99		09										01			
070102	001	00053		01	99		10				01	01					01			
070102	001	00031		01	99		10				02						01			
070102	004	00082		01	99		10				01	01					01			
070102	008	00116		01	99		10				01						01	26	03	
070102	002	00026		01	99		08				02									
070102	006	00109		01	99		09				01						01			
070102	001	00007		01	99		10				01						01			
070102	001	00033		01	99		14				01	01					01	21/22	03	
070102	019	00225		01	99		09				01	01								
070102	002	00042		01	99		09				01	01								
070102	005	00229		01	99		08				01	01								
070102	016	00175		01	99		07				01	01								
070102	649	09100		01	99						01									
070102	998	16775		01	99						01	01								
070102	053	00510		99	99															
070103	001	0016	01	02	02		10	04		04		01					01			
070103	001	00037	01	02	02		08	02		05		01					01			
070103	001	00017	01	02	02		14	02		05	01	01					01			
070103	001	00052	01	02	02		11	02		05	01						01			
070103	002	00069	01	02	02		11	02		05	01	01								
070103	004	00132		01	22		10	02		12	01	01								
070103	002	00044		01	99		11	04		99	01	01					02	01	02	
070103	002	00032		01	22		12	12		99	01	01								
070103	004	00070		01	99		09	04		99	01	01								
070103	001	00093		01	21		12	14	01	14	01	01					01	24	04	
070103	001	00044		01	22		10	14	01	99	01	01								
070103	001	00038		01	21		12	04	21	99	01	01								
070103	001	00034		01	22		09	04	01	99	01	01								
070103	001	00086		14	11	58	08	02	01	07	01	01					03	22	03	

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070102										02	000000125	02						
070102										02	000000125	02						
070102										02	000001235	02						
070102										02	000001258	02						
070102			22							02	000000125	33						
070102		05	21							02	000001258	04						
070102			21							02	000001258	02						
070102		05								02	000001257	02						
070102			02							02	000001258	04						
070102			99							02	000001235	23						
070102		05								02	000001258	02						
070102		03								02	000001235	02						
070102			11							02	000001258	02						
070102		06								02	000000125	02						
070102	26		21							02	000000125	33						
070102		03								02	000000128	33						
070102		05								02	000012358	24						
070102										02	000001235	02						
070102										02	000000125	02						
070102	03									02	000000125	02						
070102	07									02	000012358	04						
070102	03									02	000000125	04						
070102										02	000001235	25	09					
070102										02	000000125	02	07					
070102										02	000000125	02	08					
070102										02	000001235	04						
070102																		
070102																		
070102																		
070103	06									02	000001258	04						Tamarindo (Mixe
070103	06									02	000000125	23						
070103	07									03	000000125	34						
070103	03									02	000001257	02						
070103										02	000001235	02						
070103										02	000001256	02						
070103										02	000001258	02						
070103										02	000000125	02						
070103										02	000000125	02						
070103										02	000001258	02						
070103										02	000001235	02						
070103										02	000001235	23						
070103										02	000001258	23						
070103										02	000012356	24						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070103	001	00053		14	03	49	07	04		99	01	01					03	01/22	03	
070103	001	00112		14	11	58	10	02		08	01	01					03	22	03	
070103	001	00033		51																
070103	001	00019	03	71																
070103	001	00054		55																
070103	001	00103		01	99		09						01	43						
070103	001	00016		01	99		09				01	01	03	25			01			
070103	001	00066	11	01	99		09				01	01					01			
070103	002	00107	11	01	99		08				01						01			
070103	001	00021	11	01	99		07				01						01			
070103	004	00100		01	99		09				01	01					01			
070103	003	00056		01	99		07				01	01					01			
070103	005	00153		01	99		09				01						01	26	01	
070103	001	00021		01	99		12				01						01	01	01	
070103	002	00022		01	99		09				01						01			
070103	199	04150		01	99		08				01	01								
070103	151	02150		01	99		09				01	99								
070103	008	00122		99	99															
070104	002	00022		02	23		04	02		04	01	01								
070104	001	00058		02	01		07	02		05	01						01			
070104	001	00067		02	02		13	02		06	01	01					02	01/21	02	
070104	001	00092		02	02		14	04		04	01	01								
070104	005	00119		04	22		10	04		99	01	01								
070104	003	00028		02	99		13	02		99	01	01								
070104	002	00056		02	22		09	04	01	14	01	01								
070104	001	00054		02	22		11	04	01	11	01	01					02	22	02	
070104	001	00138		02	11		10	01	01	09	01	01					02	22	03	
070104	001	00046		02	11		12	04		99	01	01					02			
070104	002	00035		02	99		09	02	01	99	01	01								
070104	001	00093		02	11	21	09	02	21	06	01									
070104	002	00056		02	99		11	02	21	99	01	01								
070104	001	00035		02	22		11	04	21	99	01	01								
070104	001	00015		01	99		08				01						01			
070104	004	00183		01	99		10				01	01					01			
070104	001	00016		01	99		05				01						01			
070104	001	00037		01	99		08				01	03					01			
070104	001	00007		01	99		05				01						01			
070104	001	00053		01	99		09				01	01					01			
070104	003	00052		01	99		08				01	01					01			
070104	001	00057		01	99		10				01	01					01			
070104	001	00051		01	99		10				01						01			
070104	001	00029		01	99		10				01						01			
070104	001	00028		01	99		11				01						01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070103		99								02	000001258	04						
070103										03	000001258	34						
070103										02	000000125	04						
070103										02	000001235	04						
070103										02	000001235	04						
070103										02	000001258	02						
070103			11							02	000000125	02						
070103		03								02	000001258	04						
070103		05								02	000001235	02						
070103		05	21							02	000001258	23						
070103			11							02	000012578	02						
070103			21							02	000000125	02						
070103										02	000001235	02						
070103	03									02	000000125	23						
070103	06									02	000001258	02						
070103										02	000000125	02						
070103										02	000001235	02						
070103																		
070104										02	000000125	13						L Cangrejo / E T
070104	04									02	000012358	02						
070104										02	000012357	02						
070104										03	000000125	13						
070104										02	000001257	02						
070104										02	000000125	02						
070104										02	000001258	04						
070104										03	000123578	04						
070104										02	000001235	04						
070104	04									02	000012358	02						
070104										02	000012358	04						
070104										02	000001258	35						
070104										02	000001258	02						
070104										02	000001235	43						
070104		99								02	000001258	04						
070104			21							02	000000125	02						
070104		01								02	000000125	04						
070104		05								02	000012358	02						
070104			02							02	000000125	02						
070104		03								02	000001259	02						
070104			11							02	000012358	04						
070104		05	11							02	000000125	23						
070104	06		21							02	000001258	02						
070104	06									02	000001235	02						
070104	14									02	000001235	04						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070104	002	00040		01	99		10				01						01			
070104	001	00024		01	99		14				01						01			
070104	001	00006		01	99		11				01						01	26	02	
070104	001	00010		01	99		08				01						01	26	01	
070104	003	00094		51																
070104	001	00031		59																
070104	002	00032		62																
070104	004	00100		01	99		07				01	01								
070104	019	00475		01	99		08				01	01								
070104	004	00175		01	99		05				01									
070104	075	00850		01	99		08				01	01								
070104	288	03650		01	99		08				01	01								
070104	108	01850		01	99		99				01	99								
070104	053	00625		99	99															
070105	001	00015		02	01		11	02		10	99	01								
070105	001	00012		52																
070105	021	00350		01	99		08				01	01								
070105	004	00038		01	99		99				01	99								
070106	001	00015	01	02	01		05	04		04	01						01			
070106	003	00355	01	02	01		08	04		06	01	01								
070106	001	00220	03	02	02		06	02	02	06	01	01								
070106	001	00019		02	23		05	02	21	99	01				01	41				
070106	002	00446		02	03	24	07	04		09	01	01								
070106	004	00095		02	22		07	02		99	01	01								
070106	001	00067		02	21		09	04		07		01	03	25						
070106	001	00157		14	11	67	12	02	01	09	01	01								
070106	004	00186		02	22		10	02	01	09	01	01								
070106	002	00162		02	21		11	04	01	11	01	01					01	22	02	
070106	005	00136		02	22		08	04		99	01	01								
070106	001	00095		51							01	99								
070106	002	00277		61	22		09				01	01								
070106	001	00156		61	22		11				01	01					05	01	01	
070106	001	00059		61	22		08				01	01					05	21/22	01	
070106	001	00040		01	99		13				01	01					01	26	02	
070106	001	00020		01	99		12				01	01					01	21/22	02	
070106	001	00075		01	99		07				01	01					01	24	02	
070106	001	00044		01	99		11				01	01					01	32	03	
070106	001	00035		01	99		06				01	01					01			
070106	001	00017		01	99		08				01	01					01			
070106	001	00015		01	99		08				01	99					01			
070106	005	00123		01	99		07				01	01					01			
070106	002	00114		01	99		07				01	01					01			
070106	001	00036		01	99		07				01	01					01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070104	07									02	000000125	02						
070104	03									02	000012357	02						
070104										02	000001257	04						
070104										02	000012358	33						
070104										02	000001258	02						
070104										02	000001235	04						
070104										02	000000125	02						
070104										02	000012578	25	09					
070104										02	000001258	02	08					
070104										02	000000125	23						
070104										02	000000125	04						
070104										02	000001258	02						
070104										02	000001235	02						
070104																		
070105										02	000001258	04						Late Cangrejo
070105										02	000001235	04						
070105										02	000001258	02						
070105										02	000000125	02						
070106	03									02	000001235	35						Late Cangrejo
070106										02	000012358	02						
070106										02	000000012	04						
070106										02	000000125	35						
070106										02	000001235	02						
070106										02	000000125	35						
070106										02	000000015	35					Incrusted Stuff	
070106										02	000001235	02						
070106										02	000000125	43						
070106										02	000001256	25						
070106										02	000123567	02						
070106										03	000012359	02						
070106										02	000001235	02						
070106										02	000012356	13						
070106										02	000000157	04						
070106										02	000000012	35						
070106										02	000000125	35						
070106										02	000000125	02						
070106	03									02	000001257	02						
070106	06									02	000000125	13						
070106			02							02	000000125	04						
070106		03								02	000001235	04						
070106		05								02	000000125	02						
070106	21									02	000000125	02						
070106	21									02	000000015	25						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070106	006	00276		01	99		09				01	01								
070106	032	01225		01	99		08				01	01								
070106	215	06600		01	99		11				01	01								
070106	059	01500		01	99		11				01	99								
070107	001	00052		02	99		11	04		99	01	01								
070107	001	00022		01	99		10	02		08	01	01								
070107	001	00040	01	01	01		09	02		05	01	02								
070107	002	00181	01	01	01		10	02		05	01	01								
070107	001	00484	01	01	01		11	02	01	05	01	02								
070107	001	00046		01	99		06				02	02								
070107	003	00390	11	01	99		06				01	01					01			
070107	015	00650		01	99		07				01	01								
070107	131	03800		01	99		09				01	01								
070107	034	00575		01	99		08				01	99								
070108	001	00168	11	02	23		09	01	01	12	01	01					01	21	02	
070108	001	00023	11	01	99		09				01	01					01			
070108	022	01125		01	99		08				01	01								
070108	022	00525		01	99		08				01	99								
070109	003	00168	01	02	01		10	02		06	01	01								
070109	027	00253		01	99		07				01	01								
070109	011	00054		01	99		06				01	99								
070109	004	00016		99	99															
070110	010	00162		01	99		10				01	01								
070110	003	00043		01	99		09				01	99								
070111	001	00102	01	02	01		06	04		07	01		03	25			01			
070111	002	00158	01	02	01		07	04	02	99	01		03	25						
070111	001	00004		01	99		04					99	02	02						
070111	003	00082		01	99		07				01	99								
070111	001	00021		01	99		09				03	99								
070111	055	00425		01	99		07				01	01								
070111	021	00150		01	99		07				01	99								
070111	003	00011		99	99															
070112	001	00037	01	02	01		07	04	02	07	01									
070112	001	00086	01	02	02		09	04		10	01						01			
070112	001	00048	01	02	02		10	04		99	01	01								
070112	005	00353	01	02	01		07	02		07	01	01								
070112	001	00011		01	99		07					01	01	41						
070112	001	00013		01	99		05				01						01			
070112	001	00041		01	99		07				01	01					01			
070112	001	00013		01	99		06				01	01					01			
070112	002	00046		01	99		07				01	01					01			
070112	001	00022	11	01	99		08				01	01					01			
070112	001	00018		01	99		09				99	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070106										02	000000015	43						
070106										02	000000125	25						
070106										02	000001258	02						
070106										02	000000125	02					Incrusted Stuff	
070107										02	000000125	35					Burial 01 co	Cangrejo
070107										02	000001258	43						
070107										02	000000125	25	09					
070107										02	000000125	02						
070107										02	000001256	02					4 sherds that fit	
070107										02	000001256	02						
070107		03								02	000000125	02						
070107										02	000012359	25	09					
070107										02	000000125	02						
070107										02	000000015	02						
070108										02	000001235	35					Bag Labeled	Cangrejo
070108			99							02	000000125	35						
070108										02	000000125	02						
070108										02	000000015	02						
070109										02	000001235	02						Cangrejo
070109										02	000001259	02						
070109										02	000001256	02						
070109																		
070110										02	000000125	35						no diagnostics
070110										02	000001235	35						
070111	06			01	11			12	11	02	000000158	35					Special Floor	Cangrejo
070111										02	000000125	02						
070111										02	000000001	23						
070111										02	000000015	25	09					
070111										02	000000125	43						
070111										02	000012358	02						
070111										02	000001358	02						
070111																		
070112				01	11			14	08	02	000000125	02						Cangrejo
070112	06									02	000001235	13						
070112										03	000012358	13						
070112										02	000001235	02						
070112										02	000000015	02						
070112	04									02	000000125	13						
070112			11							02	000001257	02						
070112			99							02	000000125	02						
070112			11							02	000001258	04						
070112		03								02	000000125	35						
070112										02	000012358	34	08					

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070112	013	00282		01	99		08				01	01								
070112	008	00145		01	99		05				01	01								
070112	102	02250		01	99		08				01	01								
070112	014	00252		01	99		08				01	99								
070112	002	00046		99	99															
070113	001	00012		02	01		11	04		99	01	01					01			
070113	005	00643		02	01		11	02		08	01	01								
070113	001	00021	11	01	99		07				01						01			
070113	017	00256		01	99		08				01	01								
070113	019	00146		01	99		07				01	01								
070113	006	00085		01	99		11				01	01								
070113	007	00057		01	99		05				01	01								
070113	089	01450		01	99		08				01	01								
070113	015	00294		01	99		99				01	99								
070113	006	00076		99	99															
070115	004	00085		01	99		07				01	01								
070115	002	00029		01	99		06				01	01								
070116	001	00009		01	99		07				01	01					01			
070116	002	00049		01	99		07				01	01								
070116	002	00098		01	99		09				01	01								
070116	007	00149		01	99		08				01	01								
070117	001	00006		01	99		06					99	02	02						
070117	001	00022		01	99		06						08	24	03	25				
070117	001	00006		02	99		15	02		99	01	01								
070117	001	00039	11	01	99		08				01	01					01			
070117	001	00015	11	01	62		09				01									
070117	001	00018		01	99		11				01						01			
070117	004	00146		01	99		07				01	01								
070117	019	00184		01	99		09				01	01								
070117	002	00028		99	99															
070118	001	00019		02	99		99	02		99	99	99								
070118	001	00044		02	01		11	02	02	05	01	01					01	24	03	
070118	001	00180		02	01		13	04		05	01	01								
070118	003	00084		01	99		07				01	01					01			
070118	002	00025		01	99		06				01						01			
070118	005	00113		01	99		07				01	01								
070118	001	00012		01	99		07				01	01								
070118	001	00039		01	99		05				01									
070118	006	00111		01	99		09				01									
070118	012	00317		01	99		07				01	01								
070119	002	00120	01	02	01		10	02		04	01									
070119	001	00655	11	63	22		13	01		15	01	41	01	41			02	12	03	02
070119	004	00087		01	99		07				01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070112										02	000000125	25	09					
070112										02	000001235	34						
070112										02	000000125	02						
070112										02	000012578	02						
070112																		
070113	01			01	11			11	00	02	000000125	13						Cangrejo
070113										02	000000125	02						
070113		03								02	000000125	34						
070113										02	000001235	25	09					
070113										02	000001257	02	08					
070113										02	000000125	43						
070113										02	000001256	34						
070113										02	000000125	02						
070113										02	000001235	02						
070113																		
070115										02	000000125	25	09				Intercept 10	Cangrejo
070115										02	000000158	13						
070116			11							02	000000125	35						no diagnostics
070116										02	000000015	25	09					
070116										03	000000135	13	08					
070116										02	000000125	02						
070117										02	000001235	04					Special Floor	Cangrejo
070117										02	000001258	13						
070117										02	000000015	25						
070117		03								02	000000156	02						
070117										02	000000156	04						
070117		05								02	000000015	25						
070117										02	000012356	25	09					
070117										02	000000156	02						
070117																		
070118										02	000001257	35						Cangrejo
070118				01	13			08	00	02	000001235	25						
070118										03	000000125	34						
070118			11							02	000012578	32						
070118			02							02	000012358	43						
070118										02	000001358	25	09					
070118										02	000001257	43						
070118										02	000012578	43						
070118										02	000000157	34						
070118										02	000012578	02						
070119										02	000000125	02					Special Floor	Cangrejo
070119				01	11			04	31	02	000001278	43					Double Line Break	
070119										02	000000125	25	09					

