Excavating the Past for the Future: 
A Synthesis of Marin County Prehistoric Archaeology

by

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20 November 2009

Date
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Thesis by  
Eileen Barrow  

ABSTRACT  

Purpose of Study:  

The goal of this thesis is to lay a strong foundation on which future research can build. To accomplish this goal I will create a synthesis of the Marin County archaeological data (excluding Point Reyes National Seashore), primarily using information generated by cultural resources management excavation reports. Specifically, I will examine data pertaining to prehistoric research themes such as cultural chronology, settlement and subsistence patterns, technology, and economic and social organization. Most of the data needed to conduct this work are managed and stored by the California Historical Resources Information System; however, this synthesis would be incomplete if it did not include data generated through other means such as thesis and dissertation work.  

These data will be used to build a framework that 1) reflects the current state of research in prehistoric archaeology in Marin County, 2) identifies research 'dead zones', and 3) identifies research areas that would benefit from further study.  

It is my goal that this thesis will help enhance the work cultural resource managers do by using their data to create a synthesis of Marin County prehistoric archaeology.  

Procedure:  

All cultural resources management (CRM) excavation reports, theses, and dissertations on sites within Marin County (excluding sites within Point Reyes National Seashore) were examined for this study. Data contributing to the archaeological research themes of settlement patterns, site structure, cultural chronology, subsistence, social organization, technological changes, and contact period were extracted from these reports.  

Findings:  

Of the 54 site investigations, only 23 reports provided sufficient archaeological data to contribute to this study. The archaeological information gathered from the 23 excavation reports was synthesized. However, deficiencies were found in several reports.
Conclusions:

Analysis of the reported data show research areas that need further work. Recommendations for filling these ‘gaps’ were made along with recommendations for improving archaeological analysis and CRM report writing. By highlighting these deficiencies I hope to help improve the field of CRM.

Chair:

Signature

MA Program: Cultural Resources Management
Sonoma State University

Date: 20 November 2009
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Chapter 1. Introduction

Archaeologists have been exploring Marin County’s past since the turn of the twentieth century. Most of the archaeological work has been on prehistoric sites and has been driven by state and federal environmental legislation. While the field of cultural resource management has generated a great amount of archaeological data, the work is generally project specific and often times syntheses of great amounts of data are not feasible. Though as more and more data become available about Marin County sites, cultural resources managers are incorporating new findings into broad research themes.

PURPOSE OF STUDY

In order for the field of cultural resources management to best move forward we must understand where we have been and where we stand today. The goal of this thesis is to lay a strong foundation on which future research can build. To accomplish this goal the purpose of this thesis is to create a synthesis of the Marin County archaeological data, primarily using information generated by cultural resources management excavation reports. Specifically, I will examine data pertaining to prehistoric research themes such as cultural chronology, settlement and subsistence patterns, technology, and economic and social organization. Most of the data needed to conduct this work are managed and stored by the California Historical Resources Information System. However, this synthesis would be incomplete if it did not include data generated through other means such as thesis and dissertation work.

These data will be used to build a framework that 1) reflects the current state of research in prehistoric archaeology in Marin County, 2) identifies research ‘dead zones’,
and 3) identifies research areas that would benefit from further study.

It is my goal that this thesis will help enhance the work cultural resource managers do by using their data to create a synthesis of Marin County prehistoric archaeology.

AN IMPORTANT EXCLUSION

Point Reyes National Seashore (PRNS) is a national park within Marin County. A great amount of archaeological work has been done in the park since the 1940s, most of which focused on determining the location of the landing of Sir Francis Drake in 1579.

More recently, under a cooperative agreement between the National Park Service and the Anthropological Research Center (ASC) at Sonoma State University, a document was created that provides an overview of research issues within the park and the adjacent Golden Gate National Recreation Area (Stewart and Praetzellis 2003).

Because several studies have already been conducted within the park (Compas 1998; King 1975; Polansky 1998; Schenk 1970; Stewart and Praetzellis 2003), many of which would have overlapped with the goals of this thesis it has been excluded from this study.

THESIS ORGANIZATION

Chapter 2 provides a description of the environmental setting of Marin County. This includes a brief description of the large scale climate and geologic changes that have contributed to the formation of the Bay Area. Following this is a brief description of the current climate, geology, physiology, soils, and hydrology. This is to help give the reader an image of the environmental setting of Marin County when contact occurred between Coast Miwok and Europeans. Understanding environmental changes is important for
understanding changes that could have taken place that would affect archaeological sites. The final two sections of this chapter describe the plants and animals that inhabit the area and were utilized by the Coast Miwok.

Chapter 3 is a brief description of the cultural setting of Marin County which has been inhabited by the Coast Miwok for thousands of years. The ethnographic accounts are based on interviews performed by Isabel Kelly in the 1920s of Tom Smith and Maria Copa, two Coast Miwok descendants who lived in Marin County (Collier and Thalman 1991).

Chapter 4 is a summary of early archaeological work in the county. This includes surveys and excavations primarily prior to 1970. The 1960s and 1970s were a period of time where the field of cultural resources management was being formed. These formative years in Marin County archaeology are also briefly described.

Chapter 5 is a description of the more recent archaeological work that has been conducted within the county, primarily as a result of laws enacted in the 1960s and 1970s. This description includes the percentage of land surveyed and areas that may have received more survey work than others. Also included are brief descriptions of the theses and dissertations written using Marin County sites and a discussion of site damage.

Chapter 6 provides a summary of David Fredrickson’s five archaeological time periods established through the work conducted for his dissertation. A brief discussion of chronological use is provided.

Chapter 7 is a site-by-site description of the findings of the excavations conducted on sites within the county. Although it is explained in more detail at the beginning of this chapter, not every site excavated in Marin County was described in this thesis. Only sites
that exhibited enough information that would aid in the synthesis portion of this study were included.

In chapter 8 I use the data from Chapter 7 to discuss the findings from these reports as they relate to the archaeological themes of site structure, cultural chronology, subsistence, social organization and interaction, technological changes, settlement patterns, and contact period studies. Based on these data, or lack thereof, recommendations for future research as it relates to those seven themes are provided in Chapter 9.

Also included in Chapter 9 are future research recommendations made by the Federated Indians of Graton Rancheria. I felt it was important to include their wishes into this thesis since it is their culture archaeologists are studying, often times with or without their consent. I am thankful that I received their consent and encouragement before this work began and I hope that all the archaeological work I do in their territory is work they find respectful and beneficial for their people.
Chapter 2. Environmental Setting

This chapter is not meant to give the impression that prehistoric Native Americans were 'ecologically noble savages' or the first environmentalists (Diamond 1986; Redford 1990). Rather, its purpose is to describe the environment in which the Coast Miwok and their predecessors lived and the natural resources they utilized and managed.

Environmental information is important to archaeologists for two reasons. The first reason is that certain sites are often located in certain types of environmental settings. By explaining the environment of Marin County I am helping to set the stage for understanding the types of sites likely to be found in the county. The second reason environmental information is important is because it is constantly changing. A region could go through a drought which would have temporary effects of plant and animal resources. Something more dramatic, like an ice age, would last thousands of years and would have long term effects on people’s subsistence strategies.

PALEO-ENVIRONMENT

Climate

Although research is continuously being conducted on the peopling of the Americas, and there is growing evidence suggesting an earlier arrival date (see Erlandson et al. 2007 for discussion), the current generally agreed upon date for first migration to California is approximately 12,500 years ago (kya). Because of this it is important to understand how the paleo-environment changed over the millennia.