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070119	003	00045		01	99		99				01	99								
070119	023	00250		01	99		07				01	01								
070119	004	00025		99			99													
070119	002	00016		99			99													
070120	006	00443	01/11	02	02		11	04		07	01									
070120	014	01050	01	02	01		07	02		06	01	02								
070120	003	00272	01	02	01		07	02	01	06	01									
070120	002	00285	11	14	03	73	09	12		05	01						03			
070120	001	00065	01	02	01		10	04		06	01	01					01			
070120	001	00031	01	02	01		99	04		06	99									
070120	002	00058		02	99		13	02		99	01									
070120	001	00053		01	99		06				01	03					01			
070120	001	00019		01	99		05				01	01					01			
070120	001	00022		01	99		07				01						01			
070120	001	00030		01	99		05				01	01					01			
070120	004	00121		01	99		09				01	01								
070120	004	00110		01	99		08				01	01								
070120	012	00251		01	99		07				01	01								
070120	053	03000		01	99		10				01	01								
070120	066	02100		01	99		07				01	01								
070120	019	00650		01	99		99				01	99								
070120	008	00206		99	99															
070121	001	00021		01	99		07				01	01					01			
070121	001	00005		01	99		05					99	05	32						
070121	001	00032		01	99		06				01	01								
070121	003	00038		01	99		08				01	01								
070121	004	00074		01	99		07				01	01								
070121	011	00153		01	99		06				01									
070122	001	00127		02	03	12	05	02	22	05	01	02					01			
070122	002	00093		01	09		06				01	02								
070122	002	00044		01	99		09				01	01								
070122	002	00079		01	99		09				01	01								
070123	001	00027	01	02	01		11	04		99	01									
070123	001	00025	01	02	01		12	04		99	01	03								
070123	003	00201	01	02	01		09	02		06	01	01								
070123	001	00083	01	02	01		08	02		08	01						01			
070123	001	00030		01	99		09				01	01								
070123	002	00041		01	99		08				01	02								
070123	001	00008		01	99		05				01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070119										02	000000015	02						
070119										02	000000125	02						
070119										02	000001258	43						
070119																		
070120										02	000000125	02					All sherds from this level have lots of incrustation	Huiscoyol / Canç
070120										02	000000125	02						
070120										03	000001358	13						
070120	03			01	13			15	06	03	000000125	13						
070120	03									03	000000125	34						
070120										02	000123578	34						
070120										02	000012358	02						
070120	21									02	000012358	13						
070120	21									02	000001235	43						
070120	05									02	000012578	34						
070120		99								02	000000015	13						
070120										02	000012568	43						
070120										02	000012358	25	09					
070120										02	000000158	13	08					
070120										02	000000125	02						
070120										02	000000125	02						
070120										02	000000125	02						
070120																		
070121			01							02	000001235	34						Huiscoyol / Canç
070121										02	000000125	13						
070121										02	000001235	35						
070121										02	000000125	35	07					
070121										02	000000125	34						
070121										02	000000125	02						
070122			21							02	000000125	15						Huiscoyol / Canç
070122										02	000123567	25	09					
070122										02	000000135	02						
070122										02	000012357	34						
070123										03	000000125	34						Huiscoyol
070123										03	000000125	13						
070123										02	000012356	02						
070123	03			01	13			18	06	02	000000125	35						
070123										02	000000156	02	07					
070123										02	000000125	02						
070123										01	000000125	34						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070123	009	00112		01	99		07				01	01								
070123	003	00033		99	99		99													
070124	001	00126	01	02	02		12	02		06	99	01					01			
070124	001	00112	01	02	01		06	04	02	08	01	03					01			
070124	001	00072	01	02	01		10	04	01	05	01						01			
070124	001	00023	01	01	99		08				01	01					01			
070124	001	00028	01	01	99		08					01	05	32			01			
070124	001	00027	01	01	99		08				01						01			
070124	001	00029	01	01	99		09				01	01					01			
070124	001	00024	01	01	99		07				01						01			
070124	001	00074	01	01	99		08				01						01			
070124	003	00104		01	99		07						05	31						
070124	002	00016		01	99		05						05	32						
070124	002	00022		01	99		06				01	01								
070124	001	00017		01	99		07				01	01								
070124	004	00055		01	99		06				01	01								
070124	004	00090		01	99		07				01									
070124	013	00350		01	99		08				01	01								
070126	002	00130	01	02	01		10	04		05	99	01								
070126	001	00073	01	02	01		09	02		07	01	02					01			
070126	001	00194	01	02	01		08	04	01	07	99	01								
070126	003	00179		01	99		09				01						01			
070126	004	00138		01	99		06				01	01								
070126	004	00051		01	99		06				01	99								
070126	057	01750		01	99		08				01	01								
070127	001	00127	01	02	01		07	02		08	01						01			
070127	001	00093	01	02	01		11	01	01	06	01						01			
070127	001	00065	01	02	01		11	04		07	01									
070127	001	00014	02	01	99		06				01	01					01			
070127	002	00064		01	99		08				01	01								
070127	001	00026		01	99		06				01	01								
070127	002	00037		01	99		08				01									
070127	001	00007		99																
070201	002	00015		01	99		08				01	01								
070201	003	00044		01	99		08				01									
070201	004	00068		01	99		09				01	01								
070201	002	00027		01	99		08				01									
070201	002	00022		99	99															
070202	001	00035		02	22		13	02	01	14	01	01								
070202	001	00061		51																
070202	001	00025		01	99		09				01	01								
070202	001	00003		01	99		04				01	01	01	43						
070202	001	00005		01	99		06				01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070123										02	000001235	02						
070123																		
070124	01									03	000001235	13					Intercept 14	Huiscoyol
070124	03									02	000001237	34						
070124	01									02	000012358	35						
070124	03									02	000123568	02						
070124	04									02	000000125	02	08					
070124	01									02	000001235	34						
070124		01								02	000001235	02						
070124		99								02	000000158	02						
070124	07	03								02	000000125	13						
070124										02	000001235	13						
070124										02	000000125	34	08					
070124										02	000000015	02	08					
070124										02	000001235	25	09					
070124										02	000001234	02	29					
070124										02	000001258	02						
070124										02	000012358	02						
070126										02	000000135	34						Huiscoyol
070126	03									02	000001235	02						
070126										03	000123568	34						
070126	01									02	000001359	34						
070126										02	000001258	43						
070126										02	000000125	13						
070126										02	000001235	02						
070127	02									02	000001235	34					Bag labeled (	Huiscoyol
070127	01									02	000000135	34						
070127										02	001235678	11						
070127		01								02	000001235	34						
070127										02	000001257	02						
070127										02	000000127	04	09					
070127										02	000001235	34						
070127																		
070201										02	000000125	04						No Diagnostics
070201										02	000012357	04						
070201										02	000000125	02						
070201										02	000001257	02						
070201																		
070202										02	000001235	25						No Diagnostics
070202										02	000001235	04						
070202			11							02	000001235	25						
070202										01	000001257	23					Also from partial vessel	
070202										02	000001256	25						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070202	003	00025		01	99		08				01									
070202	005	00060		01	99		09				01	01								
070202	016	00206		01	99		09				01									
070202	012	00097		99	99															
070203	001	00015		01	99		07				03	01								
070203	001	00018		01	99		10				01	01					01	26	02	
070203	002	00024		01	99		11				01	01								
070203	001	00008		99	99															
070204	001	00026		02	03	07	09	04		04	01	01								
070204	001	00149		02	11	29	08	02	21	15	01	01								
070204	001	00051		02	21		12	04	21	13	01	01								
070204	001	00052		02	22		07	02	01	14	01	01								
070204	001	00061		61	21		04				01	01								
070204	004	00037		01	21		04				01	01								
070204	005	00040		01	21		03				01	01	01	43						
070204	001	00009		01	99		09				01	01								
070204	004	00040		01	99		09				01	01								
070204	003	00040		01	99		12				01									
070204	011	00200		01	99		08				01	01								
070204	012	00223		01	99		09				01	01								
070204	013	00242		01	99		10				01									
070204	004	00035		99	99															
070205	001	00049		02	01		10	02	02	05	01	01								
070205	001	00045		02	02		12	04		99	01	01								
070205	001	00075		02	11	28	10	04		10	01	01								
070205	001	00068		02	03	08	08	02		07	01	01								
070205	001	00047		02	03	16	09	04		06	01						04			
070205	002	00189		02	01		11	02		06		01					01			
070205	001	00022		02	22		10	02	21	11	01	01								
070205	001	00075		02	11	40	15	02		09	01	01					03	22	03	
070205	001	00041		02	03	14	09	02		99	01									
070205	001	00029		02	22		09	04	01	99	01	01								
070205	001	00049		02	22		11	02	01	10	01	01					02	21	03	
070205	002	00025		02	99		11	02	01	99	01	01					02			
070205	001	00063		02	22		12	02		16	01	01								
070205	001	00012		02	99		08	04		99			03	25	03	25				
070205	001	00012		02	99		10	04		99	01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070202										02	000012578	04						
070202										02	000012357	02						
070202										02	000001257	02						
070202																		
070203										02	000000127	24						No Diagnostics
070203										02	000000125	35						
070203										02	000001258	02						
070203																		
070204										02	000001235	04						Cangrejo
070204										02	000001235	23						
070204										02	000001257	53						
070204										02	000001235	13						
070204										01	000001256	34					More of the partial vessel in the above level, with the next two entries	
070204										02	000000125	23						
070204										02	000000125	23						
070204		05								02	000000125	25						
070204										02	000012357	04						
070204										02	000001257	04						
070204										02	000000125	34						
070204										02	000012358	02						
070204										02	000012357	02						
070204																		
070205										03	000012358	13						Cangrejo
070205										02	000012357	02						
070205										02	000001235	04						
070205										02	000001235	02						
070205		03		01	13			04	00	02	000000125	02						
070205	06									03	000000125	34						
070205										02	000012578	04						
070205	03									03	000001235	33						
070205										03	000000125	34						
070205										02	000000157	04						
070205										02	000000125	43						
070205	04									02	000001235	34						
070205										02	000001258	23						
070205										02	000000125	35						
070205										02	000000125	02						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070205	002	00046		61	22		99				01	99								
070205	002	00117		61	21		04				01	01	01	34						
070205	002	00023		01	21		03				01	01	01	43						
070205	001	00008		01	21		03				01	01								
070205	001	00044		55																
070205	001	00049		01	99		10				01	01					01			
070205	002	00026		01	99		10				01	01					01			
070205	001	00046		01	99		11				01						01	22	03	
070205	001	00017		01	99		10					01	01	43						
070205	009	00255		01	99		10				01	01								
070205	009	00256		01	99		09				01									
070205	011	00125		01	99		07				01	01								
070205	053	01350		01	99		08				01	01								
070205	033	00625		01	99		10				01									
070205	021	00225		99	99															
070206	001	00062		02	03	12	09	02		05	01	01								
070206	001	00151		02	11	50	11	04	01	07	01	01								
070206	001	00035		02	11	29	08	02		06	01	01					03	21	02	
070206	001	00045		02	27		11	03		11	01	01								
070206	001	00030		02	22		11	02	21	99	01	01								
070206	001	00019		02	22		08	01	01	99	01	01								
070206	001	00040		02	21		05	04	01	10	01	01					02	21/22	01	
070206	001	00019		02	22		05	02	01	99	01	01								
070206	001	00036		02	22		09	02	01	15	01	01					02	01	01	
070206	004	00125		02	22		10	02	01	15	01	01								
070206	002	00039		02	99		10	02		99	01	01								
070206	003	00068		02	99		10	04		99	01	01								
070206	003	00039		01	99		10					01	01	43						
070206	002	00042		01	99		12				01	01								
070206	001	00017		01	99		08				01	01								
070206	001	00038		01	99		08				01	01								
070206	002	00063		01	99		11					01								
070206	001	00013		01	99		09				01	01								
070206	001	00024		01	99		11				01	01								
070206	002	00038		01	99		08				01						01	26	01	
070206	001	00011		01	99		07					01					01	21/22	02	
070206	013	00175		01	99		09				01	01								
070206	017	00275		01	99		09				01									
070206	004	00113		01	99		08				01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070205										02	000001257	02					These and the next two lines are sherds of a partial vessel	
070205										01	000001235	34						
070205										01	000000125	34						
070205										02	000001258	34						
070205										02	000012358	04						
070205			02							03	000012357	13						
070205		03								02	000001258	02						
070205										02	000001257	04						
070205										02	00012357	23						
070205										02	000012578	04						
070205										02	000001257	04						
070205										02	000001257	34						
070205										02	000001257	02						
070205										02	000012357	02						
070205																		
070206										03	000001257	13						Cangrejo
070206										03	000012356	34						
070206										03	000000125	23						
070206										02	000000125	04						
070206										03	000001258	23						
070206										02	000012578	02						
070206										02	000000125	33						
070206				01	13			28	00	02	000001257	02						
070206				01	13			19	10	02	000001257	04						
070206										02	000001257	02						
070206										03	000000125	34						
070206										02	000000015	34						
070206										02	000001258	02						
070206			03							02	000001235	23						
070206			11							02	000000125	04						
070206			21							02	000001235	04						
070206	06									02	000001235	02						
070206	06									02	000000125	04						
070206	04									03	000001257	13						
070206										02	000000125	02						
070206										02	000001258	02						
070206										02	000000125	04						
070206										02	000012357	04						
070206										03	000000127	34						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070206	002	00082		01	99		08				01									
070206	051	01075		01	99		08				01	01								
070206	029	00600		01	99		12				01									
070206	006	00076		99	99															
070207	001	00018		02	01		12	04		06	01	01								
070207	001	00030		02	02		15	02		08	01	01					02	01	01	
070207	001	00035		02	02		11	04	01	06	01	01								
070207	002	00051		02	99		09	02		99	01	01								
070207	001	00027		02	22		15	02		09	01	01								
070207	001	00030		02	22		09	02	02	99	01	01								
070207	001	00165		51			10				01									
070207	002	00065		01	99		08				01	01								
070207	001	00024		01	99		07				01	01					01	24/26	01	
070207	001	00015		01	99		08				01	01					01			
070207	001	00024		01	99		13				01	03					01	35	05	
070207	003	00047		01	99		10				01	01								
070207	002	00089		01	99		12				01									
070207	053	01000		01	99		01				01	01								
070207	021	00490		01	99		09				01									
070207	007	00092		99	99															
070208	001	00018		02	02		08	04	01	06	01	01					02	01	03	
070208	001	00118		01	99		12				01	01					02			
070208	001	00024		01	99		08				01	01					02			
070208	001	00038		01	99		10				01	01					02			
070208	001	00054		02	22		10				01	01					01	01/22	02	
070208	001	00069		51																
070208	038	00925		01	99		08				01	01								
070208	023	00300		01	99		09				01									
070208	004	00049		99	99															
070209	001	00008		01	99		06				99	99								
070209	002	00040		01	99		07				01	99								
070209	001	00039		01	99		11				01	99								
070209	001	00045		61							99	99								
070209	001	00021		51																
070209	004	00028		01	99		08				01	01								
070209	012	00199		01	99		09				01	99								
070209	014	00135		99	99															
070209	018	00254		01	99		08				01	99								
070209	103	01175		99	99															
070210	001	00025		02	02		06	04		05	99	99					02	24	03	
070210	001	00025		02	02		13	02		05	99	99								
070210	001	00017		01	99		05					01	01	43						
070210	001	00011		01	99		08				01	99								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070206										02	000000125	34						
070206										02	000001257	02						
070206										02	000001257	02						
070206																		
070207										03	000012358	13						Cangrejo
070207										03	000001237	34						
070207										03	000001258	34						
070207										03	000000125	13						
070207				05	25			03	09	03	000000125	34						
070207										03	000001257	34						
070207										03	000001235	34						
070207			11							03	000001257	34						
070207										02	000012357	02						
070207			02							03	000000125	13						
070207										03	000001258	34						
070207										03	000012578	04						
070207										03	000001235	04						
070207										02	000012357	02						
070207										02	000001238	02						
070207																		
070208										02	000000125	04					Tag Marked (	Cangrejo
070208		01								02	000012357	24					Human Face	
070208		06								02	000001235	02						
070208		03								02	000000015	24						
070208										02	000000135	35						
070208										02	000000157	13						
070208										02	000001235	02						
070208										02	000000125	02						
070208																		
070209			02							02	000000128	33					Whitish and	Cangrejo
070209			21							02	000012357	33						
070209	06									02	000001235	35						
070209										02	000012357	04						
070209										02	000000158	04						
070209										02	000000125	34						
070209										02	000001258	04						
070209										02	000001257	04						
070209										02	000001235	33						
070209										02	000001235	33						
070210										02	000012358	23					Whitish and	Cangrejo
070210										02	000012358	33						
070210										02	000001235	34						
070210			11							02	000001258	33						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070210	001	00012		01	99		10				01	01								
070210	001	00008		01	99		08				01	01								
070210	003	00037		01	99		07				01	01								
070210	007	00102		01	99		08				01	99								
070210	065	00825		99	99															
070211	001	00011		02	01		05	02		03	01	01					02	24	02	
070211	001	00071		02	03	14	10	01		07	99	99								
070211	001	00033		02	02		06	02	01	05	99	99								
070211	001	00038		02	22		08	02		13	99	99								
070211	001	00016		61	22						99	01								
070211	002	00120		61	22						99	99								
070211	001	00011		01	99		09				99	99								
070211	005	00096		01	99		10				01	99								
070211	016	00250		99	99															
070211	107	01800		99	99															
070211	020	00400		01	99		11				01	99								
070211	003	00058		01	99		09				01	01								
070212	002	00101		02	03	13	09	02		06	99	99								
070212	004	00297		02	01		11	02		06	99	99								
070212	001	00054		02	23		05	02	02	14	01	01								
070212	002	00058		02	01		12	02		05	01	01								
070212	001	00105		14	11	50	09	02	01	06	99	01								
070212	001	00069		02	22		12	02	01	13	99	01								
070212	001	00047		02	22		06	04	01	14	99	99								
070212	002	00078		02	22		10	04		18	99	99								
070212	001	00068		58																
070212	001	00077		52																
070212	002	00066		61	22						01	99								
070212	001	00047		61	22						01	99								
070212	002	00061		01	99		08				01	99					01			
070212	002	00089		01	99		09				01	99					01			
070212	002	00035		01	99		08				01	01					01			
070212	001	00044	11	01	99		08				01	99					01			
070212	023	00500		99	99															
070212	008	00302		01	99		07				01	99								
070212	182	04025		99	99															
070212	035	00900		01	99		10				01	99								
070212	012	00257		01	99		08				01	01								
070302	001	00021		02	01		09	02		05	01									
070302	001	00029		02	03	18	11	02		07	99	99								
070302	002	00049		02	99		11	02		99	99	99								
070302	001	00024		01	99		13				01						01	32	02	
070302	001	00078		01	99		11				01						01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070210			21							02	000001235	33						
070210			02							02	000000125	33						
070210										02	000000015	02						
070210										02	000001235	33						
070210										02	000000125	33						
070211										02	000000125	33					Whitish and	Cangrejo
070211										02	000001238	33						
070211										02	000000158	35						
070211										02	000001258	02						
070211										02	000000018	33						
070211										02	000012358	33						
070211			11							03	000000125	33						
070211										02	000000125	04						
070211										02	000001258	04						
070211										02	000012358	33						
070211										02	000012578	33						
070211										02	000000125	34						
070212										02	000001235	33					Whitish and	Cangrejo
070212										02	000001235	33						
070212										02	000000125	33						
070212										02	000000125	04						
070212										02	000000123	02						
070212										02	000012578	04						
070212										02	000001258	34						
070212										02	000001235	33						
070212										02	000000125	02						
070212										02	000001258	04						
070212										02	000000125	33						
070212										02	000012357	04						
070212		06								02	000000015	33						
070212		05								02	000001235	02						
070212			21							02	000012358	34						
070212		03								02	000000125	04						
070212										02	000001258	04						
070212										02	000000125	04						
070212										02	000012578	33						
070212										02	000001258	33						
070212										02	000000125	33						
070302										03	000000125	35						Cangrejo
070302										02	000000125	02						
070302										03	000000125	34						
070302	04									02	000001257	43						
070302			03							03	000001257	34						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070302	001	00015		01	99		10				04									
070302	001	00152		51																
070302	005	00075		01	99		09				01									
070302	005	00054		99	99															
070302	005	00115		01	99		12				01	01								
070302	006	00082		01	99		08				01									
070302	013	00170		99	99															
070303	001	00096		14	11	30	11	04		07	01	01					03	22	05	
070303	001	00036		02	99		13	02		99	99	99								
070303	002	00037		02	99		14	02		99	01	01								
070303	003	00049		02	99		13	04		99	01									
070303	001	00015		01	99		08				01	01					01			
070303	001	00022		01	99		13				04									
070303	006	00102		01	99		08				01									
070303	006	00060		99	99															
070303	006	00118		01	99		10				01	01								
070303	007	00072		01	99		09				01									
070303	016	00231		99	99															
070304	001	00010		01	99		10				01									
070304	002	00102		01	99		08				01	01								
070304	002	00026		99	99															
070305	001	00012		01	99		09				01	01					01			
070305	002	00024		99	99															
070305	001	00045		01	99		09				01	01								
070305	007	00108		99	99															
070306	003	00101		02	01		11	02		07	01	01								
070306	001	00038		02	01		08	02		04	01						01	32	01	
070306	001	00020		02	02		13	02		05	01						21	01	01	
070306	001	00220		02	01		15	04		07	04									
070306	001	00035		02	01		09	04		04	04	01								
070306	001	00026		02	02		11	02		99	01	01					02	01	02	
070306	001	00056		02	02		10	04		99	99	99								
070306	002	00150		14	11		10	02		07	01	01								
070306	001	00024		12	11		11	04		07	01	01					01	07		
070306	001	00010		12	11		15	02		99	01	01								
070306	001	00121		14	11	54	13	04	01	12	01	01					03	21	03	
070306	001	00059		02	22		08	02	21	11	01	01					02	02	01	
070306	001	00036		02	22		09	02	01	99		01								
070306	001	00089		02	22		14	01		14		01	01	43						
070306	001	00032		02	23		09	04		12			01	41	01	41	01	22	02	01
070306	001	00051		02	99		07	04		99	01	01					01	28	03	
070306	001	00071	11	02	22		09	04		24	01				03	25				
070306	001	00012		02	99		08	04		99	01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070302										02	000001235	02						
070302										03	000000125	33						
070302										02	000000125	04						
070302										02	000001235	04						
070302										02	000000125	02						
070302										02	000000125	02						
070302																		
070303										02	000000125	24						Cangrejo
070303										02	000000123	04						
070303										03	000000125	34						
070303										02	000000125	02						
070303			21							02	000001257	43						
070303										03	000000125	34						
070303										02	000000125	04						
070303										02	000001235	04						
070303										02	000001237	02						
070303										02	000000012	02						
070303																		
070304										02	000012359	04						no diagnostics
070304										03	000000125	34						
070304																		
070305			11							02	000000125	34						no diagnostics
070305										02	000000012	04						
070305										02	000001235	04						
070305																		
070306										03	000001235	34						Cangrejo
070306	23			01	11			05	00	03	000000125	33					Whitish and eroded	
070306										03	000000125	35						
070306										02	000012358	33						
070306				01	13			10	00	02	000000135	33						
070306										03	000000125	33						
070306										03	000001235	02						
070306										03	000000125	34						
070306										03	000000123	33						
070306										02	000000015	35						
070306										02	000001257	04						
070306										02	000012357	33						
070306										02	000001257	34						
070306										02	000000127	43						
070306										02	000000125	34						
070306										02	000001235	13						
070306										02	000000123	34					White-rimmed-black?	
070306										02	000001257	35						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070306	001	00058		02	22		07	02		15	01	01								
070306	001	00068		02	22		12	02		20		01								
070306	001	00025		02	99		12	04		99	99	99					21	01	02	
070306	001	00043		02	99		16	04		99	99	99								
070306	001	00064		02	22		10	04		13	99	99								
070306	004	00105		02	99		12	02		99	99	99								
070306	001	00038		51																
070306	001	00052		71																
070306	001	00117		53																
070306	001	00037		51																
070306	004	00065		01	99		07				01	01					01			
070306	001	00019		01	99		07				01	01					01			
070306	003	00109		01	99		10				01						01			
070306	001	00020		01	99		08				01						01			
070306	003	00061		01	99		10				01						01			
070306	001	00031		01	99		17				01						01	21/22	02	
070306	004	00069		01	99		08					01					01			
070306	001	00005		01	99		06				01						01	26	02	
070306	015	00250		01	99		09				01	01								
070306	037	00675		01	99		09				01									
070306	036	00725		99	99															
070306	043	00700		01	99		08				01	01								
070306	071	01900		01	99		12				01									
070306	175	03010		99	99															
070307	001	00068		02	01		08	02		08	99	99								
070307	001	00081		02	01		12	02		07	99	99					01			
070307	001	00061		02	03	17	07	02	01	09	99	99								
070307	001	00034		13	11		11				99	99								
070307	001	00015		14	11	25	10	02		08	01	01								
070307	001	00026		02	22		08	02		99	99	99								
070307	001	00042		02	31		07	02		20	99	01								
070307	001	00026		51																
070307	001	00015		01	99		08				01						01			
070307	001	00032		01	99		09				01						01			
070307	001	00031		01	99		11				01						01			
070307	001	00022		01	99		10				99	99					01			
070307	002	00026		01	99		09				01	01								
070307	007	00290		01	99		09				01									
070307	017	00329		99	99															
070307	004	00108		01	99		09				01	01								
070307	019	00650		01	99		10				01									
070307	044	01025		99	99															
070308	001	00055		02	01		09	02		04	01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070306				01	13			00	13	02	000001235	02						
070306										03	000000123	33						
070306										03	000001238	33						
070306										02	000000125	04						
070306										02	000001238	34						
070306										03	000000125	33						
070306										03	000001238	33						
070306										03	000001235	13						
070306										03	000001235	13						
070306										03	000001235	13						
070306			11							02	000001237	33						
070306			21							02	000001258	04						
070306			21							02	000000123	34						
070306			03							02	000000125	04						
070306		05								02	000001235	02						
070306										03	000001235	33						
070306	06									02	000000125	02						
070306										01	000000125	33						
070306										02	000001237	04						
070306										02	000000127	04						
070306										02	000012357	04						
070306										02	000001237	02						
070306										02	000001258	02						
070306																		
070307										03	000012357	33					Whitish and	Cangrejo
070307	04									03	000012358	34						
070307										03	000001235	34						
070307										03	000001235	33						
070307										03	000000012	13						
070307										02	000000125	34						
070307										02	000001235	34						
070307										02	000012358	43						
070307			11							03	000001235	33						
070307			21							02	000001235	43						
070307			21							03	000000125	34						
070307		05								03	000001235	33						
070307										02	000001257	43						
070307										02	000001235	43						
070307										02	000001235	43						
070307										02	000000125	33						
070307										02	000000125	02						
070307																		
070308										03	000012358	34						Cangrejo

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070308	001	00082		02	01		11	02		99	01	01					01			
070308	001	00060		02	01		13	02		07	01	01					01			
070308	001	00136		02	02		09	04		99	04									
070308	004	00573		02	03	15	11	02		09	01	01								
070308	001	00225		02	02		11	02		99	01						01			
070308	001	00070		02	03	18	10	04		08	99	99								
070308	001	00034		02	03	09	99	02		07	01	99								
070308	002	00217		14	11	47	11	04		08	01	01					21	01	02	
070308	001	00165		14	11	42	10	02		10	01	01					21	02	02	
070308	003	00206		14	11	32	12	02		08	01	01					04			
070308	001	00080		14	11	22	12	04		08	01	01					04			
070308	001	00160		14	11	49	14	04	01	08	01	01					03	21	03	
070308	001	00842		14/52	11	70	09	02	01	09	01	01					03	35		
070308	002	00303		02	31		11	02		18		01								
070308	001	00050		02	99		10	02		99		01								
070308	001	00145		02	22		13	04		99	01	01								
070308	002	00100	11	02	31		08	02		15	01	01								
070308	002	00215		02	21		09	04		13	01	01								
070308	001	00013		02	23		10	04		09	01	01								
070308	001	00025		02	22		08	04		12	99	99								
070308	002	00270		63	22		11	04	01	13	01	01								
070308	001	00292		63	22		11	02		20	01	01								
070308	001	00042		61	22		11				01	01								
070308	002	00088		51																
070308	001	00094		53																
070308	002	00372		01	99		08				04									
070308	001	00016		01	99		08				01						01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070308	04									03	000001235	35						
070308	06									03	000001235	02						
070308										03	000001235	02						
070308										02	000001235	34						
070308	04		21							03	000001235	34						
070308										02	000000125	33					This lot has some eroded and whitish	
070308										03	000001257	13						
070308										03	000001235	34						
070308										03	000001257	24						
070308	03									03	000000125	02						
070308	04									03	000001235	02						
070308				01	11			06	11	03	000001235	13						
070308										03	000001235	34					Very large sherd, good example - Some reddish brown accretion on exterior on some sherds	
070308										02	000001235	34						
070308										02	000000125	33						
070308										03	000001257	24						
070308										02	000000125	35	01				Crude white-rimmed-black?	
070308										03	000012357	02						
070308										02	000000015	34						
070308										03	000000125	02						
070308										03	000012358	02						
070308										03	000001235	34						
070308										03	000001257	43						
070308										03	000001235	02						
070308										02	000001257	34						
070308										03	000000125	02						
070308	03									03	000012357	02						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070308	001	00024		01	99		11				01	01					01			
070308	003	00319		01	99		10				01						01			
070308	004	00184		01	99		08				01						01			
070308	001	00032		01	99		10						04	33						
070308	002	00134		01	99		09						01	43						
070308	002	00147		01	99		08				01	01								
070308	003	00043		01	99		10				01									
070308	006	00484		01	99		09				01	01								
070308	026	00850		01	99		10				01									
070308	033	00875		99	99															
070308	016	00700		01	99		10				01	01								
070308	063	03100		01	99		10				01									
070308	132	04550		99	99															
070401	001	00062		02	01		99	02		99	99	99					01			
070401	002	00071		02	99		16	02	21	99	01	01								
070401	001	00076		02	22		10	02	21	13	01				01	41				
070401	001	00021		02	22		08	02		99	01	01								
070401	001	00014		01	99		07					01	01	43						
070401	001	00034		01	99		10					01					01	02	05	
070401	001	00023		01	99		11				01	01					01	24	05	
070401	001	00017		01	99		10				01	01					01	26	05	
070401	001	00038		01	99		13				01	01					01			
070401	021	00590		01	99		09				01	01								
070401	005	00089		01	99		09				01									
070402	022	01700		02	01		07	02		05	01	01								
070402	001	00084		02	01		10	04		99	01									
070402	005	00234		02	01		08	02		06	01	01					02	01	03	
070402	002	00113		02	02		10	02		07	01	01								
070402	001	00121		02	03	09	08	02		06	01	01					04	21	02	
070402	004	00272		02	01		07	04		05	01	01					01			
070402	001	00130		02	21		09	02		06	01									
070402	003	00151		02	22		12	02		17	01	01								
070402	002	00068		02	22		08	02		16			01	43	01	43				
070402	002	00111		02	22		07	02		16	01	01								
070402	003	00107		02	99		11	02		04	01	01								
070402	011	00488		02	22		07	02	21	11	01	01								
070402	001	00107		14	11	52	09	02	01	06	01	01					03	24	01	
070402	004	00079		02	99		07	01	21	06	01	01								
070402	001	00119		02	22		06	02	21	16	02	02			05	32				
070402	004	00105		13	11	99	07				01	01								
070402	007	00122		02	99		10	02		99	01	01								
070402	001	00012		01	99		06				01	01	03	25						
070402	001	00020		61	22		06						01	43	01	43				

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070308			11							03	000001235	02						
070308			21							03	000001235	34						
070308		05								03	000001235	02						
070308										03	000000125	35						
070308										03	000001235	02						
070308										03	000001235	25						
070308										02	000000125	25						
070308										03	000001235	43						
070308										03	000001235	43						
070308										02	000012357	43						
070308										03	000001235	34						
070308										03	000001235	02						
070308																		
070401	03									02	000000125	02						Tamarindo
070401										02	000012358	04						
070401										02	000001257	23						
070401										02	000001235	23						
070401										02	000001235	43						
070401	06									02	000000125	02						
070401										02	000001258	04						
070401										02	000012358	04						
070401			99							02	000001235	02						
070401										02	000000125	02						
070401										02	000001257	02						
070402										02	000012358	02						Tamarindo
070402					01	11		12	00	02	000001235	25						
070402										02	000001257	02						
070402										02	000001235	02						
070402										02	000012357	02						
070402	03									02	000001235	02						
070402										02	000000125	34					Cylendar with Resist?	
070402										02	000001235	02						
070402										02	000001268	23						
070402				04	31					02	000000012	25					White Rimmed Black	
070402										02	000000125	02						
070402										02	000012357	02						
070402										02	000001235	35						
070402										01	000001235	23						
070402										01	000012358	23					Different Paste	
070402										01	000000123	23						
070402										02	000001235	02						
070402										02	000000015	02						
070402										01	000001258	23					Similar to Partial Vessel	

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070402	002	00025		01	99		06				01	01								
070402	006	00233		61	22		11				01	01								
070402	002	00059		66			08				01	01								
070402	003	00200		53																
070402	002	00056		51																
070402	002	00052		51																
070402	001	00041		59																
070402	001	00015		01	99		04				01	01					01			
070402	001	00032		01	99		11				01	01					01			
070402	002	00081		01	99		09				01	01					01			
070402	002	00039		01	99		08				01	01					01			
070402	006	00239		01	99		07				01	01					01			
070402	001	00028		01	99		13					01					01			
070402	002	00049		01	99		09					01					01			
070402	001	00025		01	99		10				01						01			
070402	001	00049		01	99		08				01	01					01	26	01	
070402	001	00033		01	99		10				01	01					01	21/22	01	
070402	002	00032		01	99		09				01	01					01	24	02	
070402	001	00032		01	99		04				01	01					01	2/26/2	01	
070402	011	00189		01	99		05				01	01								
070402	014	00400		01	99		07				01	01								
070402	014	00350		01	99		08				01									
070402	009	00225		01	99		08				01	01								
070402	015	00400		01	99		08				01	01								
070402	501	14100		01	99						01	01								
070402	138	03200		01	99		99				01	99								
070402	014	00400		99	99															
070403	001	00021		51																
070403	019	00400		01	99		08				01	01								
070403	007	00111		01	99		07				01									
070404	005	00344		02	01		08	02		05	01	01								
070404	001	00035		02	01		07	02		05	01	01								
070404	001	00123		02	01		08	02		05	01	01								
070404	003	00046		02	99		11	02		99	01	01								
070404	002	00144		02	22		09	02		16	01				03	25				
070404	001	00055		02	22		09	04	01	16	01	01								
070404	005	00078		01	99		07					01	01	41						
070404	002	00086		61	22		99				01	99								
070404	003	00126		01	99		07				01	01								
070404	001	00031		01	99		05				01	01								
070404	001	00016		01	99		06				01	01					01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070402										01	000001258	34					Sim to other	Fine Gray
070402										02	000001235	02						
070402										02	000001235	02						
070402										02	000001235	02						
070402										02	000000125	02						
070402										02	000001235	04						
070402										02	000001258	02						
070402		99								02	000001235	02						
070402			99							02	000001258	23						
070402		03								02	000012357	02						
070402		05								02	000001358	24						
070402			21							02	000001235	02						
070402	06		21							02	000001235	04						
070402	06									02	000000125	02						
070402	03									02	000000125	24						
070402										02	000012358	43						
070402										02	000000125	02						
070402										02	000001258	02						
070402										01	000000125	23					Special Paste and Design	
070402										01	000000123	23						
070402										02	000123568	04						
070402										02	000000125	04						
070402										02	000000125	25						
070402										02	000001235	02	08					
070402																		
070402										02	000012358	02						
070402																		
070403										02	000000125	25						L Cangrejo / E T
070403										02	000001257	02						
070403										02	000001235	02						
070404										02	000001235	13					Special Floor	Late Cangrejo
070404					01	13		14	00	02	000001235	25						
070404										02	000001257	43						
070404										02	000001235	02						
070404										02	000001235	23						
070404										02	000001257	23						
070404										02	000012358	02						
070404										02	000001235	02						
070404										02	000001257	04						
070404										01	000000015	34						
070404		99								02	000001258	04						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070404	001	00006		01	99		05				01						01			
070404	001	00009		01	99		05				01	99					01			
070404	004	00112		01	99		07				01	01					01			
070404	007	00304		01	99		09				01	01								
070404	025	00480		01	99		08				01	01								
070404	302	06150		01	99		07				01	01								
070404	100	01900		01	99		01				01									
070404	010	00130		99	99															
070405	039	03200		02	01		08	02		06	01	01								
070405	002	00184		02	01		06	02		07	01	01	05	32						
070405	001	00050		02	02		10	04		05	01	01								
070405	001	00099		02	01		10	02	02	05	01	01								
070405	007	00343		02	01		09	02		06	01	01								
070405	004	00331		02	01		09	04		10	01	01								
070405	001	00236		02	01		09	02		09	01	01					01			
070405	001	00040		02	01		11	02		07	01	01					02	01	02	
070405	003	00147		02	01		08	02		07	01	01					01			
070405	006	00365		02	01		08	04		07	01	01								
070405	001	00059		02	03	14	07	04	02	05	01	01								
070405	003	00142		02	02	42	09	04	01	06	01	01					03	21	03	
070405	001	00088		02	02		09	04		06	01	01					02	21	03	
070405	007	00416		02	02		08	02		06	01	01								
070405	009	00373		02	99		09	02		99	01	01								
070405	005	00175		02	99		10	04		99	01	01								
070405	002	00121		02	22		07	02	21	10	01	01								
070405	003	00117		02	22		09	02		14	01				03	25				
070405	001	00073		02	22		09	02		17			03	25	03	25				
070405	001	00022		02	22		13	02	21	13	01	01								
070405	007	00394		02	22		11	02		15	01	01								
070405	001	00033		51																
070405	001	00199		53																
070405	001	00046		52																
070405	001	00055		01	99		08				01	01					01	21/22	04	
070405	005	00273		01	99		08				01	01					01			
070405	004	00170		01	99		07				01	01					01			
070405	003	00092		01	99		09				01	01					01			
070405	009	00413		01	99		08				01	01					01			
070405	003	00054		01	99		08				01	01					01			
070405	001	00042		01	99		06				01						01			
070405	002	00104		01	99		08				01	01					01			
070405	001	00011		01	99		06					01	01	41						
070405	001	00036		01	99		10					02	05	32						
070405	001	00098		01	99		09				01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070404		01								02	000000125	23						
070404		05								02	000000125	02						
070404		21								02	000001235	02						
070404										02	000000125	02	08					
070404										02	000000125	25						
070404										02	000000125	02						
070404										02	000000125	02						
070404																		
070405										02	000000125	02						Late Cangrejo
070405				01	13			09	00	02	000001235	23						
070405										02	000001257	04						
070405										02	000000125	24	08					
070405										02	000001357	25						
070405				01	11			11	00	02	000001235	35						
070405	13									02	000000012	23						
070405	03									02	000001257	35						
070405	03									02	000001235	02						
070405				01	11			08	00	02	000012568	02						
070405				01	13			08	00	02	000000125	02						
070405										02	000001356	02						
070405										02	000001257	23						
070405										02	000001358	02						
070405										02	000001235	02						
070405										02	000000125	02						
070405										02	000001235	25						
070405										02	000001256	02						
070405				04	31					02	000000125	02						
070405				01	13			04	04	02	000001256	02						
070405										02	000001235	02						
070405										02	000012357	43						
070405										02	000012357	35						
070405										02	000000125	34						
070405										02	000012357	23						
070405		05								02	000001235	02						
070405		03								02	000001235	02						
070405			11							02	000000125	02						
070405			21							02	000012356	02						
070405			02							02	000001235	02						
070405		04								02	000000125	13						
070405	03									02	000012357	02						
070405										02	000000125	02						
070405										02	000000125	02						
070405										02	000000125	02	08					