Between 15 and 100,000 (kya) the earth went through several periods of temperature fluctuations. These warming and cooling periods, or stadials (cool periods)
and interstadials (warming periods) caused major disruptions to plant and animal life around the world. These fluctuations were first identified and named after Willi Dansgaard and Hans Oeschger and are known as Dansgaard/Oeschger events. Dansgaard and Oeschger analyzed oxygen isotopes in glacial ice cores collected from Greenland which showed approximately twenty interstadial periods (Burroughs 2005:37).

The last and coldest stadials occurred between 18-25 kya during what is known as the Last Glacial Maximum (LGM). Continental ice sheets reached their fullest volume 21 kya (Burroughs 2005:40). Frozen ocean water caused sea levels to drop 130 meters from current levels (Burroughs 2005:41). This sea level change had a profound affect on the San Francisco Bay Area. Fifteen thousand years ago there would not have been a ‘Golden Gate’. Instead the mouth of the Sacramento River would have been at the Farallon Islands and what is now San Francisco Bay would have been a savannah like valley (Parkman 2006:1).

After this last ice age event, temperatures began to warm around the world. As temperatures rose, ice sheets began to recede, and ocean levels began to rise. Studies based on coring data around San Francisco Bay and the Pacific Coast showed that beginning approximately 11 kya ocean water began to touch the base of the Golden Gate, which now lies 70 meters under water (Atwater 1979; Atwater et al. 1977). Over the next three thousand years Bay waters rose at a rate of 2 centimeters per year. Between 8 and 6 kya this rate slowed to 1 centimeter per 10 years. This slowing allowed for the development of marshlands, which are known locations for archaeological sites (Bickel 1978:11-12). By approximately 7,000 years ago ice sheets had receded to their state prior to the affects of recent global warming. Because of the amount of water released from
glaciers and from rebound, (an uplift of the land after the weight of the glaciers was removed) earth’s oceans reached within 5 meters of current eustatic or global sea levels at approximately 4,000 years ago (Booth et al. 2004:30). Although the speed sea levels rose slowed down it did not stop and waters continued to rise which buried sites located along the Bay edge as sediments built up (Bickel 1978:9; Moratto 1984:221).

Along with the development of Bay marshlands, other plant and animal communities were affected by rising temperatures. Beginning five thousand years ago, pollen analysis shows an increase in Douglas fir forests (West et al. 2007:21-23). Coniferous forest plants, such as pine and cedar which prefer cooler temperatures, were replaced by Douglas fir forest, redwood forest, oak woodland, and chaparral. This increase continued until circa AD 500 to AD 800 when pollen analysis shows a period of cooler temperatures and increase in pine forests. After this point oaks and Douglas fir once again replaced pines (West et al. 2007:22).

This information is most pertinent to migration theory discussion. Receding ice sheets would have affected an inner continental migration route, while rising sea levels would have had affected coastal migration routes and would have buried sites located adjacent to the ocean and bay.

Geology
Just over 200 million years ago, North American began to inch its way closer to the Asian continent. At this time most of California was underwater with the western edge of North America being located almost to the present day western edge of Nevada. This western journey caused fissures to form and some of the Pacific Ocean to drain into the Earth’s mantle. This caused the lighter ocean floor to rise and buckle into folds
creating most of today’s California (Alt and Hyndman 2000:1). Later volcanic activity and the eventual grinding of the North American Plate against the Pacific Plate continued to form California’s topography. Californian continues to be tectonically active. This geological activity has formed numerous distinctive rocks and minerals which were used by Native Americans for thousands of years.

CURRENT ENVIRONMENTAL CONDITIONS

Climate
The climate of Marin County is classified as Mediterranean, characterized by cool wet winters and warm dry summers (Felton 1965:21). Overall, however, temperatures remain fairly moderate. Although it has a Mediterranean climate, the county’s proximity to the Pacific Ocean and its advection fog reduces temperatures which moderate temperatures even further. While this temperature moderating quality affects the entire county, it mostly affects the coast, especially lands west of the California Coast Ranges. These hills and mountains regulate climate by lessening the amount of rain and fog that the eastern portion of the county receives (Kozloff and Beidleman 1994:9-10). Because of the cooling effects of fog, Point Reyes is one of the coolest places in the United States during the summer months (Felton 1965:21).

Geology
The geology of Marin County is comprised largely of Franciscan Formation rocks (Jennings and Burnett 1961:1.c.; Koenig 1963: 1.c.). This large formation extends from Santa Barbara to Southern Oregon and can also be found on Santa Catalina Island (Bailey, Irwin, and Jones 1964). It consists of greywacke, shale, conglomerate, chert, minor lenses of limestone, and glaucophane schists and related metamorphic rocks.
(Jennings and Burnett 1961; Koenig 1963). There are also smaller geologic units in Marin County. Franciscan Volcanic and Metavolcanic rocks contain greenstone, basalt, and diabase. Upper Cretaceous Marine Sedimentary Rocks contain massive pebble and cobble conglomerate, unnamed arkosic sandstone, quartzite sandstone, and thin-bedded shales, pyroclastic. Pliocene Volcanic rocks from Middle and/or Lower Pliocene Marine Sedimentary contain tuffs, tuff breccias, agglomerates, water-laid sands, gravels, diatomaceous clays and silts, and minor pumice and perlite. Mesozoic Ultrabasic Intrusive Rocks contain serpentine, peridotite, dunite, pyroxenite, and minor amounts of silica-carbonate rocks derived from alteration of serpentine (Jennings and Burnett 1961; Koenig 1963). Point Reyes contains Mesozoic granite, Middle Miocene Marine Sedimentary rocks, and Upper and Middle and/or Lower Pliocene Marine Sedimentary rocks (Galloway 1977; Jennings and Burnett 1961; Koenig 1963). This is most relevant because granite, sandstone, and chert were used for making stone tools by local Native Americans.

For many years, archaeologists have observed places throughout the state where Native Americans mined and quarried rocks and minerals for a variety of purposes (Heizer and Treganza 1944). In Marin County, basalt, chert, glaucophane schist, and granite are native rocks that were used by Coast Miwok. All of these rocks can be found on the surface and in creek beds. With the exception of chert, none were quarried. Basalt was used primarily for making mortars, pestles, and some chipped stone tools. Basalt is found in cobble sized pieces thus quarrying is unnecessary. Chert is a sedimentary rock primarily composed of microscopic grains of quartz (Alt and Hyndman 2000:348). This cryptocrystalline stone was used by Native Americans throughout California for making
chipped stone tools. Chert is found in cobble sized pieces, though there are numerous outcrops, especially along the coast, were quarried. Schist has been used for choppers, charmstones, net weights, and sometimes for platters. In Marin and Sonoma counties, schist outcrops often contain cupules. Cupules are small, shallow, circular depressions ground into rocks by Native Americans. These cupules were reportedly used in fertility ceremonies (see Gilreath 2007; Jones 2004; Jordan 1995; Price 1999; and Whitley 2000). Granite was used for groundstone implements (e.g., mortars) and for making charmstones and net weights.