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070405	002	00074		61	22		10				01	01								
070405	845	23100		01	99						01	01								
070405	249	05550		01	99						01									
070405	007	00125		99	99															
070406	001	00085		02	02		06	04	02	07	01	01								
070406	001	00038		02	02		06	02	02	99	01	01					01			
070406	001	00045		02	02		10	02	02	06	01						04			
070406	010	00700		02	01		10	02		06	01	01								
070406	003	00061		02	99		09	02		99	01	01								
070406	001	00083		02	02		08	04	02	08	01	01					01			
070406	002	00044		01	99		09					01	03	25						
070406	002	00360		63	22		12	02		17	01	01								
070406	001	00037		02	22		09	04		08	01	01								
070406	001	00074		51																
070406	001	00067		52																
070406	001	00014		62							01	99								
070406	001	00029		01	99		08				01	01					01			
070406	001	00024		01	99		99				01	99					01	24	01	
070406	004	00276		01	99		10				01	01								
070406	012	00280		01	99		08				01	01								
070406	212	05450		01	99		09				01	01								
070406	052	01075		01	99		07				01									
070406	008	00146		99	99															
070407	001	00015		02	01		08	04		04	01	01								
070407	001	00022		01	99		09				01	99					01			
070407	001	00024		01	99		08				01	01								
070407	005	00029		01	99		07				01	01								
070407	063	00990		01	99		07				01	01								
070407	026	00600		01	99		08				01									
070408	010	00800		02	01		09	02		06	01	01								
070408	001	00040		02	01		09	02		05	01	01					01			
070408	003	00124		02	01		07	04		06	01	01								
070408	002	00147		02	02		06	04	02	06	01	01								
070408	003	00083		01	99		08				01	01					01			
070408	001	00048		01	99		08				01	01	02	02						
070408	001	00041		01	99		06				01						01			
070408	001	00033		01	99		09				01	01					01			
070408	001	00034		61	22		11				01	01								
070408	018	00400		01	99		08				01	01								
070408	070	02250		01	99		10				01	01								
070408	013	00280		01	99		08				01									
070408	005	00077		99	99															
070409	002	00163		02	01		12	02		06	01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070405										02	000001235	02						
070405																		
070405																		
070405																		
070406										02	000012578	02						Late Cangrejo
070406	01									02	000000125	02						
070406			99	01	13			04	00	02	000000125	02						
070406										02	000001235	02						
070406										02	000001259	35						
070406	03			01	13			08	00	02	000000125	35						
070406										02	000001258	02						
070406										02	000000125	02					Incrusted Stuff	
070406										02	000000015	02						
070406										02	000123578	43						
070406										02	000012358	02						
070406										02	000000125	02						
070406		03								02	000001357	02						
070406										01	000001235	04						
070406										02	000001258	02	08					
070406										02	000000015	25						
070406										02	000001235	02						
070406										02	000001258	02						
070406																		
070407				01	13			12	00	02	000000125	02					Special Floor	Cangrejo
070407	03									02	000001258	35						
070407										02	000012358	04						
070407										02	000001235	25						
070407										02	000001235	02						
070407										02	000000125	02						
070408										02	000000015	02						Cangrejo
070408	03			01	11			15	10	02	000000125	02						
070408				01	11			10	05	02	000001235	02						
070408										02	000001235	35						
070408			21							02	000000158	02						
070408										03	000000125	13						
070408		01								02	000001235	35						
070408			02							02	000001235	02						
070408										02	000000125	02						
070408										02	000001235	25						
070408										02	000000125	02						
070408										02	000000125	02						
070408																		
070409										02	000000125	02						Cangrejo

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070409	001	00031		02	01		06	04	02	04	01									
070409	001	00018		01	99		07				01	01					01			
070409	013	00240		01	99		07				01	01								
070409	004	00046		01	99		07				01									
070410	001	00100		02	01		10	04		06	01	01								
070410	004	00230		02	01		10	02		05	01	01								
070410	003	00101		02	01		09	02		06	01									
070410	002	00087		02	99		10	04		99	01	01								
070410	003	00117		02	22		09	04		11	01	01								
070410	001	00067		02	99		06	02		99	01	01	05	32			02	02	03	
070410	002	00055		02	22		10	02		09	01	01								
070410	001	00050		02	22		09	02		99	01	01								
070410	001	00052		01	99		08				01	01					01			
070410	001	00034		01	99		07				01	01					01			
070410	001	00026		01	99		08				01	01					01			
070410	001	00018		61	22		07				01	01								
070410	001	00034		66	99		06				01	01								
070410	001	00048		01	99		09					01	03	25						
070410	002	00057		01	99		07				01	01								
070410	001	00033		01	99		07				01									
070410	037	01225		01	99		07				01	01								
070410	114	04700		01	99		08				01	01								
070410	012	00311		01	99		07				01									
070410	002	00028		99	99		99													
070501	007	00105		01	99		10				01	01								
070501	003	00068		01	99						01									
070502	001	00029		02	01		15	02		99		01					01			
070502	001	00019		02	01		11	04		99	01	01					01	22	01	
070502	001	00020		02	01		07	02		06	01	01					01			
070502	001	00021		02	01		06	02		04	01	01					01	21/22	02	
070502	001	00050		02	01		09	02		05	01	01					01	32	01	
070502	006	00115		02	99		10	02		99	01	01								
070502	002	00089		02	99		11	02	21	10	01	01					01			
070502	007	00354		02	22		09	04	02	17	01	01								
070502	001	00042		02	99		16	04	21	99	01	01								
070502	002	00084		02	23		07	04		99	01	01					01	01/24	02	
070502	001	00017		02	22		08	02		19	01	01								
070502	001	00023		02	22		09	04		99	01	01								
070502	004	00197		02	22		07	04		17	01	01								
070502	001	00164		51																
070502	002	00149		51																
070502	003	00032		01	99		07				01	01					01	26	02	
070502	001	00015		01	99		07				01	01					01			

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070409										02	000000125	25						
070409			11							02	000000015	25						
070409										02	000001235	02						
070409										02	000001235	02						
070410				01	13			15	06	02	000001235	13						Cangrejo
070410										02	000000125	02						
070410										02	000001235	25						
070410										02	000000128	43					Incrusted Stuff	
070410										02	000001257	02						
070410										02	000000125	02						
070410										02	000000125	23						
070410				01	13			13	99	02	000001235	25						
070410		05								02	000012358	25						
070410			21							02	000000123	02						
070410	04									02	000000123	02						
070410										02	000012358	02						
070410										02	000001258	02						
070410										02	000000125	25						
070410										02	000001258	43						
070410										02	000001235	25						
070410										02	000001235	25						
070410										02	000012358	02						
070410										02	000000125	02						
070410																		
070501										02	000001235	02						no diagnostics
070501																		
070502	06									03	000000125	04						Tamarindo (Mixe
070502										02	000001235	34						
070502	12									02	000000125	02						
070502										02	000001258	34					Small Vessel	
070502	23			01	13			07	00	02	000000125	04						
070502										02	000001235	02						
070502	03									02	000001235	02						
070502										02	000001257	02						
070502										02	000001235	34						
070502										02	000000125	02						
070502										02	000000125	24						
070502				04	31			22	00	02	000001235	02					White-Rimmed-Black	
070502										02	000001257	02						
070502										02	000000125	02						
070502										02	000000125	02					Smaller than Usual	
070502										02	000000125	02						
070502		06	02							02	000000012	24						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070502	006	00082		01	99		07					01					01			
070502	003	00045		01	99		11				01	01					01			
070502	004	00112		01	99		07				01	01					01			
070502	001	00019		01	99		08				01	01					01			
070502	003	00143		01	99		10				01	01					01			
070502	002	00060		01	99		09				01	01					01			
070502	207	04700		01	99		10				01	01								
070502	119	02175		01	99		09				01									
070502	010	00125		99	99															
070503	007	00440		02	01		11	02		07	01	01								
070503	002	00233		02	01		10	02		06	01	01					01	22	01	
070503	001	00057		02	01		07	02		07	02	01								
070503	001	00063		02	01		08	04		06	01	01					01	24	04	
070503	001	00135		02	03	53	05	04		07	01	01					01	24	04	
070503	003	00113		02	01		07	02		06	01	01					02	01	02	
070503	002	00180		02	01		08	04		05	01	01					02	01/22	03	
070503	001	00072		02	01		07	02		06	01	01					01			
070503	001	00099		02	01		09	02		06	01						01	22	01	
070503	002	00089		02	01		09	02		05	01	01					01			
070503	006	00439		02	01		10	02		06	01	01					01			
070503	001	00026		02	01		10	02		99	01	01					01			
070503	017	00525		02	22		13	04		99	01	01								
070503	005	00350		02	03	16	08	02	21	06	01	01								
070503	001	00199		02	02		09	02	01	08	02	01								
070503	019	00790		02	22		09	02		99	01	01								
070503	025	00900		02	22		10	12		99	01	01								
070503	006	00150	21	02	21		10	04		11	01	01								
070503	010	00300		02	22		10	02	01	12	01	01								
070503	001	00377		14	11	89	15	02		08		01	01	41						
070503	002	00071		14	11	34	99	02		05	01	01								
070503	001	00140		02	22		12	02		15			07	33	07	33				
070503	001	00022		02	23		12	02		99	01	01					02			
070503	001	00031		02	22		10	04	01	99		01	03	25			21	01	03	
070503	001	00017		02	22		08	04	21	99			08	24	08	24				
070503	001	00026		02	22		10	04	01	11			07	33	07	33				
070503	001	00054	21	02	26		07	04		09			05	34	05	34				
070503	001	00210		14	11	68	08	02		08	01	01					03			
070503	001	00408		14	11	103	09	02	01	12	01	01					03	22	03	
070503	003	00351		02	21		09	04	01	17	01	01					01	21/22	02	

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070502		06								02	000001258	02						
070502			11							02	000000125	02						
070502			21							02	000000125	02						
070502			02							02	000001235	02						
070502		05								02	000000125	02						
070502			99							02	000012357	24						
070502										02	000000125	02						
070502										02	000000125	02						
070502																		
070503										02	000012358	02						Early Tamarindo
070503										02	000001235	02						
070503				01	13			11	00	02	000000125	34						
070503				01	13			06	00	02	000000125	24					Possible Fugitive Red over Entire Body	
070503										02	000000125	02						
070503										02	000001235	02						
070503										03	000000125	34						
070503	01									02	000000125	04						
070503				01	11			09	00	03	000001259	34						
070503	06									02	000012358	25						
070503	06									02	000001235	02						
070503	06			01	13			14	07	02	000001235	13						
070503										02	000000125	02						
070503										02	000000125	02						
070503										02	000001235	02						
070503										02	000000125	02						
070503										02	000012358	02						
070503										02	000000125	02						
070503										02	000001235	02						
070503										02	000012578	02						
070503										02	000001235	23						
070503				01	11			00	16	02	000012358	02						
070503			21							02	000001235	25						
070503										02	000000125	02						
070503										02	000001235	02						
070503				01	11			03	05	02	000000125	02						
070503										02	000001235	04						
070503	03									02	000001235	02						
070503										03	000000125	34						
070503										02	000000125	02						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070503	001	00087		02	21		15	04		08	01	01					01	32	03	
070503	003	00142		02	22		07	04	01	15	01	01								
070503	003	00212		02	22		10	04	01	10	01	01								
070503	004	00412		63	22		10	04	01	15	01	01								
070503	010	00925		02	22		12	02	01	18	01	01								
070503	016	00650		61	22															
070503	014	00875		51																
070503	001	00146		53																
070503	001	00016		01	99		07				01	01					01	24	01	
070503	003	00082		01	99		07				01	01					01	26	02	
070503	005	00241		01	99		10				01	01					01			
070503	003	00131		01	99		08				01	01					01			
070503	003	00135		01	99		09				01	01					01			
070503	002	00053		01	99		09					01	01	41						
070503	002	00076		01	99		10					01					01			
070503	009	00285		01	99		09					01					01			
070503	010	00290	11	01	99		10				01	01					01			
070503	011	00380		01	99		10				01	01					01			
070503	020	00650		01	99		09				01	01					01			
070503	003	00180		01	99		11				01	01								
070503	999	31700		01	99						01	01								
070503	296	06850		01	99						01									
070503	016	00325		99	99															
070504	003	00191		02	02		10	02		07	01	01								
070504	001	00112		02	02		07	02		99	02	01								
070504	001	00130	11	02	02		11	04		05	01	01					01			
070504	003	00722		02	02		09	02		07		01					01			
070504	001	00071		02	02		12	04		05	01	01					02	01	02	
070504	001	00128		02	02		06	04		07	01	01					03	22	03	
070504	001	00336		14	03		11	02	21	09	01	01					01	22	01	
070504	002	00126		02	03	15	06	04		09	01	01								
070504	002	00291		02	01		08	02		06	01	01					01			03
070504	002	00038		02	22		11	04		99	01	01								
070504	002	00039	11	02	22		09	04		99	01	01								
070504	001	00035		02	22		09	02		99	01	01			07	33				
070504	002	00058		02	22		11	02		08	01	01								
070504	003	00580		14	11	55	12	02	01	08	01	01								
070504	004	00184		02	22		11	04		14	01	01								
070504	004	00355		02	22		08	02		18	01	01								
070504	004	00480		02	22		10	02	01	16	01	01								
070504	001	00045	11	02	22		08	02	21	13	01	01					01	11	01	
070504	003	00156		02	22		07	04	21	16	01	01								
070504	001	00227		63	22		07	04	21	15	01	01								

Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
070503	01									03	000001235	34						
070503										02	000012358	02						
070503										02	000001258	04						
070503										02	000001235	02						
070503										02	000012358	02						
070503										02	000001257	02						
070503										02	000012358	02						
070503										02	000001258	35						
070503										02	000000125	23						
070503										02	000001235	02						
070503	03									02	000001235	02						
070503			99							02	000000125	02						
070503		05								02	000000125	02						
070503										02	000000125	02						
070503	06									02	000000125	25						
070503	06									02	000001235	02						
070503		03								02	000000125	02						
070503		02								02	000001258	02						
070503			21							02	000001258	02						
070503										02	000000125	02	08					
070503																		
070503																		
070503																		
070504										02	000000125	02						Cangrejo
070504										02	000001235	02						
070504	06	03								02	000000125	34						
070504	06									02	000001235	02						
070504	04									03	000000125	13						
070504										02	000001235	02						
070504										02	000001235	04						
070504										02	000001258	02						
070504										02	000001235	35						
070504										02	000000125	04						
070504				04	31					02	000001235	34					White-Rimmed-Black	
070504				01	11			00	20	02	000001235	02						
070504										02	000001235	25						
070504										03	000001256	34						
070504										02	000000125	23						
070504										02	000001258	02						
070504										02	000000125	02						
070504										02	000000158	35						
070504										02	000001257	02						
070504										02	000001235	04						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
070504	003	00111		61	22		07				01	01								
070504	004	00288		51																
070504	001	00032		01	99		11				01	01					01	26	02	
070504	007	00345		01	99		07				01	01					01			
070504	002	00044		01	99		11				01						01	24	01	
070504	006	00492	11	01	99		10				01	01					01			
070504	002	00322		01	99		12				02	01								
070504	001	00018		01	99		08				01	01					01			
070504	001	00031		01	99		11				01	01					01			
070504	003	00124		01	99		08					01					01			
070504	004	00420		01	99		08				01	01								
070504	215	11200		01	99						01	01								
070504	049	01900		01	99						01									
070504	003	00261		99	99															
070505	005	00484		02	01		07	04		06	01	01								
070505	002	00064		02	01		15	02		08	01	01								
070505	002	00099		02	01		11	02		99	01	01								
070505	003	00620		02	01		09	04		07	01	01								
070505	002	00386		02	02		11	02	01	07	01	01								
070505	002	00230		02	02		10	02		09	01						02	01	04	
070505	001	00219		02	02		09	02		08	01	01					01	22	02	
070505	016	01500		02	03	17	08	02	21	07	01	01								
070505	001	00299		02	03	37	11	02	21	07	01	01					01			
070505	001	00144		12	11	99	11	02	01	08	01	01					02			
070505	002	00313		14	11	58	08	02	01	10	01	01					02	22	02	
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Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
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070504		03								02	000000125	02						
070504										02	000001258	23						
070504			11							02	000000125	13						
070504	03									03	000000125	13						
070504	06									02	000001257	02						
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070504																		
070504																		
070504																		
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070505				01	11			09	00	02	000012356	34						
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070505				02	02			07	00	02	000000125	02						
070505										02	000001258	02						
070505		05								02	000001235	02						
070505	03									02	000001258	23						
070505										02	000001235	02						
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Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
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070505																		
070505																	Wasters?	
070506										02	000000125	02						Cangrejo
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070506			21							02	000000125	25						
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070506																		
070507										02	000012357	02						Cangrejo
070507										02	000001235	02						
070507										02	000001258	02						
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070507										02	000012358	02						
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070507										02	000001257	02						
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070507				01	11			05	00	02	000012578	43						
070507										02	000001235	02						
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070507										02	000012358	43						
070507										02	000001235	02						
070507										02	000000125	02						
070507			11							02	000001235	02						
070507			22							02	000000125	02						
070507			21							02	000001235	02						

Context	n	Wgt	TimeP	VPart	VForm	Clen	PThick	RForm	Rbol	RDia	ESurfT	ISurfT	ESlip	ESlipM	ISlip	ISlipM	DLoc	IncD	IThick	SlipInc
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Context	PuncD	AppD	ModD	SlipD	DSlipM	ASlipD	ASlipDM	EBThick	IBThick	PasteT	PasteI	PasteM	IBurn	OxC	IUse	IMend	Comments	Chrono
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070507										02	000000125	02						
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070507										02	000001235	02						
070507																	Wasters?	
070508										02	000012358	34						Cangrejo
070508	03									02	000001237	02						
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070508																		

Appendix D

LITHIC ANALYSIS

Technological and Typological Data Produced by Brigitte Kovacevich

LA-ICP-MS Data Produced by Brigitte Kovacevich and Molly Morgan

Obsidian

The obsidian analysis for Chiquiuitan began with a technological, typological (i.e., Clark 1997, Clark and Bryant 1997; Sheets 1975), and distributional analysis conducted by Brigitte Kovacevich during the PACHI lab season in 2007 (Kovacevich 2007). Second, a chemical compositional analysis preformed through the Visiting Researcher Program of the Institute for Integrated Research in Materials, Environments, and Societies (IIRMES) used laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) for sourcing a sample of artifacts and small debitage.

The obsidian artifact assemblage from PACHI projects in 2006 and 2007 is comprised of 232 artifacts (255.71g). Obsidian artifacts were collected through stratigraphic excavations in domestic zones from all four of the house mounds that were tested at the site (see Chapter 5 for a detailed discussion of these excavations). The special excavation techniques used to investigate dirt floor contexts in Suboperation 7-1 allowed archaeologists to find several artifacts that would have otherwise been missed, including 38 examples of small debitage, some as tiny as 2mm in length.

The obsidian artifacts at Chiquiuitan were primarily created with the use of expedient flake technology, such as hard-hammer and bipolar percussion (Table D-1). While prismatic blades are present (Figure D-1), there is no evidence to suggest that blade/core technology was utilized at the site: no exhausted polyhedral cores or rejuvenation flakes characteristic of the production of blades from imported prepared cores are present. While three macroblades and one small percussion blade (the early stages of prismatic blade production) were present, they also appear to have been imported to the site ready-made along with prismatic blades produced by pressure techniques. The prismatic blades are in an extreme stage of use, indicating that blades were scarce, and used until nearly or completely exhausted. Most of the blade fragments seem to come from Tamarindo Phase (950-600 B.C.) deposits. This artifact type appears at many sites on the Pacific Coast during the Middle Formative and may be tied to shifting exchange relationships (Clark 1987; Clark et al. 1989; Rosenswig 2007; Tabares et al. 2005).

Figure D-1. Obsidian prismatic blade from a Tamarindo context at Chiquiuitan (drawing by Margarita Cossich).

Rather than blade production, it appears that the vast majority of artifacts from Chiquiuitan were produced by bipolar percussion, in which an anvil is used and the striking blow to remove the flake comes from above (Figure D-2). This technique leaves distinctive pronounced percussion rings on the ventral side of the flake and is also marked by the lack of a pronounced bulb of percussion (Figure D-3). The mean size of these flakes, as well as the cores used in their production, was small also pointing to the paucity of obsidian at the site (see Table

D-1). Direct, hard-hammer percussion flakes made up 25% of the obsidian artifacts at the site, indicating that this technique was used to a lesser degree. Two soft-hammer percussion flakes, usually characteristic of bifacial reduction, were also recovered, as well as one biface fragment, showing that bifacial technology may have been present (or at least resharpening or rejuvenation activities). Microflakes and microdebitage were recovered from several floors, indicating that primary production activities probably took place within or near the structures at the site (see also Moholy-Nagy 1990).

Table D-1. Obsidian artifact types with mean length, width, thickness and weights, along with standard deviations from the mean.

Artifact Type	*N*	*Mean length*	*St. Dev.*	*Mean Width*	*St. Dev.*	*Mean Thickness*	*St. Dev.*	*Mean Weight*	*St. Dev.*
Macroblade	3	47.03	15.57	25.04	8.01	9.23	2.83	9.37	5.86
Small Percussion Blade	1	29.19		11.56		4.53		1.4	
First Series Blade	6	24.83	12.05	12.68	1.89	2.89	0.67	1.22	0.88
Final Series Blade	3	14.27	0.6	6.55	1.03	2.25	0.52	0.2	0.08
Blade Fragment (undetermined)	4	14.5	8.8	10.15	2.32	2.48	0.62	0.6	0.57
Biface	1	23.65		27.22		6.06		3.8	
Percussion Flake	25	17.65	10.79	17.8	10.66	4.37	3.03	2.21	4
Rejuvenation Flake	1	23.78		25.93		7.37		4.2	
Chunk	10	12.41	4.22	7.87	2.63	4.92	1.91	0.49	0.47
Soft Hammer Percussion Flake	2	11.76	0.83	17.09	2.87	3.28	0.75	0.55	0.07
Microflake	38	5.65	2.8	5.17	2.32	1.24	0.54	0.07	0.03
Bipolar Flake	97	16.13	6.63	13.98	5.52	3.38	1.71	0.82	1.12
Bipolar Corner Flake	17	20.7	9.47	8.53	3.75	5.64	3.27	1.36	2.68
Bipolar or Multidirectional Flake Core	15	22.31	7.34	15.95	4.89	7.98	2.83	2.53	2.14

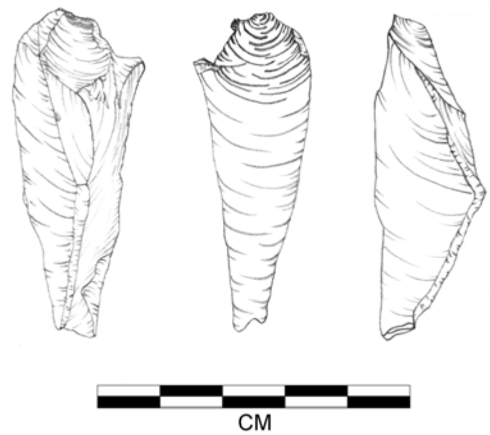

Figure D-2. Blade-like bipolar flake from Chiquiuitan (drawing by Margarita Cossich).

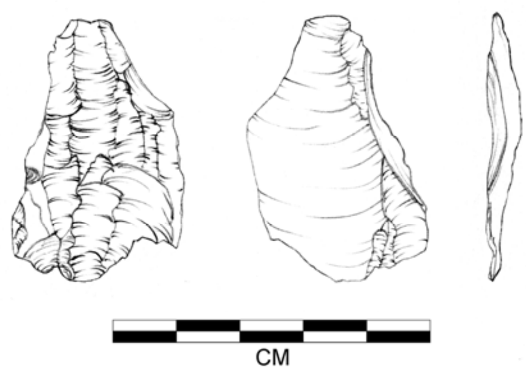

Figure D-3. Bipolar flake with dorsal pressure flake removal from Chiquiuitan (drawing by Margarita Cossich).

Only 21 of the 232 obsidian artifacts retained cortex on their dorsal surface; that is 15 artifacts had 0-25% cortex and six had 25-50% cortex. No artifacts had a complete cortex dorsal surface, again suggesting that most of the obsidian was previously reduced and imported.

Visual sourcing was conducted in the laboratory season by Kovacevich (2007), but chemical compositional testing was sought to test the efficiency of visual sourcing. The results of the LA-ICP-MS study are three-fold (Morgan et al. 2008). First, in testing the efficiency of the

LA-ICP-MS technique on very small, thin obsidian artifacts, the technique was successful in determining the chemical composition of flakes or flake fragments of sizes as small as 250μm. Even at this small size, LA allowed for the targeting of the tiny artifacts for sample introduction, and the ICP-MS unit was able to detect compositional components without problem. It was found that the obsidian included in this study came from three sources in Guatemala: El Chayal, San Martin Jilotepeque, and Ixtepeque.

Some elements are especially useful in illustrating different chemical composition between obsidian from various sources. Arsenic (As) is a metalloid that exists in several oxidized forms as crystals. Cesium (Cs) is a naturally occurring alkali metal. By plotting the ppm quantities of these two chemical elements from each sample, it is possible to see the clustering of the three obsidian groups (Figure D-4). These clusters also include samples from the known sources that were analyzed through LA-ICP-MS to confirm group assignments, securing their identification with these particular origins.

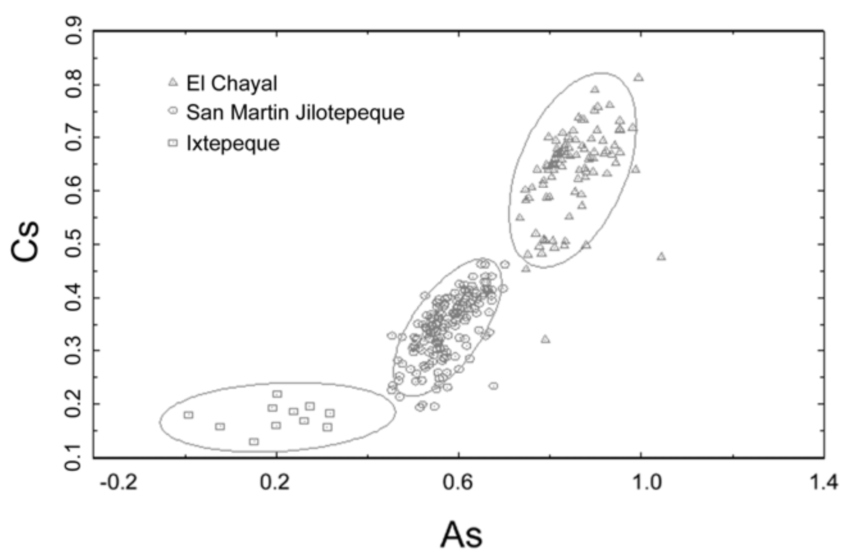

Figure D-4. Scatterplot created using Cesium and Arsenic to illustrate the success of LA-ICP-MS in determining easily distinguishable groups of obsidian with chemical compositions linking them to the sources of El Chayal, Ixtepeque, and San Martin Jilotepeque.

Second, this study approached the challenging issue of visually sourcing microdebitage. Unfortunately, effective sourcing of small artifacts such as these is not possible through techniques like X-ray Fluorescence (XRF). XRF an other techniques similar to it do not produce effective sourcing results for such small artifacts because they require a minimum dimension for analysis (Glascock et al. 2005:32). Thus, the successful application of the LA-ICP-MS technique in a microdebitage study provides a new and important tool with which archaeologists can approach the important topics of obsidian procurement and production. Visual sourcing analysis of artifacts above 1mm in size from Chiquiuitan was largely confirmed by the LA-ICP-MS results, with 98% success.

Lastly, the identification of the sources of obsidian found in archaeological contexts from Formative period Chiquiuitan indicate important trends in the procurement of this resource and its use by the inhabitants of the site. The visual identification of an obsidian assemblage largely attributed to the source of El Chayal has been reinforced. In fact, 57 of the 63 artifacts tested, or 90%, were from Chayal (Table D-2). The less intensive exploitation of Ixtepeque and San Martin Jilotepeque was also seen in visual analysis and further indicated in the LA-ICP-MS study. Two artifacts came from Ixtepeque, while four were identified from San Martin Jilotepeque.

Table D-2. Sources of obsidian artifacts from Chiquiuitan, determined by LA-ICP-MS analysis.

	Chiquiuitan Obsidian
El Chayal	57
Ixtepeque	2
S. M. Jilotepeque	4
Total	63

These data point to an intriguing pattern, suggesting that residents of Chiquiuitan may have had unequal access to these sources at the end of the Early Formative and beginning of the Middle Formative, as indicated in a varying distribution of artifacts from the rarer sources of

Ixtepeque and San Martin Jilotepeque identified from contexts dating to these phases throughout the site. More specifically, of the four mounds excavated in 2006 and 2007 seasons at Chiquiuitan, obsidian from Ixtepeque and San Martin Jilotepeque were found in greater frequencies in two specific mounds. Mound 34 demonstrated 14% of obsidian from Ixtepeque, while Mound 24 exhibited 50% obsidian from San Martin Jilotepeque, the rest of the obsidian from both mounds being attributed to El Chayal. In comparison to Mound 13, the most intensively excavated mound at the site, no obsidian came from Ixtepeque and only 2% from San Martin Jilotepeque, while the majority 98% was sourced to El Chayal. This pattern suggests the possibility that residents of late early Formative and early Middle Formative Chiquiuitan lived in a factionalized society that operated through multiple obsidian exchange networks, an interpretation which requires further investigation to support with any certainty.

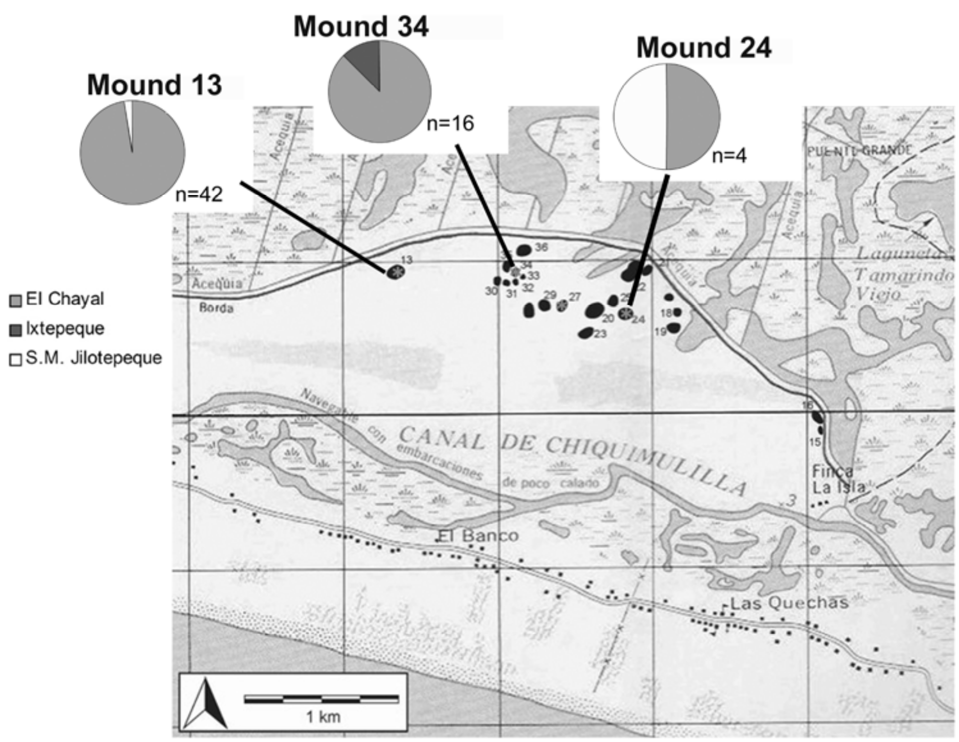

Figure D-5. Map of Chiquiuitan with pie charts associated with specific mounds that show frequencies of obsidian from different sources found from those contexts.

Groundstone and Miscellaneous Stone

Groundstone was also very scarce at the site, with a total of 10 artifacts or fragments from all excavations with a total weight of 7.065 kilograms. All manos and metate fragments were made of basalt (Figure D-4). One axe head was made from a metamorphic greenstone. Other miscellaneous stone included 7 very small river cobbles of quartzite and possibly chert, 4 pieces of pumice, and two rounded basalt nodules that may have been used as smoothers. All stone appears to have been imported into the site as there is an extreme paucity of stone in the region. The total weight of miscellaneous stone at the site was 252.25 grams.

Figure D-6. Photo of one of the ground stone manos found in a Tamarindo phase context.

Summary of Lithic Use through Time at Chiquiuitan

In the Early Formative period, lithic artifacts are extremely rare at Chiquiuitan. No groundstone artifacts were collected, and only one obsidian flake was located in a Huiscoyol level from Mound 13. Additional sampling from Huiscoyol contexts will help verify this observation, though it does presage the overall paucity of lithics from all time periods of Chiquiuitan's occupation.

During the Cangrejo phase, lithic technology underwent significant changes. The total number of lithic artifacts uncovered in all of the PACHI excavations at Chiquiuitan is low in comparison to collections from other sites, and future work is needed to augment the sample.

Still, some important trends can be noted. First, groundstone artifacts appear for the first time at Chiquiuitan in Cangrejo contexts. Of the ten total groundstone artifacts, seven were collected from deposits dated to the Cangrejo phase. These artifacts include basalt fragments of manos and metates, as well as one metamorphic greenstone axe. The new presence of these artifacts may indicate an increasing reliance on subsistence practices exploiting grains that would need to be ground before consumption.

Obsidian artifacts also appear with an increasing frequency in the Cangrejo phase. While only one obsidian flake (0.5 artifacts per cubic meter) was discovered in the Huiscoyol levels, a total of 107 artifacts or 2.9 artifacts per cubic meter of sediment were uncovered in Cangrejo phase excavations. Two blade fragments date to this phase.

Groundstone and obsidian lithic tools uncovered in the Tamarindo phase follow general trends established in the Cangrejo phase, with some possible modifications to the obsidian technology. Basalt manos and metates, first recovered from Cangrejo deposits, continued to be used in the Tamarindo phase with about the same frequency. While 0.19 groundstone tools per excavated cubic meter were calculated from the Cangrejo phase, 0.16 artifacts per cubic meter were recovered in the Tamarindo.