Obsidian is the best quality stone for making chipped tools. The only native outcrop is reportedly found on Burdell Mountain (Jackson 1986:50). Jackson reported that the outcrop showed no signs of quarrying, did not seem to be of adequate quality for making tools, and stated that this obsidian source had not yet been found in archaeological sites (1986:50). The nearest used obsidian source is found in Annadel State Park at the east edge of Santa Rosa (Heizer and Trezanza 1944:315). While this source is the closest, the Napa Valley obsidian is much better quality. Both Annadel and Napa Valley obsidians show up in the archaeological record frequently. Borax Lake and Mt. Konocti are two other obsidian sources, both of which are located in Lake County (Heizer and Trezanza 191944:315). They are considered poorer quality than Annadel and Napa Valley and are much farther away from Marin County; both are likely reasons why specimens from these sources show up in the archaeological record less often.

**Physiography**

The highest point in Marin County is Mt. Tamalpais at 2571 feet. There are five other points with elevations above 1500 feet in the county which include, Big Rock.
(1887ft.), Pine Mountain (1762ft.), Loma Alta (1592ft.), Burdell Mountain (1558ft.), and Hicks Mountain (1532ft.). These mountains are located in the central portion of the county; and the mountain, or more appropriately hill, ‘range’ trends relatively north-south. While this makes east-west travel somewhat more difficult, there are no extreme heights, relatively speaking, that would prevent it.

Soils

Soils in Marin County are diverse and support the growth of a variety of plants. Of particular note is the presence of serpentine soils. While the minerals in this soil type can make it difficult for some plants to live, other plants thrive on it (Kozloff and Beidleman 1994:11). Many of the mudflats along San Pablo and San Francisco bays have been filled and levied, both purposefully and accidentally from Sierra Nevada mining runoff.

This filling and levying activity has had a significant impact on plants and animals living in and adjacent to the Bay. It has been estimated that hydraulic placer mining in the Sierra Nevada between 1850 and 1914 added 1.146 billion cubic yards of deposits into the Carquinez Strait, Suisun, San Pablo, and San Francisco bays (Gilbert 1917:37). These filled areas have been used for agricultural purposes, a public air field, an army air field, San Quentin State Prison, and commercial and residential properties. Sediment deposition would have buried low lying archaeological deposits along the Bay shore. During his early 20th century survey of San Francisco Bay shellmounds, Nels Nelson noted that several sites were obliterated or destroyed by natural causes (Nelson 1909:144). He further states that 30 sites were subject to wave action due to their proximity to shore, some of which seemed to have a foundation below sea level.
Unfortunately, as sea levels rise due to elevating global temperatures, this damage will continue to occur.

**Hydrology**

Estero Americano, Estero de San Antonio, Walker, Olema, Lagunitas, San Antonio, Novato, Miller, and San Anselmo creeks drain Marin County’s freshwater into Tomales, San Pablo, and San Francisco bays. There are also numerous springs located throughout the county. There are no naturally occurring lakes in the county. Many large village sites are found near the deltas of creeks with the bays, though they can also be found along these creeks in land (Nelson 1909:316, 322, 325).

**Plants**

Twelve plant communities have been identified in Marin County: redwood forest, tanbark oak-madroño woodland, oak-buckeye woodland, Douglas fir forest, bishop pine forest, chaparral, coastal brush, grassland, stream bank and lakeshore groves or thickets, freshwater marsh, saltwater marsh, and dunes (Howell 1970:6-21; Kozloff and Beidleman 1994:12-21). All of these communities contain species that were utilized and managed by the Coast Miwok. Several species of seaweed were also harvested from the ocean and eaten (Dawson 1966).

Several plants were important to Native Americans. Plants provided 60-70% of nourishment for most California Native Americans (Anderson 2005:242). For Coast Miwok, mush and bread made from acorns were a staple. Occasionally buckeye was used as well, but acorns were preferred. Several plants were woven into baskets and mats including bulrush, sedge, dogwood, hazel, redbud, willow, tule, oak, and grey pine. Tobacco was burned for recreational, medicinal, and ceremonial purposes.
People have been managing their environment for thousands of years. There are several ways that Native Americans encouraged growth of certain plants. Fire is the most affective and large scale tool Native Americans used. Pruning, selective harvesting, and weeding were other common practices (Anderson 1996:159). There have been some debates as to whether or not some California Native American tribes can be classified as either hunter/gatherers or foragers because of the amount of plant tending that occurred (Lightfoot and Parrish 2009). As Thomas Ledig, a conservation geneticist, pointed out, “The transition from foraging to farming is not a sharp break, rather it is a gradation” (quoted in Anderson 2005:252). With interest growing over this subject, there will likely be more studies into Native anthropogenic landscapes.

Animals
Terrestrial mammals include several species of rodents, fox, raccoon, ringtail, river otter, skunk, weasel, mountain lion, beaver, rabbit, deer, and bear which call or called Marin County home. Grizzly bears at one time inhabited all of California but are now completely extirpated from the state (Jameson, Jr. and Peeters 1988:20). Black bears can only be found in Sonoma County and north. Another species that inhabited Marin County is elk, though now these animals are confined to the north end of Point Reyes. Marine mammals include sea lions, sea otters, seals, and whales (For further information see Jameson and Peeters 1988 and for terrestrial mammals; Ingles 1947 for both terrestrial and sea mammals).

Several species of fish inhabit Marin County streams. Freshwater species include pike-minnow, roach, sucker, sculpin, splittail, and tule perch. Some common saltwater species that inhabit the bay environments include eel, sculpin, jacksmelt, rockfish, sharks,
surfperch, and topsmelt. Anadromous fish indigenous to Marin County include salmon species and sturgeon (For more information see Sheldon 1999 and Weymouth 1921 for shellfish and saltwater fish).

Several varieties of birds inhabit Marin County year round as well as seasonally. Migratory birds occupy the wetlands to the north of San Pablo Bay. Some of these species include loons, cranes, herons, pelicans, and ducks and geese species. Throughout the county are several species of raptors, songbirds, owls, and many others (e.g. quail) (For more information on birds, see Clark 1995; Grinnell and Miller 1944; Local Birds, Inc. 1995; and Shuford 1993).

Birds and mammal bones were used as tools, for making whistles, and for beads. Animal hides would have been used for clothing and blankets, and other portions of bird and animal carcasses would likely have been utilized as well. Bay and ocean dwelling plants, animals, and mollusks were also utilized. Archaeologically, the most striking evidence of shellfish utilization are the massive shell mounds found around the Bay Area. Although their exact purpose has been debated (see later discussion) there is little doubt that a great amount of work went into the development of these mounds. Smaller shell middens can be found up and down the coast. Jewelry, tools, and money were made from shell.

Archaeologically, plant and animal subsistence and uses are a very important part of understanding how cultures lived and changed over time. For example, changes in subsistence can indicate environmental changes, over-hunting or over-harvesting, and migration patterns. Understanding the prehistoric environment that is being studied will help archaeologists in their work.
Chapter 3. Cultural Setting

The purpose of this chapter is to briefly describe the cultural setting for the reader. The Coast Miwok were defined by their language and they primarily inhabited Marin County, though their territory extends just beyond the county’s boundaries to the north into Sonoma County (Golla 2007:75; Moratto 1984:533). Although the group were defined by their language, they structured themselves into tribelet communities which could be viewed as small nations (Milliken 1995:228-234, 240, 242, 244, 247-251, 254, 255, 260).