Obsidian tool use increases in the Tamarindo phase, with 5.1 artifacts per excavated cubic meter. The majority of the obsidian artifacts came from El Chayal and consist of expedient flakes. While 17 prismatic blades were encountered in excavation at Chiquiuitan, there is not significant evidence to suggest that blade/core technology was utilized at the site (Kovacevich 2007). No exhausted polyhedral cores were present, nor rejuvenation flakes characteristic of the production of blades from imported prepared cores. The prismatic blades that were present were in an extreme stage of use, indicating that blades were scarce, and used until nearly or completely exhausted. Fourteen (82%) of all of the blades found at the site were from Tamarindo phase or mixed Tamarindo phase deposits. These tools were probably imported to the site already formed, or perhaps created at a different location not yet encountered at the site.

Appendix E

MICROBOTANICAL STUDIES FROM SEDIMENT CORE SAMPLES

Sediment Cores Collected by Hector Neff and John Jones,

Pollen Data Produced by John Jones,

and Phytolith Data Produced by Deborah Pearsall and Shawn Collins

In the late 1990's, a research team including Barbara Arroyo, Shawn Collins, Dorothy Friedel, John Jones, Hector Neff, and Deborah Pearsall used a vibracorer to take sediment cores from estuary, lagoon, and other mangrove wetland areas along the Pacific coast of Guatemala in order to collect microbotanical samples that could indicate patterns in plant life and the paleoenvironment in this area (Neff et al. 2006d). Their work specifically focused on understanding adaptational shifts in human behavior during the transition from the Archaic to the Formative, which occurred shortly after 2000 B.C. along with a significant climatic drying trend.

Chiquiuitan was sampled by two cores, CHQ003 (UTM 769207E, 1540191N) placed at the base of one of the mounds at the site center, and CHQ004 (UTM 769518E, 1541652N) located on the road just to the east of the archaeological site. The microbotanical remains recovered from the sediments taken in this core include pollen and phytoliths, and would have been carried to this place through aerial and fluvial transport, thus coming from Chiquiuitan and its immediately neighboring environs.

AMS radiocarbon dates provide data to reconstruct the chronologies of sedimentation within these cores (Table E-1). Core CHQ004 included four dates, spanning between 3363 and 784 years B.P. in stratigraphic order, providing a clear chronology (Figure E-1). The chronology for core CHQ003 is less clear (Figure E-2). In this core, the two earliest dates, 1353 B.C. and 1952 B.C., are inverted. This suggests a more complicated process of sedimentation in this area.

These results make environmental reconstruction from materials in this core more difficult, and the interpretation presented here relies on core CHQ004.

Table E-1. AMS Radiocarbon Dates from Chiquiuitan Core Samples.

Lab ID	Sample ID	Frac. Modern	FM st. dev.	14C Age	st. dev.	delta 13C	calibrated (1-sigma)
AA39748	CHQ003-134-135	0.7389	0.0039	2430	43	-26.9	cal B.C. 758(498,493,483,465, 449,441,426,424,413) 405
AA39749	CHQ003-167-168	0.6379	0.0035	3612	44	-27	cal B.C. 2029(1952) 1891
AA36851	CHQ003-186-187	0.6831	0.0035	3061	41	-25	cal B.C. 1395(1372,1356,1353,1340,1318) 1262
AA36838	CHQ004-115-116	0.8975	0.0042	870	40	-23.0	cal A.D. 1070 (1165, 1166, 1188) 1219
AA36839	CHQ004-132-133	0.7721	0.0043	2077	45		cal B.C.168 (90, 76, 59) 3
AA36840	CHQ004-225-226	0.7138	0.0034	2708	39	-26.8	cal B.C. 899(832) 815
AA36841	CHQ004-318-320	0.676	0.0034	3145	40	-25	cal B.C. 1485(1413)1325

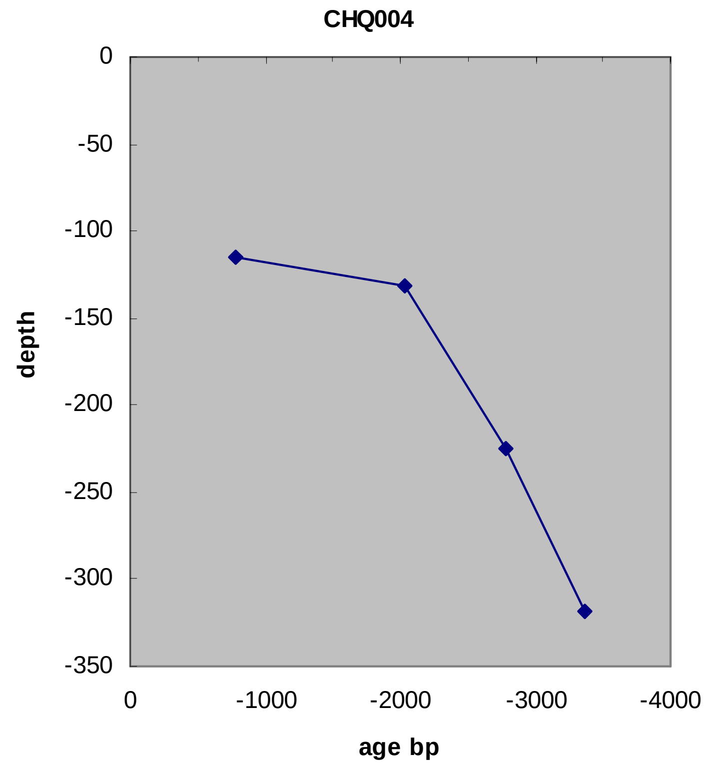

Figure E-1. Plot of the radiocarbon date calibrated intercept or the middle calibrated intercept against depth for core CHQ004.

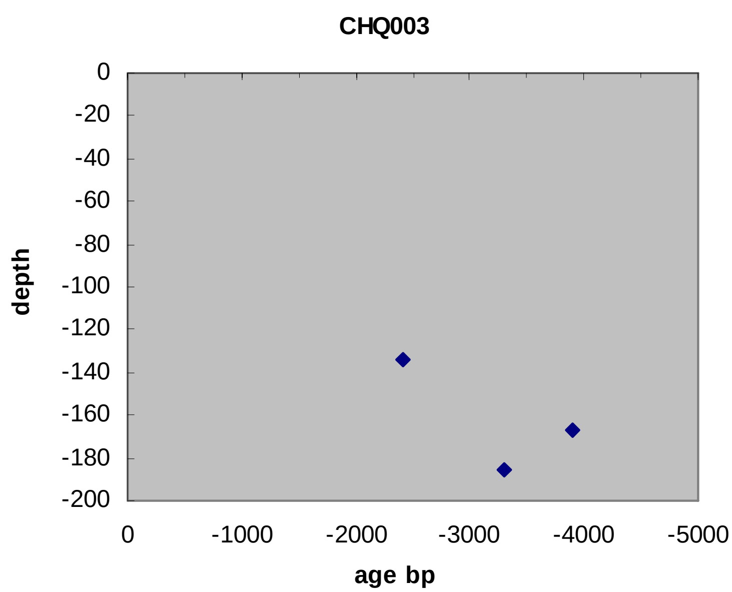

Figure E-2. Plot of the radiocarbon date calibrated intercept or the middle calibrated intercept against depth for core CHQ003. Notice the reversal of dates from the lower sediments.

Pollen Analysis

The sediments from core CHQ004 were analyzed in a pollen study by John Jones, and reveal significant shifts in flora in the Chiquiuitan area that demonstrate human impacts on the environment (Figure E-3). The earliest date from the core falls into Early Formative, and thus does not permit interpretation for human impacts on the environment in this area prior to the time period for which we also have information from archaeological investigation. However, the data from the sample do fit well with the archaeological evidence. First, around a depth of 300-320 in the core, pollen content for arboreal species slightly decreases while charcoal numbers rise. A date of 1413 B.C. is associated with a sample from level 318-320, and these shifts in concentrations could indicate initial occupation by humans at Chiquiuitan and the concomitant environmental impacts. Mangrove forests also may have declined shortly thereafter, as indicated in the decrease in *Rhizophora* at the depth of 280-265. While the mangroves were reduced, plants that grown in open habitats such as those from the Poaceae family of grasses, the flowering plant family Chenopodiaceae, the herb *Amaranthus*, and especially sedges (Cyperaceae) demonstrate pollen increase, suggesting human clearing of the land.

Indications of *Zea mays* appear in the column at about 225-226, layers that have been dated to 832 B.C., falling into the Middle Formative Tamarindo phase. The ensuing abandonment of Chiquiuitan, somewhere between 600-400 B.C. may be seen in the effects on flora by a return of mangrove population evidenced by an increase in *Rhizophora* pollen and a decrease in plants typically indicating human disturbance (Poaceae, Chenopodiaceae, and *Amaranthus*) at the depth of 180-200.

In later time periods the signal of human impact is stronger, suggesting that after the Late Formative abandonment of Chiquiuitan, the area was reoccupied and used for agricultural purposes. Especially at the core depth of about 130, dated to 76 B.C., a significant shift in the estuary system took place with clear signs of a change to freshwater as well as cultivation in the

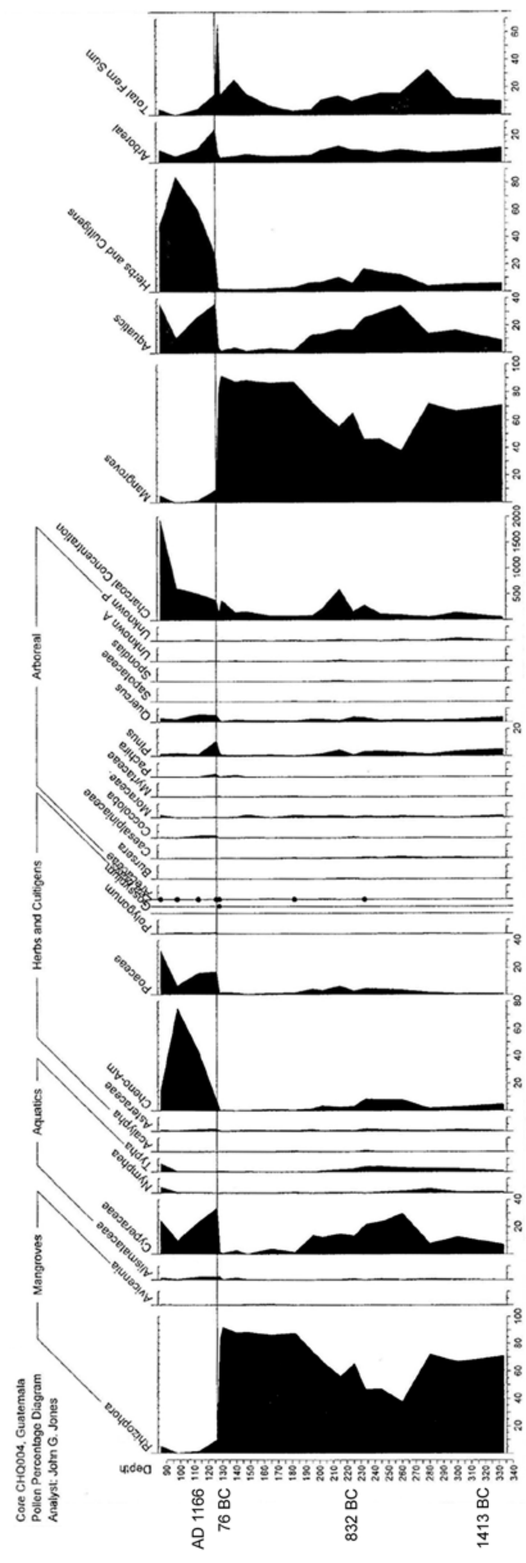

Figure E-3. Pollen data from CHQ004. Horizontal axis indicates percentage of total pollen. For *Zea mays*, the dots represent presence of this pollen. Charcoal concentration is indicated as particle per ml in the 8 to 80-micron size range. Image by John Jones.

immediate area. The change in the water table, perhaps with a removal of salt water by human activity, is witnessed by the near disappearance of mangroves (*Rhizophora*) and spike in sedges (Cyperaceae) as well as in herbs and cultigens (Poaceae, Chenopodiaceae, and *Amaranthus*). At these levels, *Zea mays* pollen is seen in every sample and cotton (*Gossypium*) appears in the basal sample. Pine (*Pinus*) and oak (*Quercus*) tree pollen are seen, indicating more open lands and the appearance of highland pollen blowing into the area. *Asteraceae* also increase in pollen count at this time and are indicators of human forest modification, often tied to agricultural efforts. Finally, the economically valued *Coccoloba* fruit tree also increase at this later time. Patterns appear similar to these levels throughout the rest of the core, although it appears that the sedimentation was disturbed, as evidenced by the jump to A.D. 1166 at a depth of 115-116.

Phytolith Analysis

These sediment samples were also analyzed by Deborah Pearsall and Shawn Collins (2003) for phytolith content. The summary presented here focuses on the results of that study from core CHQ004. The earliest levels of sediment did not provide considerable phytolith data with which to interpret the effects of the initial occupation of Chiquiuitan on the surrounding environment. However, a plant typically found in locations disturbed by human activity, *Heliconia*, is present in the lowest level of the column.

Evidence of a wet habitat is clear in levels 226-136cm, which is compatible with the mangrove forests demonstrated for this area in the pollen study. By these Middle Formative levels, the mangrove forests had already begun to decline, but can still be detected in the phytolith patterns. While mangroves do not produce diagnostic phytoliths, an assemblage well-suited to mangrove swamp conditions is observed. This portion of the core contains high, although fluctuating, sponge spicules and diatoms, as well as some tropical forest indicators including palms (*Arecaceae*) and *Bombacaceae*. Lastly, *Heliconia* is also seen in these levels. While this

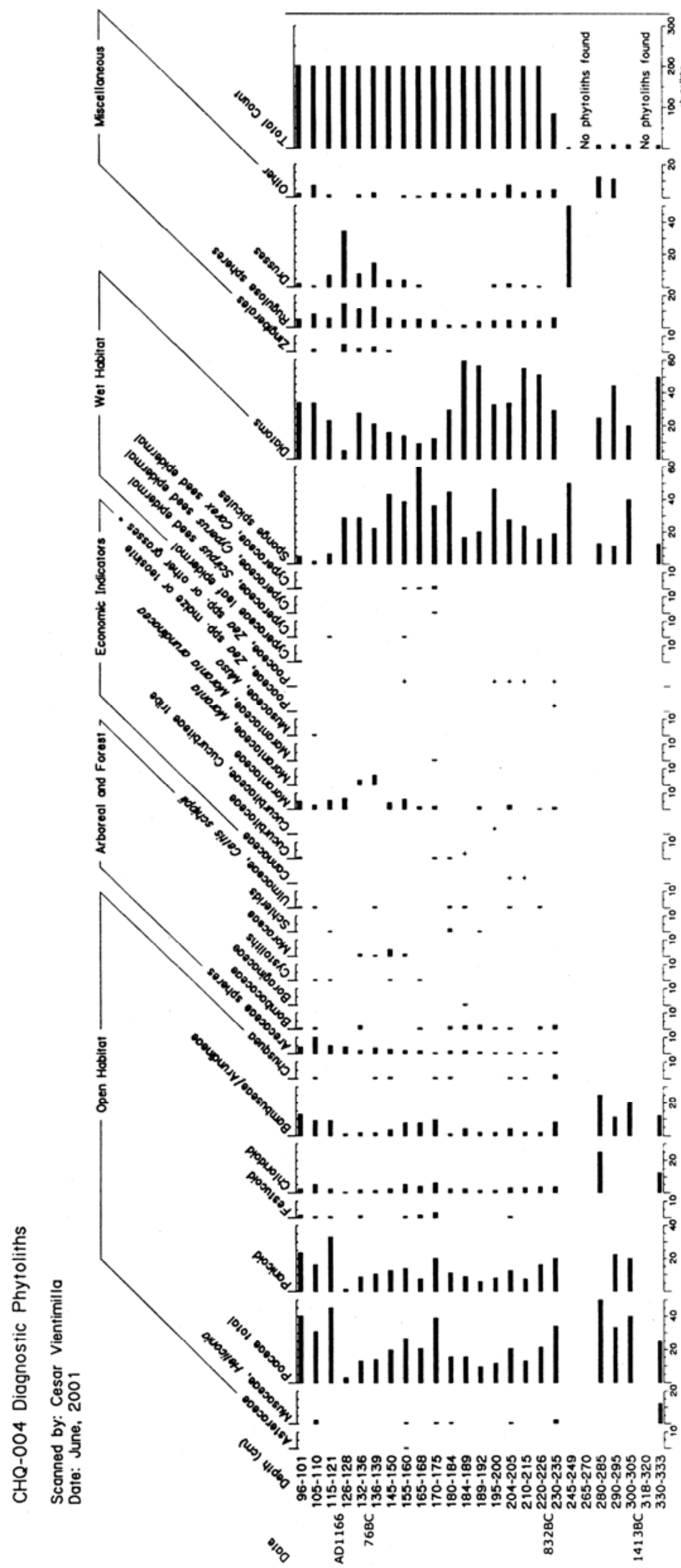

Figure E-4. Phytolith data from CHQ004. Horizontal axis indicates percentage of total phytoliths for various taxa. Image by Deborah Pearsall and Shawn Collins.

plant is an indicator of open habitat, it is also known to thrive on the edges and in openings of forests. Thus, the mangrove swamp is reflected at early levels, but appears to be replaced by the formation of a freshwater lagoon or swamp throughout the sequence of core CHQ004.

By 832 B.C., from the same levels that provided the first *Zea mays* pollen, phytolith content increases and evidence for some economic indicators including Marantaceae, or arrowroot, and *Zea* is present. In the case of the later, phytoliths could be identified to the genus level, which could include either maize or one of the teosinte varieties, but since teosinte has not been reported from the coast of Guatemala, it is interpreted as primitive maize in this region. Counts of plant phytoliths that could indicate cultivation gradually increase throughout the upper levels of the sediment column, eventually including Curcurbitaae (squash) and Musaceae (a type of flowering plant) in addition to arrowroot and *Zea*.

In the phytolith record, the shift to a freshwater system somewhere in the area is reflected as early as level 170-175, at which point sedges (Cyperaceae) appear. Palms (*Arecaceae*) increase throughout the upper sections of the column. Some second growth tropical forest may have been present nearby, in which an addition of a few rare trees such as Moraceae and a type of hackberry (*Celtis schippii*) from the Ulmaceae family and the woody structures of forest plants (schlerids and cystoliths) are observed, consistent with the freshwater conditions. By level 115-121which is closer to the A.D. 1166 date, a complete switch to a freshwater system is evident. In this uppermost section of the core, the phytolith data indicate an increase in open habitat plants such as grasses (families Poaceae and Panicoid), bamboo (Bambuseae), and reeds (Arundineae). At the same time, sponge spicule content significantly decreases.