Ethnographic information for the Coast Miwok are based on interviews performed by Isabel Kelly in the 1920s of Tom Smith and Maria Copa, two Coast Miwok descendants who lived in Marin County. Kelly’s notes were incorporated into a book in 1991 (Collier and Thalman 1991).

While ethnographic data can help answer questions that cannot always be answered through archaeological work, they should not be taken at face value. Ethnographers, like archaeologists, make mistakes, come with their own biases, and misinterpret information (Agar 1982:780; LeCompte 1987).

Informants often have had their culture damaged by the same culture the ethnographer is from. This creates a divided between the informant and ethnographer that would potentially color the information exchanged. Also, there are secretive or private aspects of people’s societies that one would not always like to disclose to an outsider. This could cause an informant to uniform and misguide the ethnographer. This does not mean it should not be used, just used with caution.
TERRITORY

At contact with Europeans, Coast Miwok territory was bounded on the east by Richardson and San Pablo bays, on the south by San Francisco Bay, and on the west by the Pacific Ocean. The northern boundary is less clear. Tom Smith places the beginning of the western boundary at both Duncan’s Point and the Russian River (Collier and Thalman 1991:28). Samuel Barrett places the beginning of the northern boundary just north of Bodega Bay. The boundary then travels east following Salmon Creek and includes Freestone, Cotati, and Glen Ellen. The eastern boundary lies a little more than halfway between Glen Ellen and Napa (Barrett 1908).

LANGUAGE

The language spoken by the Coast Miwok belongs to the Penutian family (Golla 2007:75; Moratto 1984:533). Golla (2007:75-76) has further subdivided the California Penutian languages into three branches of which the Coast Miwok belong to the Yok-Utian and Miwok-Coastanoan (or Utian) subbranch. This split, Golla hypothesized, occurred approximately 4,000-4,500 years ago. He states that the expansion of the Windmiller Pattern into the San Francisco Bay and Northern Bay areas after 4,000 years ago represents the movement of Utian speakers (Golla 2007:76).

SOCIO-POLITICAL ORGANIZATION

At the time of contact the Coast Miwok were hunter/gatherers who divided themselves into small nations containing a central village or a few villages with small satellite campsites where resources were collected or processed and brought back to the village. Kelly’s statements regarding structure are somewhat confusing as she stated that there was no tribal organization, yet she goes on to say that tribes had male chiefs and
two female leaders. These female leaders consisted of a women chief and a mâien, or leader of the ceremony house (Kelly 1978:419; Parkman 2006a:2). Also the Coast Miwok followed a moiety organization and divided the nations into Land and Water people (Kelly 1978:419).

SUBSISTENCE
The territory of the Coast Miwok contained a variety of resources that would have provided subsistence. Along the Richardson, San Pablo, San Francisco bays, and the Pacific Ocean, shellfish provided a large amount of protein. Sea mammals and seaweed also provided food. Salmon are seasonally available in creeks. In the fall numerous migrating birds inhabited the bay marshes which provide food, feathers, and bone for tools (Kelly 1978:415-416).

Throughout the territory, oak trees provided acorns which were an important staple to their diet. Buckeye trees also provided fruits which needed to be leached, just as acorns did. Trees were privately owned (Collier and Thalman 1991:37).

EUROPEAN CONTACT 1579
It is believed that members of the Coast Miwok were the Native Americans who met with both Sir Francis Drake and Sebastian Rodriguez Cermeño during their voyages to California. After those two contacts, the Coast Miwok were left alone for nearly 200 years until the construction of the San Francisco Presidio and Mission Delores in 1776 (Kelly 1978:414). Even then, Coast Miwok did not enter Mission Delores in significant numbers until 1800 (Milliken 1995:176).

Since 1800 the Coast Miwok have struggled to maintain their culture. In 1992 the tribe reestablished itself and in 2000 it was officially recognized by the United States
government as the Federated Indians of Graton Rancheria (Federated Indians of Graton Rancheria 2009).
Chapter 4. Summary of Early Prehistoric Archaeological Research in Marin County

It is important for one to learn how archaeology changed over time and how CRM developed. This development varied some based on region so it is important to understand how it developed in the local region one is working. This will help one understand the current state of the archaeological work conducted, learn the archaeology of the local region, and show where the gaps in research are. This chapter describes the archaeological changes in Marin County from 1900 to the 1960s, it describes briefly what theories were influencing the different types of archaeology being performed diachronically, and it gives a brief history of the early development of CRM as it relates to Marin County.

There were several factors that led to a number of changes in North American archaeology around the beginning of the nineteenth century. The first of these was that the field was growing and had been for about twenty years. Many universities and museums were creating positions for archaeologists (Trigger 2006:183).

Second, professionals of the four anthropological subfields realized the loss of culture as Native Americans were dying, continuously being rounded up onto reservations, and acculturated by Euro-American religions and customs. The racist belief of Euro-Americans for many years was that Native Americans were brutal savages incapable of becoming 'civilized' or of developing culture (Taylor 1983:23; Trigger 2006:159). This racial ideology was perpetuated in large part by Euro-Americans who were justifying the theft of Native lands as people migrated westward through the United States. John Lubbock’s evolutionary view of indigenous cultures further justified these
actions through ‘science’. Lubbock studied several tribal cultures and concluded that through natural selection these groups had remained inferior to European societies and that they were doomed to extinction because they were biologically and mentally inferior and were incapable of cultural change (Trigger 2006:171-173, 177).

Because it was assumed that Native American culture did not change throughout time, how they were living at the time of contact would tell archaeologists and ethnologists how they had lived thousands of years ago. This belief influenced the type of work archaeologist conducted, which was study on geographic variation (Trigger 2006:180). This assumption coupled archaeologists with ethnologists who were interviewing tribes living on reservations for their cultural knowledge (Trigger 2006:183).

The third and potentially most influential factor affecting the field of archaeology was a paradigm shift from the antiquated and racist ideologies of social evolutionist to culture-historical archaeology. Archaeologists who follow the culture-historical approach to archaeology (sometimes referred to as Boasian archaeology) primarily describe the when and where of cultures. Very little synthesis or interpretation of data was conducted. As archaeologists began to recognize that Native American culture changed through time, regional chronologies were developed (Trigger 2006:288). Some early archaeological investigations in Marin County were guided by this type of research (Beardsley 1954).

EARLY RESEARCH

Surveys

The first archaeological work done in Marin County was broad surveys.
University of California students conducted these surveys for Alfred Kroeber. These surveys consisted of walking the land looking for archaeological sites. Usually only large shell mounds were recorded as these represented villages.

Kroeber was a student of Franz Boas who heavily pushed the culture-historical paradigm. Although Kroeber continued to utilize a Boasian approach to his work, he differed from Boas in that rather than focusing on one specific culture, Kroeber’s interest was on describing many cultures and mapping the locations of these cultures. This interest led to his books, *Handbook of the Indians of California* (1925) and *Cultural and Natural Areas of Native North America* (1939) (McGee and Warms 2004:131).

In 1907 Nels Nelson surveyed from the mouth of the Russian River in Sonoma County south along the Pacific coast into Marin County, Drakes Bay, Drakes Estero, and the east side of Tomales Bay (Beardsley 1954:20; Nelson 1909b). Nelson was looking for shell mounds during his survey. The following year Nelson surveyed the east and south side of Marin County and documented 425 shell mounds along San Francisco, Richardson, and San Pablo bays (Nelson 1909a). Along with documenting the presence of the sites, Nelson spoke with local people and landowners to gain information about sites that had been damaged. He noted that several sites had been eroded from rising sea levels or had been buried (Nelson 1909a:322-323). Human activities were the most harmful impacts to archaeological sites. Nelson noted that people had constructed buildings on mounds, had carted dirt away to use in gardens, ballast for roads and sidewalks, chicken feed, and for tennis court construction (Nelson 1909a:326). Nelson also said that several sites had been looted for their artifacts for displays in museums or
homes. Reportedly, collections from two sites in San Rafael were sent to the British Museum (Nelson 1909a:327).

Jesse Peter, a high school history teacher and amateur archaeologist, did a great amount of survey work that resulted in the finding of over a hundred archaeological sites. He primarily focused his surveys in Sonoma County but did record some sites in northern Marin County during the early part of the 20th century (Beardsley 1954:20). In 1927 Lt. Commander Stewart Bryant surveyed Tomales Bay and Drakes Estero looking for sites as well (Beardsley 1954:20). He also found several sites that were informally recorded.

Excavations

The first excavation of a site in Marin County occurred in 1909 at CA-MRN-76 by Nels Nelson. The following year he excavated Nelson Mound 86c which has subsequently designated CA-MRN-315. In 1914 Edward Gifford also excavated CA-MRN-76 and CA-MRN-315 as well as CA-MRN-3 (Slaymaker 1982:82). These sites were never fully reported but some of the data was used by Gifford (1916), Beardsley (1954), and Kroeber (1925).

In the 1940s the Point Reyes area became a popular location for several archaeological excavations. Many archaeologists were interested in locating the landing place of Sir Francis Drake. As my study is excluding the extensive amount of data from this area, a list of all the sites and excavations will not be chronicled here. However, what is relevant for this study is the work performed by Richard Beardsley (1954). Beardsley’s focus was on developing a chronology and to accomplish this he excavated four sites in the Point Reyes area. The data from these sites and other nearby excavations were used to develop a chronology (Beardsley 1954).
In the 1950s Clement Meighan excavated CA-MRN-115 and Donald McGeein and W.C. Mueller excavated CA-MRN-20 (Meighan 1953; McGeein and Mueller 1955). These excavations were conducted to develop information about the prehistoric Native Americans who lived in this area. In the late 1950s and early 1960s Adan Treganza conducted several excavations throughout Marin County for the purposes of determining where Sir Francis Drake had landed (Treganza 1957, 1958, 1966).

THE 1960S AND EARLY 1970S
Before I describe the radical changes that began to take place in Marin County in the 1960s I will provide a brief background. In 1957 at the young and enthusiastic ages of 12, 13, and 14, respectively, a group of boys, Thomas King and Richard and Alvin Baldwin, discovered an archaeological site and ‘investigated’ it. A few years after this, they and others founded the Northwestern California Archaeological Society (formerly the Petaluma Archaeological Society) (Northwestern California Archaeological Society 1961:1).

The site is located in Marin County on the south side of San Antonio Creek (King, Upson, and Milner 1966). Although years later they described themselves as ‘pot hunters’, the work these boys did later in life led to preservation of numerous cultural resources.

King and others had observed several sites in the San Antonio Valley being damaged or destroyed by a lawn fill contactor (King, Upson, and Milner 1966:3). The Society consisted of avocational, professional, and student archaeologists whose mission was to further prehistoric research in northwestern California through education, salvage fieldwork, and publication (King 1970). They organized several excavations to try to
salvage archaeological information before the sites were destroyed (Northwestern California Archaeological Society 1961-1970).

It was also in the 1960s that students at the Novato Senior High School started their own archaeology club. Although the club conducted less archaeological investigations than the Northwestern California Archaeological Society, it was instrumental in getting an ordinance passed that would begin to protect archaeological sites in Marin County (King 1968:505-506; O’Neil 1972:353).

In the mid-1960s archaeologists from these groups convinced the Marin County Board of Supervisors that an ordinance was needed to protect archaeological sites in the county (King 1968:505-506; O’Neil 1972:353). The passing of this ordinance in Marin County was used as an example of how archaeologists could get protection laws enacted in their local communities (King 1968:506).

It is interesting how cyclical history can be as the increase in archaeological site excavations was driven by a feeling of a loss of data from the local community/field of archaeology. This sentiment cannot have been felt by Marin and southern Sonoma county inhabitants alone. At this time several pieces of state and federal legislation regarding the protection and preservation of cultural resources were passed during the 1960s and 1970s: (National Historic Preservation Act 1966 [amended 2006], National Environmental Policy Act 1969 [amended 1982], California Environmental Quality Act 1970, Coastal Zone Management Act 1972, Housing and Community Development Act 1974, and several others) (Neumann and Sanford 2001:17, 18). It has been noted that the increase in acts and amendments during this time corresponds with population increases in college attendance in post-war times (Newmann and Sanford 2001:16-17).
Many archaeologists conducting salvage projects were being influenced by a major paradigm shift that was occurring in the field. At the time labeled New Archeology, processual archaeology was becoming a popular theory within the field. This concept was not widely used until Lewis Binford promoted it in 1962 (Binford 1962). Although not the first to suggest the field needed reform, Walter Taylor had originally outlined the processual approach (Watson 1983:ix-x).

The intent of site reports also changed during this time from descriptive reports to evaluative reports prompted by local, state, and federal laws. The changes in environmental law that were developing during the 1960s and 1970s created the new field of CRM. As a result of these laws, 75% of the archaeologists in the United States work for either the government or private sector and perform archaeology under the requirements of local, state, or federal laws (Neumann and Sanford 2001:21). Although the development of 'contract archaeology' appears to have bifurcated, the field into consultants and academics, archaeology is what is conducted in all situations. Understanding CRM's past, how it has changed over time, and how archaeology was once practiced in Marin County is important to understand if one is to work in the field and help it to grow.
Chapter 5. Recent Archaeology in Marin County

This chapter describes the archaeological excavations conducted in Marin County since the 1970s. It includes an estimation of survey coverage for the county, the general locations of the surveys, the number of excavations that have take place since the early 1970s, the thesis and dissertation research conducted using sites in Marin County, the amount of potential site destruction, and ‘dead zones’ that appear in the research.

This information is compiled primarily from information collected at the Northwest Information Center of the California Historical Resources Information System, Sonoma State University, in Rohnert Park, California, and a review of theses and dissertations on file at regional colleges and universities. The information in this chapter reflects data generated and processed as of August 2009 (Northwest Information Center File #08-1337).

SURVEY INFORMATION

A review of the base maps at the Northwest Information Center showed that an estimated 21% of the land in Marin County has been archaeologically surveyed (excluding Point Reyes National Seashore). Many surveys were restricted to the east edge of the county where most of the development has occurred. A few isolated areas on the west side of the county, and a few ranches in the center have also been surveyed. The archaeological surveys have resulted in the discovery of 749 prehistoric sites in the county.

EXCAVATIONS

Since 1970 at least 47 sites have been subject to some archaeological excavation. As previously mentioned, many early site investigations were unfunded salvage projects.
As more laws and regulations were enacted, prompting the evaluation of site significance before development could be conducted, investigations occurred more often. Chapter 7 provides a description of all the sites where sufficient analysis was conducted to contribute data to this study.

**THESIS RESEARCH**

This section provides a summary of all the theses or dissertation work where Marin County archaeological sites provided the primary data for the study.