Appendix F

Osteological Analysis of Human Remains

Data Created by Carrie Anne Berryman

Burial 1

Burial 1 was identified in Suboperation 7-1 on Mound 13, in a tightly flexed position, and placed on the surface of a dirt floor. It was subsequently buried in the construction fill of an addition to the mound, apparently as a dedication at the beginning of the building event (see Chapter 5 for a description of these contexts and photo of the bones *in situ*).

These remains belong to a fully mature adult individual of undeterminable sex. The individual is represented by fragments of the left arm, left os coxae, left leg and foot, and the right lower arm and hand. Several un-sided fragments of hand and foot bones as well as a couple of small vertebrae fragments were present. One intact right lower second molar and a small fragment of another molar were also recovered. Notably missing are the head, clavicles, right humerus, right os coxae, and right leg. Given the presence of other long bones, it seems unlikely these missing elements are the result of poor preservation. However, the absence of ribs and most vertebrae might be explained by poor preservation, as these elements tend to deteriorate more rapidly due to their thin cortical structure. More likely, this burial represents an incomplete secondary burial. In terms of taphonomy, these remains are very poorly preserved and are covered in mineralized accretions of sediment, making pathological observations and metric analyses impossible.

The bones were also clearly subjected to thermal alteration, as indicated by gray-to brown discoloration throughout the body (see photos of phalanges; Figure F-1). This color change is indicative of relatively brief exposure to a low intensity fire (< 700°C)—perhaps just enough to remove the flesh. It is not possible to determine whether the bones were burned while fleshed or defleshed (i.e. peri-mortem vs. post-mortem) due to the mineralized sediment that covers most of them.

Figure F-1. Phalanges from Burial 1 showing discoloration from thermal alteration.

The only notable pathology is a large cervical root carie on the buccal surface of the recovered lower molar (Figure F-2). This tooth also exhibited minor calculus deposits and moderate attrition---each cusp scored a 6 based on the scoring system recommended by *Standards* (Buikstra and Ubelaker 1994). This tooth was also subjected to thermal alteration, as evidenced by the gray discoloration of the crown and the blackened root, indicating the head was likely burned along with the rest of the body.

Figure F-2. Lower molar from Burial 1 showing minor calculus deposits, moderate attrition, and discoloration from thermal alteration.

Burial 2

The second burial recovered at Chiquiuitan was located in an excavation close to the first burial, in Suboperation 7-4 on Mound 13. It was also placed on the surface of a dirt floor and covered in a dirt fill construction addition (Chapter 5 describes these deposits in greater detail). Unrecognized in excavation, but determined in osetological analysis, this burial actually included two individuals, which are described in greater detail below.

The remains of the first individual belong to a fully mature adult individual of undeterminable sex. The individual is represented by ten teeth (Figure F-3), some recognizable cranial and femur fragments, and many small nondiagnostic bone fragments. Unlike Burial 1, these remains were not subjected to fire and they are less covered in mineralized sediment. However, preservation is extremely poor with little intact cortical bone making pathological observations impossible. No dental pathologies were observed on the teeth. Dental attrition was moderate to severe, indicating the remains likely represent an older adult (perhaps 30+); however, without knowledge of local diets or a larger reference sample from the population, an age estimate generated from attrition observations is highly speculative.

Figure F-3. Ten teeth recovered from the first individual in Burial 2.

The second individual in Burial 2 is represented by two teeth, which were found mixed in with long bone fragments of the first individual. These teeth are not consistent with the attrition observed on the other ten teeth and were apparently found separate from them, given that they were packaged with long bones. These teeth include a right lower second molar and a right upper first molar representing a second individual. The lower second molar exhibited no wear or contact facets, indicating it was not in occlusion at the time of death and the upper first molar exhibited very minor wear facets. If both teeth belonged to the same individual, the individual was likely between 6-14 years of age at the time of death.

Appendix G

MARINE SHELL STUDY

Data Produced by Judith Valle

Judith Valle (2007) examined shell remains in the PACHI 2007 lab season to better understanding mollusk and gastropod subsistence exploitation at Chiquiuitan. In total, 211 marine faunal specimens were analyzed from Chiquiuitan, 176 of which were identifiable at least to family, sometimes to genus and species (Table G-1).

Table G-1. Marine fauna counts and frequencies recorded for different time phases.

	Taxa	**Common Name**	**Mollusk Type**	**n**	**% of Total**
Huiscoyol	Arcidae *Anadara tuberculosa*	Ark Clam	Bivalve	8	47.37
	Arcidae *Anadara grandis*	Ark Clam	Bivalve	1	0.88
Cangrejo	Arcidae *Anadara tuberculosa*	Ark Clam	Bivalve	79	4.39
	Arcidae *Anadara mazatlanica*	Ark Clam	Bivalve	2	1.75
	Noetiidae *Noetia reversa*	Clam	Bivalve	2	1.75
	Veneridae *Chione*	Venus Clam or Cockle Shell	Bivalve	1	0.88
	Potamididae *Cerithidea*	Horn Snail	Gastropod	24	8.77
	Potamididae – genus unknown	Horn Snail	Gastropod	37	17.54
	Cerithiidae – genus unknown	Sea Snail	Gastropod	6	4.39
Tamarindo	Arcidae *Anadara tuberculosa*	Ark Clam	Bivalve	6	3.51
	Potamididae *Cerithidea*	Horn Snail	Bivalve	10	8.77
TOTAL				176	

Shell recovery was highest in the Huiscoyol phase, with 4.7 specimens per cubic meter of excavated sediments. In the Cangrejo phase this number decreases to 4.0 specimens per cubic meter and then to 1.2 in the Tamarindo phase. These preliminary results suggest a trend in decreasing marine exploitation throughout the Formative period. This trend may be the result of intensified horticultural practices or possibly of the diminishing availability of some local fauna.

Table G-2. Total marine fauna counts and frequencies from Chiquiuitan.

Taxa	n	% of Total
Arcidae *Anadara tuberculosa*	93	44.08
Arcidae *Anadara grandis*	1	0.47
Arcidae *Anadara mazatlanica*	2	0.95
Noetiidae *Noetia reversa*	2	0.95
Veneridae *Chione*	1	0.47
Potamididae *Cerithidea*	34	16.11
Potamididae	37	17.54
Cerithiidae	6	2.84
Unidentifiable Shell Fragments	35	16.59
TOTAL	211	

In the earliest Huiscoyol levels, significant amounts of shell from the genus *Anadara* of clam were found and present interesting information relating to subsistence practices of the first occupants of this village (Figure G-1). The *Anadara tuberculosa* were found in the greatest quantity, making up 44% of total collected specimens (Table G-2). These bivalves are related to, but distinct from the *Polymesoda radiata* marsh clams that were collected and accumulated in abundance at Late Archaic shellmounds in Chiapas (Voorhies 2004). It is interesting that while *Anadara tuberculosa* may have been present in the Acapetahua Estuary where Chiapan shellmounds formed, not a single shell of this species was collected from Late Archaic contexts. This suggests that the *Polymesoda radiata* was the preferred resource perhaps due to availability, lower collection costs, or differing sensitivities to environmental conditions. The opposite is true for Chiquiuitan where researchers identified no *Polymesoda radiata*, and the larger *Anadara tuberculosa* appears to have been the preferred or only available bivalve food type.

Figure G-1. Photo of a shell disk. It is made from the most typical mollusk found at Chiquiuitan, from the family Anadara.

Appendix H

FAUNAL ANALYSIS

Data Produced by Kitty F. Emery and Michael Kay

Animal remains collected from excavations at Chiquiuitan in 2006 and 2007 were identified and analyzed in 2009 by researchers at the Florida Museum of Natural History at the University of Florida, primarily Kitty F. Emery and Michael Kay (2009). Standard zooarchaeological identification procedures were followed using reference collections from the Florida Museum of Natural History Environmental Archaeology Program as well as other osteological collections housed in the Invertebrate Zoology, Herpetology, and Ornithology labs at the Florida Museum.

Studies included 1108 animal specimens from four phyla and eight taxonomic classes (Table H-1). These specimens were collected from 43 proveniences at the site, dating to the Huiscoyol, Cangrejo, and Tamarindo phases of the Early and Middle Formative periods. Faunal remains were fairly well preserved although suffered from the heavy concretion of sand and clay that could not be removed and hindered species identification in many samples and affected the weights taken for all specimens. No human or animal modifications were noted, except for burning found on 7% of the assemblage, probably the result of a discard practice conducted for sharp and potentially dangerous fish bones (81% of the burned remains were fishes).

Table H-1. Taxonomy and habitats of the faunal remains (Kingdom Animalia) from Chiquiuitan (from Emery and Kay 2009, Appendix A).

Phylum	Class	Order	Family	Genus	Species	Common Name	Habitats	NISP	Weight
--	--	--	--	--	--	animals		544	25.02
Cnidaria	Anthozoa	Scleractinia	--	--	--	stony corals	marine, usually clear, shallow water	2	3.36
Mollusca	Gastropoda	Neotaenioglossa	Cerithiidae	*Cerithium*	sp	ceriths	moderately shallow water (marine), usually on	2	0.10
Mollusca	Gastropoda, Subclass Prosobranchia	Neogastropoda	Marginellidae	*Marginella*	sp	margin shells	sandy ocean bottoms, usually shallow water	1	0.17
Mollusca	Gastropoda, Subclass Prosobranchia	Neogastropoda	Nassariidae	*Nassarius*	sp	mud snails/dog whelks	shallow water (marine)	3	0.04
Mollusca	Gastropoda, Subclass Prosobranchia	Neogastropoda	Olividae	*Olivella*	sp	olives	shallow water (marine); sandy bottom	1	0.32
Mollusca	Bivalvia	--	--	--	--	bivalves		1	0.00
Mollusca	Bivalvia	Veneroida	Cardiidae/Noetiidae	--	--	cockles	shallow to moderately shallow water (marine)	3	2.06
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	--	--	--	true crabs		264	116.14
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	--	--	land crabs		37	54.14
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	*Gecarcinus*	sp	--		10	20.80
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	*Gecarcinus*	*quadratus*	--	tropical forests within 200m of marine environments, including mangroves; usually sandy soil; mostly Pacific coast; hibernate		
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	*Gecarcinus*	*planatus*	--	highly flexible terrestrial crab - tropical forests near marine environments, including mangroves; may enter lagoons; survives at		
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	*Cardisoma*	sp	--	semi-terrestrial, near coast; mate in ocean or inshore waters during summer months	8	18.44
Arthropoda	Malacostraca	Decapoda, Infraorder Brachyura	Gecarcinidae	*Cardisoma*	*crassum*	--	see above, common among mangrove roots, also occasionally channel banks and flats	47	90.61
Vertebrata, Superclass Osteichthyes	--	--	--	--	--	bony fishes		39	1.87
Vertebrata, Superclass Osteichthyes	Actinopterygii	--	--	--	--	ray-finned fishes		24	2.95
Vertebrata, Superclass Osteichthyes	Actinopterygii	Semionotiformes	Lepisosteidae	*Atractoseus*	sp	broad head gars	swamps, bayous, backwaters of rivers or	1	2.30
Vertebrata, Superclass Osteichthyes	Actinopterygii, Infraclass Teleostei	Clupeiformes	Clupeidae	--	--	anchovies, herrings, sardines	mostly marine, some enter freshwater	11	90.10
Vertebrata, Superclass Osteichthyes	Actinopterygii, Infraclass Teleostei	Siluriformes	--	--	--	catfishes		3	0.05
Vertebrata, Superclass Osteichthyes	Actinopterygii, Infraclass Teleostei	Siluriformes	Ariidae	--	--	sea catfishes	tropical and temperate coastal water, often bays and harbors; sometimes brackish or	2	0.13
Vertebrata, Superclass Osteichthyes	Actinopterygii, Infraclass Teleostei	Perciformes	Scombridae	--	--	tunas, mackerals, bonitos	usually strictly marine, some species enter shallow bays; usually swim near surface, feed	1	0.30
Vertebrata, Superclass Osteichthyes	Actinopterygii, Infraclass Teleostei	Perciformes	Gerreidae	--	--	mojarras	coastal waters, bays, estuaries; often on sandy or grassy ocean bottom (not reefs)	1	0.02
Vertebrata, Tetrapoda	Reptilia	--	--	--	--	reptiles		6	6.59
Vertebrata, Tetrapoda	Reptilia	Testudines	--	--	--	turtles	all specimens identified here could be either marine or inland (CA river turtle *Dermatemys*	9	2.95
Vertebrata, Tetrapoda	Reptilia	Testudines	Cheloniidae	--	--	marine turtles	tropical marine waters, usually beach only in	2	4.16
Vertebrata, Tetrapoda	Reptilia	Squamata	Iguanidae	--	--	arboreal lizards, chuckwallas, iguanas	terrestrial, rock-dwelling (e.g. *Ctenosaura*), or	5	0.51
Vertebrata, Tetrapoda	Aves	--	--	--	--	birds		1	0.96
Vertebrata, Tetrapoda	Aves	Gruiformes	Rallidae			coots, gallinules, rails	some migratory; dense vegetation in damp environments near lakes, swamps, or rivers	7	0.49
Vertebrata, Tetrapoda	Aves	Passeriformes	Corvidae			jays, crows, magpies	non-migratory; terrestrial arboreal, opportunistic omnivores found in all habitats	1	0.17
Vertebrata, Tetrapoda	Aves	Passeriformes	Hirundinidae			swallows	migratory; flying insect feeders so often above waterways, but also found over any open habitat including grasslands, open woodland,	1	0.02
Vertebrata, Tetrapoda	Mammalia	--	--	--	--	mammals		59	12.21
Vertebrata, Tetrapoda	Mammalia	Carnivora	Procyonidae	*Procyon*	*lotor*	raccoon	widespread; usually coastal regions, mangroves, lowland forests of less density	3	6.17
Vertebrata, Tetrapoda	Mammalia	Primates	Hominidae	*Homo*	*sapiens sapiens*	humans		2	22.70
Vertebrata, Tetrapoda	Mammalia	Artiodactyla	--	--	--	cows, deers, peccaries	peccaries include *Tayassu pecari* (Link, 1795)	2	16.50
Vertebrata, Tetrapoda	Mammalia	Artiodactyla	Bovidae	*Bos*	*taurus*	domestic cow		1	4.21
Vertebrata, Tetrapoda	Mammalia	Artiodactyla	Cervidae	--	--	deers	other possible cervid is *Mazama americana* (Erxleben, 1777)		
Vertebrata, Tetrapoda	Mammalia	Artiodactyla	Cervidae	*Odocoileus*	*virginianus*	white-tailed deer	widespread; usually deciduous forests near	3	65.21
Vertebrata, Tetrapoda	Mammalia	Rodentia	--	--	--	rodents		1	13.95

Results

Research identified several taxa of animals present in the Chiquiuitan assemblage. The distribution of specimens among taxonomic groups was uneven (Table H-2). Crabs are the most frequently encountered taxa in the Chiquiuitan assemblage. Researchers identified two genera of crab – the Cardisoma and Gecarcinus groups. Fishes are the second most frequently represented taxa by number of specimens (although the weight of the mammal bones is higher due to their larger sizes). Fishes were primarily identified to the level of super-class (Osteichthyes) or class (Actinopterygii). Of the other fishes, clupeids and catfish species were most numerous. Reptiles include turtles (Testudines) and iguanids (Squamata). Some birds were identified, such as corvids (Corvidae family), swallows (Hirundinidae family), and members of the Rallidae family. Mammal bones were difficult to identify, which is common due to their large size and high degree of fragmentation. White-tailed deer (*Odocoileus virginianus*) is the dominant species. Racoons (*Procyon lotor*), rodents (Rodentia order), and one cow tooth (*Bos Taurus*) are probably intrusive species.

Table H-2. Distribution of Chiquiuitan animals by taxonomic class. Totals include only those specimens identified to the level of class (from Emery and Kay 2009, Table 3).

Taxon	NISP	% NISP	Weight	% Weight
Corals	2	0.35	3.36	0.6
Molluscs	11	1.95	2.69	0.48
Crabs	366	64.89	300.13	53.53
Fishes	82	14.54	97.72	17.43
Reptiles	22	3.9	14.21	2.53
Birds	10	1.77	1.64	0.29
Mammals	71	12.59	140.95	25.14
Total	564		560.71	

Conclusions

The most important trend observed in the Chiquiuitan faunal data is seen in the chronological patterning of specific fauna. Emery and Kay (2009:9) note,

> the specific fauna of the assemblage and their chronological patterning does reveal possible changes in focus through time from a heavy reliance on crab, shellfish, and fish in the first period of occupation (consistent with Morgan's hypothesized intensive estuarine exploitation), to a much more diverse focus on crabs, fish, artiodactyls, turtles, and iguanids and an virtual disappearance of shellfish in the second phase of occupation (consistent with a possible shift to a more diverse food base during a period of resource manipulation), to a focus once again on crabs, shellfish, and fish during the final phase. This last pattern seems somewhat at odds with the proposed intensive agricultural production but a feature of earl agricultural coastal communities does seem to be a reduction in the diversity of aquatic and shoreline gathered resources as time must be committed to agricultural activities.

Thus, the zooarchaeological data provide valuable information regarding subsistence activities related to animal exploitation in the Formative period. As stated above, the faunal assemblage at Chiquiuitan reflects an expected pattern considering the changes seen in other areas from this time period.

Appendix I

Study of Macrobotanical Remains

Data Produced by Andrew R. Wyatt and Kathryn E. Brayton

Andrew Wyatt and Kathryn Brayton (2010) examined macrobotanical remains collected in the PACHI 2006 and 2007 seasons at Chiquiuitan. The analysis took place in the laboratory of Dr. Wyatt at the University of Illinois, Chicago. The objectives of the research were to identify plant remains for better understanding the exploitation of wild flora, the possible cultivation of domesticated species, and the conditions of the paleoenvironment.

In total, 180 soil samples were processed through flotation to collect macrobotanical remains. Fifty samples were analyzed in this analysis. Early in the study, it was clear that the Chiquiuitan environment did not favor substantial preservation of botanical remains. The collected materials were sparse and uncarbonized. Since the site of Chiquiuitan is regularly flooded and the tropics do not preserve botanical specimens well, it is interpreted that the identified plant remains from the site are modern or more recent in origin.

The majority of the plant assemblage is identified as Spermatophyte Tissue or Angiosperm plant parts (Table I-1). Spermatophyte Tissues are from seed bearing plants, but further identification is not possible due to poor preservation. Angiosperm plant parts are seeds or parts of seed bearing plants that are also too damaged for further identification.