**Chavez, David**


Because this thesis is a descriptive analysis of CA-MRN-170, I refer the reader to Chapter 7 as a summary of all site reports is located there.

**Hansen, Ronald Gene**


The purpose of Hansen's thesis was to look at subsistence patterns and how they were reflected in the collection from CA-MRN-192 (Hansen 1970:1). Hansen observed through his analysis an abandonment of sites by the Upper Emergent Period due to the lack of historical materials in the site. He felt this fit with Gould's model of inland exploitation of acorns occurring around this time (Hansen 1970:60; Gould 1964).

While Hansen did observe subsistence pattern change through time it was a gradual change with the introduction of the mortar and pestle and the bow and arrow versus a radical event (Hansen 1970:63 and 67).

**Riley, Lynn Marie**

1979 Shelter Hill: An Analysis of Faunal Remains and Artifacts from a Marin County Shellmound (04-MRN-14).
Riley compared the shellfish remains and the artifact collection from CA-MRN-14 to look for a relationship between technological and subsistence changes through time for her thesis at San Francisco State University. Her analysis showed that both shellfish and faunal remains exhibited changes in subsistence patterns through time. Bone to shell ratios reflect an increase in hunting over shellfish gathering in the lower levels of the deposit as well as in the highest levels or in the Phase 2/Historic component (Riley 1979:76). In contrast, the middle of the deposit has low bone to shell ratios reflecting an emphasis on shellfish gathering.

The explanation Riley gives for the increased hunting during the Phase 2/Historic component is that it potentially corresponds with the introduction of the bow and arrow into Marin County at approximately AD 1350 (Riley 1979:77-78). As time went on and site inhabitants came into contact with Europeans they would have gained possession of firearms which also would have greatly enhanced their hunting success. While no evidence of firearms was found at the site, domestic cow remains were (Riley 1979:78).

During the Ellis Landing/Emeryville Transition there is a change in the bird and mammal bone quantities. There appeared to be an increase in waterfowl hunting and a decrease in land mammal hunting. It is possible this event occurred at CA-MRN-20 as McGeein and Mueller (1955) reported a similar phenomenon at level 36-48”. However, due to lack of data, it is difficult to compare the two sites though it appears, based on the data presented in the article, that the two sites are contemporaneous.

Van Dyke, Stanley G.
1972 Settlement Patterning in Prehistoric Marin County.

Van Dyke conducted a study of settlement patterns in Marin County which was influenced by Hudson's colonization model (1969) and Southern Anthropological
Research Group’s studies of settlement patterns and how they relate to environmental settings (Van Dyke 1972:128 and 130). Van Dyke admits there are two potentially major flaws in his study. The first is that his mapping of environmental zones is not detailed and the second is that he assumed the environment remained unchanged for 3000 years (Van Dyke 1972:129). Although Van Dyke came to several conclusions he postulates that his study is descriptive and that work is primarily speculative (Van Dyke 1972:131).

General observations Van Dyke made about sites were that they tended to cluster, though he surmised that the clustering was not due to a social factors (which is what King (1970) postulated) but a result of subsistence strategy (Van Dyke 1972:130). Sites which showed winter/spring seasonality have been found primarily on the edges of salt marshes. Sites inhabited during the summer and fall generally lie between 0.6 and 2.2 miles inland (Van Dyke 1972:123).

Van Dyke determined that during initial occupation of the county, which he places circa 700 BC, acorn consumption occurred but was limited (Van Dyke 121-123). Sites tended to be found on the edges of salt marshes which provided easy access to major bay shore resources, such as shellfish.

It was not until Phase 1 of the Late Horizon (~ AD 1200-1550) that he surmised that changes consisting of increased exploitation of marine resources and populations densities where smaller catchments were utilized (Van Dyke 1972:123). Van Dyke deduced that these smaller catchments were designed to exploit the limited bay shore (Van Dyke 1972:124).

Van Dyke argued that Hanson’s hypothesis (1970) that the introduction of the bow and arrow and acorn contributed to culture change was contradictory to his own
findings. He postulates that since the acorn was introduced and utilized earlier in time than Phase 1 of the Late Horizon that what contributed to culture change was an intensification of shellfish procurement (Van Dyke 1972:125).

During Phase 2 of the Late Horizon (AD 1550-1850) all types of subsistence strategies increase. Van Dyke agreed with Gould (1964) in that Van Dyke did not observe population shifts, but what he observed through his analysis was population expansion that took advantage of ecological zones (Van Dyke 1972:121 and 126).

Van Dyke further found that (1) there appeared to be no artifact differences between bay shore and coastal sites, (2) there is the potential that Phase 1 of the Late Horizon needs to be divided into further sub phases, and (3) this phase is also the least understood of the phases in his sequence (Van Dyke 1972:129).

Dietz, Stephen A.

In 1976 Dietz excavated site CA-MRN-402. The site was found in the fall of 1970 by Edward Mitchell Love. At the time Love, an anthropology student at San Francisco State College (now University), was searching for the ethnographic village of Echa-tamal which had been documented by Isabel Kelly (Dietz 1976:73).

Dietz attempted to look at the acculturation process through historical documents and the archaeological record. He constructed an extensive history of the events that led to the habitation of this site after secularization and what potentially led to the abandonment of the site.

Dietz divided time from AD 1400 to AD 1884 into four time periods. Prehistoric (1400-1817), Missionization (1817-1833), Post-Mission/Early European Settlement
(1833-1849) and American (1850-1884) (Dietz 1976:176). He concluded that the site was occupied before contact and that it was not occupied again until his American period. Dietz surmised that this occurred after the Coast Miwok were left landless when Americans made living on the nearby Tinicasio land grant extremely difficult and when they petitioned for possession of the land grant in 1854 (Dietz 1976:196-197). It is also possible that Timothy Murphy, who had served as administrator and alcalde and juez de paz at Mission San Rafael, lived at the site. After secularization, Murphy had remained ‘in charge’ of the Native Americans from the mission.

Although Dietz conducted an extensive history of events and some analysis of the archaeological remains found at the site, he fails to link the two together in his study. This is unfortunate as it is the only thesis that addresses Native Americans in a post-contact context.

Slaymaker, Charles
1974  Fidemo, the Twilight, and Before: A Study of Coast Miwok Political Organization.

The purpose of Slaymaker’s study was to show that Coast Miwok organized in what Kroeber termed a ‘village community’. In his Handbook of California Indians (1925:162), Kroeber stated that the Maidu, the Yuki, and the neighboring tribe, the Pomo all fall under this type of social organization. Kroeber further suggests that the Coast Miwok likely had a similar structure. To test this idea, Slaymaker used several sites in the Gallinas Valley as his case study.

Slaymaker identified CA-MRN-138 as a potential central village and CA-MRN-139, 140, 141, 142, and 403 as potential satellite sites. He found that CA-MRN-138 contained a variety of artifacts which matched Southern and Southwestern Pomo material
culture and that these artifacts were indicative of central permanent villages where people lived year round and practiced religious ceremonies. The satellite sites did not contain ceremonial artifacts and no structures were found.

Slaymaker suggests that the shift to an acorn-based economy coincides with the development of a tribelet/village community (Slaymaker 1974:46). He suggests this hypothesis should be further investigated. Slaymaker’s, *The Material Culture of Cotomko 'ica* (1979) was produced after his thesis and contained a description of the types of artifacts and features found at CA-MRN-138 and at the satellite sites he excavated.

In his dissertation (1982), Slaymaker used mission records and archaeological data to examine sociopolitical organization and settlement patterns for the Coast Miwok. His case study was the *nacion* of Yoletamal on Bodega Bay.

**SITE DESTRUCTION**

Site destruction is when damage has been done to a site so that no more archaeological information can be obtained from the site. It difficult to determine site destruction because to date only 749 prehistoric sites have been recorded in Marin County. Nelson had noted during his survey that several had suffered damage from pot hunters, avid gardeners, and road builders (Nelson 1909:326). Since Nelson’s survey, the amount of development that has occurred in Marin County has grown and continues to grow exponentially.

During initial planning for this thesis I had intended to discuss the number of sites that had been destroyed over the years. Also, my preliminary brief review of the site records at the Northwest Information Center showed several records that had the word
"destroyed" written on them. Not that the information should be taken at face value, though short of visiting each site there was no other way of confirming this determination. So while my original plan was to use the information recorded on the site records, upon closer examination several sites that had been reported as destroyed during the 1950s where in later years found to have intact archaeological deposits. Examples of this include sites CA-MRN-151, 168, and 171 (Meighan 1952; Melander and Slaymaker 1969; Morgan 1991; Busby et al. 1995).

Based on this information, there can only be negative repercussions in placing the label 'destroyed' on a site without appropriate investigation. That being said, several site investigations conducted in the county were in reaction to development. Many excavations, especially the early ‘salvage excavations’, were designed collect data before it was lost. The following is the list of sites that were excavated as a reaction to development that would directly impact the site. This list is not meant to imply that the sites have been destroyed. There is still the potential that these sites contain intact archaeological deposits. They also may have traditional values to the Coast Miwok people and before they are determined destroyed, Coast Miwok counsel should be sought.

| CA-MRN-3   | CA-MRN-159          |
| CA-MRN-5   | CA-MRN-168          |
| CA-MRN-14  | CA-MRN-170          |
| CA-MRN-26  | CA-MRN-174          |
| CA-MRN-27  | CA-MRN-192          |
| CA-MRN-42  | CA-MRN-254          |
| CA-MRN-43  | CA-MRN-255/H        |
| CA-MRN-44  | CA-MRN-357          |
| CA-MRN-45  | CA-MRN-374          |
| CA-MRN-100 | CA-MRN-471          |
| CA-MRN-101 | CA-MRN-495          |
| CA-MRN-127 | CA-MRN-601          |
| CA-MRN-158 | CA-MRN-673          |
Chapter 6. Chronology and Cultural History

Changes in material culture can signify several things. They can represent a stress on a culture which is having to adapt, it can represent a change in technology, or it can signify the migration of a new group into an area. Understanding when and why these changes occur is important to understanding how and why cultures change.

When it was first recognized that change took place throughout time amongst Native American cultures and that they had lived in North America for thousands of years, archaeologists began to focus on developing chronologies. However, as time went on a common problem in the field was that archaeologists were, “largely concerned with internal relationships, between local cultural sequences” … that were “considered against the backdrop of California as a separate, or even detached area” (Baumhoff and Elsasser 1956:1). In essence, archaeologists were not looking at the ‘big picture’ and were developing only micro-chronologies. This was due to the lack of dating methods such as radiocarbon dating.

David Fredrickson felt this was a problem, and for his dissertation, he adapted Gordon Willey and Philip Phillips (1958) methodological application of the culture-historical theory to California archaeology to develop a chronology. Through his work at CA-LAK-36, CA-LAK-261, and CA-NAP-131 Fredrickson recognized five time periods. What is refreshing about Fredrickson’s five time periods is its simplicity. Milliken et al. (2007) in their recent chapter in California Prehistory, show what can happen when one attempts to incorporate all of the different periods, patterns, and aspects of the San Francisco Bay Area onto one table (2007:104). They admit that the figure is, “a nightmare of detail to novices” and rightfully so (2007:105). Although Fredrickson’s
five time periods are based on the antiquated paradigm of culture-historical theory, its simplicity makes conveying information to other archaeologists easier and analyzing data from multiple sites less complicated.

The following is a description of Fredrickson’s five time periods taking into account new information regarding time period start/stop dates.

**PALEOINDIAN PERIOD (9,500-6,000 BC)**

Sites from this time period are often found on the edge of former lake beds and marshes and along old stream channels at coast locations. Heat treated stone with percussion and pressure flaking are evident on their flaked stone tools. The atlatl and spear were the hunting tools used during this time period and large foliate, trianguloid, and lanceolate fluted points are the point types. Other artifacts indicative of this time period include cobble, core, flake, and blade tools, foliate knives, crescents, scrapers and planers, perforators, choppers, and hammerstones. Because of the nature of the environment in the Northern Bay Area, nonlithic artifacts decay over time and few organic based tools have survived (Moratto 1984:76).

Subsistence strategies would have revolved around shellfish collection, seashore and land plants, some fishing, and hunting of land and sea mammals and birds (Moratto 1984:78). No milling technology is found during this period.

Most of the research conducted on this time period has been on sites located in the Great Basin or Southern California. Paleoindian sites or site components that have been identified in the region include CA-LAK-36 located near Borax Lake in Lake County, CA-SON-977 located (near Sebastopol), and CA-SCL-177 near Scotts Valley in Santa Cruz County.
The pattern indicative of this time period is the Post Pattern. A pattern is a "configuration of basic traits representing a cultural adaptation" (Bennyhoff and Fredrickson 1994:20). For more information see Fredrickson (1973), Fredrickson and White (1988), and White et al. (2002).

LOWER ARCHAIC PERIOD (6,000-3,500 BC)

As the climate began to warm during this time period, the lakes and marshes that Paleo-Indians sites are found on began to dry and disappear. This period is identified by the first evidence of plant processing in the form of milling equipment. Projectile point types include wide-stem and leaf-shaped forms. The oldest burial in this portion of California, radiocarbon dated to 6570 cal BC, was found at CA-CCO-637. It was loosely flexed (Milliken et al. 2007:114). The burials found at CA-LAK-36 ranged from semi-extended to tightly flexed (White et al. 2002:405-407).

Regional sites which date to this period include CA-LAK-36 (where it was first identified locally), CA-SON-348/H located at Duncan’s Landing on the Sonoma County coast, CA-SON-20b in western Santa Rosa and CA-CCO-696 and CA-CCO-637 at Los Vaqueros Reservoir (Fredrickson 1984:498 and 517; Kennedy 2005; Milliken et al. 2007:114).

CA-MRN-17 located at De Silva Island near Tiburon is the only Marin County site to produce a radiocarbon date that lies on the boundary between the Lower and Middle Archaic periods (Moratto 1984:274; Pahl 2003). This indicates occupation of the site was by Yukian speakers. Later site components date to a time when Penutian speakers occupied Marin County (Moratto 1984:547-557).
MIDDLE ARCHAIC PERIOD (3,500-500 BC)

It is during the Middle Archaic Period that evidence of concave-base points and the bowl mortar emerges. Fredrickson speculated that the presence of the bowl mortar could represent economic diversification by the incorporation of acorn processing into subsistence strategies (Fredrickson 1984:499). In the Clear Lake area, the Napa Valley, and Sonoma County numerous sites that date to this time period are found. While the increase in sites at the time could be a result of environmental changes, it more likely represents an increase in population and sedentism (Stewart 2003:77).