Of the identifiable, uncarbonized remains, items from the Asteraceae and Poaceae families were the most prevalent. These weeds species are indicative of disturbed or abandoned areas. Other disturbance species also come from the families Melastomaceae, Convolvulaceae, Cucurbitaceae, and Phytolaccaceae, as well as many Pteridophyta sporangia. These botanical remains suggest a cleared environment, which fits the modern case for Chiquiuitan, occupying cattle pasture land.

Woody plant parts found pine (*Pinus*) and palms (Arecacea). Seeds or plant parts were identified from the liana vine *Cissus verticillata* and the wetland plant *Rhynchospora cephalotes.* Also recovered were papaya (*Carica papaya*) and tomatillo (*Physalis angulata*). Due to their uncarbonized state and collection from upper levels in excavation, it is probably that these plant remains indicate recent intrusions illustrating the disturbed nature of this wetland environment.

The majority of the carbonized remains are from hardwood charcoal. All of these remains were too small or fragmented to identify below the family level. With this limited taxonomic information, little information has been gained from this identification. However, of interest is one identified Pine specimen. This object came from a Cangrejo level and could very well indicate the import of pine wood to the site from the highlands. Lastly, two carbonized remains of maize were identified, although poorly preserved. One came from a Tamarindo level and the other from a probable Tamarindo level. Although the question of whether these are recent intrusive items or archaeological materials looms large, the identification of maize in archaeological contexts suggests that macrobotanical studies could provide useful information in future studies.

Wyatt and Brayton state,

> "The systematic recovery and analysis of archaeobotanical remains from the Pacific coast of Guatemala, particularly from the Early and Middle Formative period, is rare. Too often projects neglect this important dataset due to the difficulty of conducting flotation in the field, the relatively few number of individuals trained in the identification of archaeological plant remains, and, most importantly, the poor preservation of plant remains in the humid tropics. However, the regular practice of sample collection and flotation can supply an accumulation of archaeobotanical material that can yield valuable data."

Table I-1. Archaeobotanical data.

Sample No.	No.	Wt. (g)	Taxonmomic Plant Name	Plant Part	Lot #	Context	Date
10002-001	1	>.01g	Pteridophyta	Sporangia	07-01-17B	Floor	Cangrejo
10002-002	1	>.01g	Asteraceae	Flower/bud	07-01-17B	Floor	Cangrejo
10002-003	1	>.01g	Poaceae	Flower/bud	07-01-17B	Floor	Cangrejo
10003-001	1	>.01g	Angiosperm	Seed	07-01-17C	Floor	Cangrejo
10003-002	1	>.01g	Poaceae	Seed	07-01-17C	Floor	Cangrejo
10005-001	1	>.01g	Asteraceae	Flower/bud	07-01-17E	Floor	Cangrejo
10005-002	1	>.01g	Spermatophyte	Tissue	07-01-17E	Floor	Cangrejo
10006-001	3	>.01g	Poaceae	Flower/bud	07-01-17F	Floor	Cangrejo
10007-001	1	>.01g	Hardwood	Charcoal	07-01-17G	Floor	Cangrejo
10009-001	1	>.01g	Asteraceae	Flower/bud	07-01-17I	Floor	Cangrejo
10010-001	1	>.01g	Asteraceae	Flower/bud	07-01-17J	Floor	Cangrejo
10011-001	1	>.01g	Spermatophyte	Tissue	07-01-17K	Floor	Cangrejo
10012-001	1	>.01g	Asteraceae	Flower/bud	07-01-17L	Floor	Cangrejo
10016-001	5	>.01g	Pteridophyta	Sporangia	07-04-04P	Floor	Cangrejo
10016-002	2	>.01g	Pteridophyta	Sporangia	07-04-04P	Floor	Cangrejo
10016-003	4	>.01g	Pteridophyta	Sporangia	07-04-04P	Floor	Cangrejo
10016-004	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-005	2	>.01g	Hardwood	Charcoal	07-04-04P	Floor	Cangrejo
10016-006	1	>.01g	*Physalis angulata* L. (Solanaceae)	Seed	07-04-04P	Floor	Cangrejo
10016-007	3	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-008	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-009	4	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-010	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-011	2	>.01g	Hardwood	Charcoal	07-04-04P	Floor	Cangrejo
10016-012	1	>.01g	Gastropod	shell	07-04-04P	Floor	Cangrejo
10016-013	5	>.01g	Asteraceae	Flower/bud	07-04-04P	Floor	Cangrejo

10016-014	1	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-015	2	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-016	1	>.01g	Convolvulaceae	Seed	07-04-04P	Floor	Cangrejo
10016-017	2	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-018	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-019	1	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-020	6	>.01g	Hardwood	Charcoal	07-04-04P	Floor	Cangrejo
10016-021	1	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-022	2	>.01g	Angiosperm	Seep Pod	07-04-04P	Floor	Cangrejo
10016-023	11	>.01g	*Cissus verticillata* (Vitaceae)	Seed	07-04-04P	Floor	Cangrejo
10016-024	2	0.2g	Hardwood	Wood	07-04-04P	Floor	Cangrejo
10016-025	2	0.2g	Aracaceae	Wood	07-04-04P	Floor	Cangrejo
10016-026	1	>.01g	Pteridophyta	Sporangia	07-04-04P	Floor	Cangrejo
10016-027	2	>.01g	*Carica papaya* (Caricaceae)	Seed	07-04-04P	Floor	Cangrejo
10016-028	1	>.01g	Angiosperm	Seed	07-04-04P	Floor	Cangrejo
10016-029	1	>.01g	Cucurbitaceae	Seed	07-04-04P	Floor	Cangrejo
10016-030	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10016-031	1	>.01g	Spermatophyte	Tissue	07-04-04P	Floor	Cangrejo
10017-001	6	0.5g	Asteraceae	Flower/bud	07-01-11B	Floor	Cangrejo
10017-002	2	>.01g	Spermatophyte	Tissue	07-01-11B	Floor	Cangrejo
10017-003	1	>.01g	Hardwood	Wood	07-01-11B	Floor	Cangrejo
10017-004	1	>.01g	Poaceae	Flower/bud	07-01-11B	Floor	Cangrejo
10018-001	1	>.01g	Asteraceae	Flower/bud	07-01-11C	Floor	Cangrejo
10018-002	4	>.01g	Pteridophyta	Sporangia	07-01-11C	Floor	Cangrejo
10018-003	7	0.9g	Hardwood	Wood	07-01-11C	Floor	Cangrejo
10018-004	7	>.01g	Poaceae	Flower/bud	07-01-11C	Floor	Cangrejo
10018-005	1	>.01g	Hardwood	Hard wood	07-01-11C	Floor	Cangrejo
10018-006	6	0.2g	Asteraceae	Flower/bud	07-01-11C	Floor	Cangrejo
10018-007	2	>.01g	Spermatophyte	Tissue	07-01-11C	Floor	Cangrejo
10018-008	1	>.01g	Pteridophyta	Sporangia	07-01-11C	Floor	Cangrejo

10018-009	1	>.01g	Gastropod	Shell	07-01-11C	Floor	Cangrejo
10018-010	1	>.01g	Angiosperm	Seed	07-01-11C	Floor	Cangrejo
10018-011	1	>.01g	Phytolaccaceae	Seed	07-01-11C	Floor	Cangrejo
10019-001	1	>.01g	Spermatophyte	Tissue	07-01-11D	Floor	Cangrejo
10019-002	1	>.01g	Pteridophyta	Sporangia	07-01-11D	Floor	Cangrejo
10019-003	19	0.3g	Asteraceae	Flower/bud	07-01-11C	Floor	Cangrejo
10019-004	25	0.6g	Poaceae	Flower/bud	07-01-11D	Floor	Cangrejo
10020-001	1	>.01g	Pteridophyta	Sporangia	07-01-11M	Floor	Cangrejo
10020-002	3	>.01g	Asteraceae	Flower/bud	07-01-11M	Floor	Cangrejo
10021-001	1	>.01g	Spermatophyte	Tissue	07-01-11E	Floor	Cangrejo
10021-002	21	0.4g	Asteraceae	Flower/bud	07-01-11E	Floor	Cangrejo
10021-003	5	>.01g	Pteridophyta	Sporangia	07-01-11E	Floor	Cangrejo
10021-003	3	>.01g	Hardwood	Wood	07-01-11E	Floor	Cangrejo
10022-001	3	>.01g	Asteraceae	Flower/bud	07-01-11F	Floor	Cangrejo
10022-002	82	0.2g	Asteraceae	Flower/bud	07-01-11F	Floor	Cangrejo
10022-003	4	>.01g	Hardwood	Wood	07-01-11F	Floor	Cangrejo
10022-004	1	>.01g	Poaceae	Flower/bud	07-01-11F	Floor	Cangrejo
10022-005	2	>.01g	Angiosperm	Flower/bud	07-01-11F	Floor	Cangrejo
10023-001	1	>.01g	Spermatophyte	Tissue	07-01-11G	Floor	Cangrejo
10023-002	8	>.01g	Poaceae	Flower/bud	07-01-11G	Floor	Cangrejo
10023-003	5	>.01g	Hardwood	Wood	07-01-11G	Floor	Cangrejo
10023-004	>100	.03g	Asteraceae	Flower/bud	07-01-11G	Floor	Cangrejo
10024-001	15	>.01g	Spermatophyte	Tissue	07-02-04	Fill	Cangrejo
10024-002	5	>.01g	Hardwood	Wood	07-02-04	Fill	Cangrejo
10024-003	1	>.01g	Spermatophyte	Tissue	07-02-04	Fill	Cangrejo
10024-004	3	>.01g	Hardwood	Wood	07-02-04	Fill	Cangrejo
10024-005	1	>.01g	*Cissus verticillata* (Vitaceae)	Seed	07-02-04	Fill	Cangrejo
10024-006	2	>.01g	Angiosperm	Seed	07-02-04	Fill	Cangrejo
10024-007	10	0.2g	Angiosperm	Seed	07-02-04	Fill	Cangrejo
10024-008	2	>.01g	*Carica papaya* (Caricaceae)	Seed	07-02-04	Fill	Cangrejo

10024-009	1	>.01g	Asteraceae	Flower/bud	07-02-04	Fill	Cangrejo
10024-011	15	1.0g	Hardwood	Charcoal	07-02-04	Fill	Cangrejo
10024-012	4	1.0g	Hardwood	Charcoal	07-02-04	Fill	Cangrejo
10024-013	10	0.7g	Spermatophyte	Tissue	07-02-04	Fill	Cangrejo
10024-014	1	>.01g	Spermatophyte	Tissue	07-02-04	Fill	Cangrejo
10024-015	1	>.01g	*Physalis angulata* L. (Solanaceae)	Seed	07-02-04	Fill	Cangrejo
10024-016	1	>.01g	Angiosperm	Seed	07-02-04	Fill	Cangrejo
10024-017	1	>.01g	Pinus sp.	Charcoal	07-02-04	Fill	Cangrejo
10025-001	2	>.01g	Spermatophyte	Tissue	07-02-05	Floor	Cangrejo
10025-002	2	>.01g	Asteraceae	Flower/bud	07-02-05	Floor	Cangrejo
10025-003	1	>.01g	Spermatophyte	Tissue	07-02-05	Floor	Cangrejo
10025-004	1	>.01g	Spermatophyte	Tissue	07-02-05	Floor	Cangrejo
10026-001	3	>.01g	*Cissus verticillata* (Vitaceae)	Seed	07-02-06	Fill	Cangrejo
10026-002	2	>.01g	Spermatophyte	Tissue	07-02-06	Fill	Cangrejo
10027-001	1	>.01g	Hardwood	Wood	07-02-07	Fill	Cangrejo
10028-001	1	>.01g	*Zea mays*	Kernel	07-03-04	Fill	Sin Diagnosticos
10028-002	2	>.01g	Asteraceae	Flower/bud	07-03-04	Fill	Sin Diagnosticos
10028-003	3	>.01g	Spermatophyte	Tissue	07-03-04	Fill	Sin Diagnosticos
10028-004	4	0.5g	Hardwood	Wood	07-03-04	Fill	Sin Diagnosticos
10028-005	3	>.01g	Pteridophyta	Sporangia	07-03-04	Fill	Sin Diagnosticos
10029-001	2	>.01g	*Zea mays* (?)	Kernel	07-04-02	Fill	Tamarindo
10029-002	2	>.01g	Spermatophyte	Tissue	07-04-02	Fill	Tamarindo
10029-003	2	>.01g	*Cissus verticillata* (Vitaceae)	Seed	07-04-02	Fill	Tamarindo
10029-004	1	>.01g	Asteraceae	Seed	07-04-02	Fill	Tamarindo
10029-005	1	>.01g	Angiosperm	Seed	07-04-02	Fill	Tamarindo
10029-006	3	>.01g	*Carica papaya* (Caricaceae)	Seed coat	07-04-02	Fill	Tamarindo
10029-007	7	0.2g	Hardwood	Wood	07-04-02	Fill	Tamarindo
10029-008	1	>.01g	*Carica papaya* (Caricaceae)	Seed	07-04-02	Fill	Tamarindo
10029-009	22	>.01g	Hardwood	Charcoal	07-04-02	Fill	Tamarindo
10029-010	11	>.01g	Spermatophyte	Tissue	07-04-02	Fill	Tamarindo

10029-011	3	>.01g	Hardwood	Charcoal	07-04-02	Fill	Tamarindo
10029-012	3	>.01g	Spermatophyte	Tissue	07-04-02	Fill	Tamarindo
10030-001	3	>.01g	*Cissus verticillata* (Vitaceae)	Seed	06-01-04	Fill	Cangrejo Tardio
10030-002	1	>.01g	Angiosperm	Seed	06-01-04	Fill	Cangrejo Tardio
10030-003	2	>.01g	Spermatophyte	Tissue	06-01-04	Fill	Cangrejo Tardio
10030-004	2	>.01g	Poaceae	Flower/bud	06-01-04	Fill	Cangrejo Tardio
10030-005	1	>.01g	Spermatophyte	Tissue	06-01-04	Fill	Cangrejo Tardio
10030-006	1	>.01g	Spermatophyte	Tissue	06-01-04	Fill	Cangrejo Tardio
10030-007	7	>.01g	Hardwood	Wood	06-01-04	Fill	Cangrejo Tardio
10031-001	17	0.5g	Asteraceae	Flower/bud	07-01-07	Fill	Cangrejo
10031-002	13	>.01g	Pteridophyta	Sporangia	07-01-07	Fill	Cangrejo
10034-001	1	>.01g	Asteraceae	Seed pod	07-05-05	Fill	Cangrejo
10034-002	3	>.01g	Angiosperm	Seed pod	07-05-05	Fill	Cangrejo
10034-003	6	>.01g	Hardwood	Charcoal	07-05-05	Fill	Cangrejo
10035-001	1	>.01g	Melastomaceae	Seed	04-01-07	Fill	Tamarindo (Mezclado)
10035-002	2	>.01g	Spermatophyte	Tissue	04-01-07	Fill	Tamarindo (Mezclado)
10036-001	1	>.01g	Spermatophyte	Tissue	05-01-19	Round Feature	Huiscoyol
10036-002	26	0.6g	Hardwood	Charcoal	05-01-19	Round Feature	Huiscoyol
10036-003	2	>.01g	Spermatophyte	Tissue	05-01-19	Round Feature	Huiscoyol
10036-004	2	>.01g	Hardwood	Wood	05-01-19	Round Feature	Huiscoyol
10036-005	1	>.01g	Angiosperm	Seed	05-01-19	Round Feature	Huiscoyol
10037-001	2	>.01g	Hardwood	Wood	05-01-20	Fill	Huiscoyol
10039-001	>20	0.2g	Hardwood	Charcoal	04-01-19	Fill	Cangrejo Temprano
10040-001	4	0.4g	*Cissus verticillata* (Vitaceae)	Seed	04-01-03	Fill	Tamarindo (Mezclado)
10040-002	1	>.01g	Spermatophyte	Tissue	04-01-03	Fill	Tamarindo (Mezclado)
10040-003	1	>.01g	Hardwood	Charcoal	04-01-03	Fill	Tamarindo (Mezclado)
10040-004	>20	0.6g	Angiosperm	Seed	04-01-03	Fill	Tamarindo (Mezclado)
10041-001	1	>.01g	Asteraceae	Flower/bud	07-01-06	Fill	Cangrejo Tardio
10041-002	1	>.01g	Pteridophyta	Sporangia	07-01-06	Fill	Cangrejo Tardio
10041-003	1	>.01g	Angiosperm	Seed	07-01-06	Fill	Cangrejo Tardio

10041-004	1	>.01g	Spermatophyte	Tissue	07-01-06	Fill	Cangrejo Tardio
10042-001	4	0.3g	Hardwood	Charcoal	07-05-02	Fill	Tamarindo (Mezclado)
10042-002	4	>.01g	Angiosperm	Seed	07-05-02	Fill	Tamarindo (Mezclado)
10042-003	1	>.01g	*Rhynchospora cephalotes* (Cyperaceae)	Seed	07-05-02	Fill	Tamarindo (Mezclado)
10042-004	1	>.01g	Angiosperm	Drupe	07-05-02	Fill	Tamarindo (Mezclado)
10042-005	1	>.01g	*Cissus verticillata* (Vitaceae)	Seed	07-05-02	Fill	Tamarindo (Mezclado)
10042-006	>20	0.8g	Hardwood	Charcoal	07-05-02	Fill	Tamarindo (Mezclado)
10043-001	1	>.01g	Angiosperm	Seed	07-03-06	Fill	Cangrejo
10045-001	1	>.01g	Hardwood	Charcoal	05-01-05	Fill	Tamarindo
10045-002	12	>.01g	Pteridophyta	Sporangia	05-01-05	Fill	Tamarindo
10047-001	2	>.01g	Hardwood	Charcoal	04-01-04	Fill	Tamarindo (Mezclado)
10047-002	1	>.01g	Pteridophyta	Sporangia	04-01-04	Fill	Tamarindo (Mezclado)
10048-001	>20	0.4g	Asteraceae	Flower/bud	07-01-04	Floor	Cangrejo Tardio
10048-002	8	>.01g	Pteridophyta	Sporangia	07-01-04	Floor	Cangrejo Tardio
10048-003	2	>.01g	Angiosperm	Seed	07-01-04	Floor	Cangrejo Tardio
10048-004	1	>.01g	Spermatophyte	Tissue	07-01-04	Floor	Cangrejo Tardio
10049-001	1	>.01g	Angiosperm	Seed	05-01-03	Fill	Tamarindo
10049-002	1	>.01g	*Rhynchospora cephalotes* (Cyperaceae)	Seed	05-01-03	Fill	Tamarindo

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