The Mendocino Pattern and the Lower Berkeley Pattern are representative of this time period. In the north Bay Area the Berkeley Pattern is found toward the later end of the Middle Archaic Period.

UPPER ARCHAIC PERIOD (500 BC - AD 1,000)

The Berkeley Pattern is indicative of this time period (Fredrickson 1984:499). The pattern is marked by a complete replacement of millingstones with mortars and pestles. Also, concave-base points are completely replaced with shouldered lanceolates and contracting stem points. Signs of sociopolitical growth and status distinction are found during this time period and shell beads grow in importance. Later in time they develop into money (Fredrickson 1994:100).

LOWER EMERGENT PERIOD (AD 1,000-1500)

This period was identified by Willey and Phillips as the Formative stage. Throughout the United States agriculture was developed and utilized as a primary food source during this time (1958). Fredrickson recognized that regional tribes had reached a similar level of complexity during this time period in spite of their nonagricultural society.
The Augustine Pattern indicative of this time period is marked by fully shaped mortars, new types of *Olivela* beads, new types of *Haliotis* pendants, the flanged pipe, and the banjo effigy ornament (Milliken et al. 2007:116-117)

Territorial boundaries are well established and regularized exchange between groups develops into stable networks (Fredrickson 1994:100). Increases in the number of mortars and pestles suggest a well developed acorn industry. During this time the bow and arrow is developed and projectile points become much smaller and are serrated or corner-notched. The rectangular *Olivela* bead is a marker of this period.

Burials are often loosely flexed and, along with *Olivela* beads, the *Haliotis* banjo effigy is buried with remains which is another indicator of the beginnings of the Kuksu ceremonial system (Milliken et al. 2007:117).

**UPPER EMERGENT PERIOD (AD 1500-1850)**

The Augustine Pattern continues to mark this time period though the assemblage changes somewhat with the use of obsidian nonserrated corner-notched and notchless point preforms, chert drills, hopper mortars, clam disc beads, and *Olivella* lipped beads (Stewart 2003:118). The clam disc bead economy was developed and adornment with these beads was an indicator of wealth (Fredrickson 1994:100). Trade begins to expand geographically. Higher status people were cremated and placed within the midden while lower status individuals were buried away from the village in flexed positions (Stewart 2003:119).
Chapter 7. Description of Sites Examined in this Study

This chapter contains the descriptions of all the excavations (n=23) conducted in Marin County where enough information was presented to allow for a sufficient synthesis of the data.

I believe that this type of broad analysis is important so that a foundation for future archaeological study can be made. The most problematic issue is that the information used in this thesis was written and analyzed by multiple people with differing agendas, investigation styles, and education levels; as a result this has caused me a great amount of trouble to report findings in a consistent manner.

The variety of viewpoints and investigative strategies can be a positive trait. I have, however, found this to be a negative trait as well. Each archaeologist values different information while having various levels of expertise in a range of specialties. Along with analysis, descriptions of artifacts and ecofacts, and other related elements are also dependent on level of experience. Nonetheless, as I previously stated, this work is important in spite of its shortcomings because it is part of the history of Marin County archaeology.

The following descriptions are of sites where enough information was presented to synthesize the data for this thesis.

CA-MRN-5
Environmental Setting

The area around this site has been heavily developed. The site is located just inland from the mouth of several creeks which flow into Richardson Bay. The nearby hills of the Marin Headlands in Golden Gate National Recreational Area have a
combination of oak-buckeye woodland and grassland environments and it is likely that the recent prehistoric environment of the site was similar.

Site History

This site was discovered by Nels Nelson (Nelson 1909). In 1957 Leonard Valdivia revisited the site, rerecorded it, and excavated two burials which were found during the construction of a wing of the Fireside Inn (Valdivia 1957).

In 2000, the property containing the site was surveyed by Archaeological Resource Service (Flynn and Chattan 2000). During the course of the survey it was undetermined if the existing buildings had been constructed on top of or potentially into the site. To establish the location of the site Archaeological Resource Service recommended that an archaeological investigation be conducted (Flynn and Chattan 2000).

Two years later in 2002 an investigation was conducted (Greene and Flynn 2003:12). Mechanical boring, hand auguring, and hand excavation gave a very limited idea of the areal extent of the site. This investigation found that the depth of the site extended into the water table which was reached at depths ranging between 100 and 170 centimeters. Because Archaeological Resource Service did not have all of the project plans they could not make comprehensive recommendations. They did, however, state that the site was possibly significant, and that at the very least monitoring would be required during some of the demolition and construction activities. Archaeological Resource Service also stated that it was possible that excavation would be required depending on the nature of disturbance for the proposed utility lines and foundations (Greene and Flynn 2003:19-21).
In 2004, the Fireside Inn buildings were demolished except the building that once served as a saloon (Evans, Smith, and Chattan 2008:2 and 6). This building is slated to be remodeled by the project proponent. During monitoring for these activities, no artifacts or features were found by the Archaeological Resource Service monitors; however, a mortar was found in the constructions spoils from the garage area by a construction worker. Also found during the removal of a sewer line was a historical feature containing a variety of household remains (Evans, Smith, and Chattan 2008:22). Although the items ranged in age from 1880 to the 1950s, the items were not considered able to contribute to a further understanding of the historic era habitation of the site. Based on the description of the artifacts it is unlikely that any of the items were associated with late period Native American occupation of the site (Evans, Smith, and Chattan 2008:29-32).

Most recently Archaeological Resource Service conducted monitoring during vegetation removal, grading, demolition and removal of buildings, light and heavy excavation, drilling, and redistribution of midden soils for construction of the low-income housing buildings on the property. This monitoring took place between July 2006 and October 2008 (Evans, Smith, and Chattan 2008:27-28).

**Investigation Findings**

The only formal excavation conducted on the site occurred in 2002 (Greene and Flynn 2003). Although four units were planned for archaeological excavation, only three were excavated. All of the units were covered with a layer of asphalt followed by a layer of sandy fill which ranged in depth from approximately 30 to 84 centimeters (Greene and Flynn 2003:15-17). Two of the three units were only excavated in fill soils.
These two units were excavated to 30 and 50 centimeters respectively. It was then decided that an auger boring would be placed in each unit to determine the depth of fill. A thin band of midden soil was found at a depth of 50 centimeters in the shallower (30 centimeter) unit. It was found that the midden layer was thin, fragmented, and disintegrated and that the unit was close to the edge of the site so further excavation of it was abandoned (Greene and Flynn 2003:17). In the other (50 centimeter) unit the auger boring did not reveal midden soils until 84 centimeters below the ground surface. Further augering showed that the midden extended below the surface to a depth of 110 centimeters before reaching the water table. This unit was then abandoned (Greene and Flynn 2003:16-17).

Only one unit was excavated into midden soils. The unit was excavated in 10 centimeter levels to a depth of 80 centimeters. At this point the soil became very wet which made dry screening difficult. An auger boring was placed in the center of the unit to determine the extent of the deposit. The water table was reached at 113 centimeters; at 147 centimeters the midden soils were too wet to remain in the auger bucket (Greene and Flynn 2003:15-16). This was the only unit that gave Archaeological Resource a sample of the types of artifacts that could be found within the site, and a sample of the types of faunal materials at the site.

Data generated from the only unit archaeologically excavated into the midden were not presented in their report. The only data reported on from the site were from those specimens collected from the largely disturbed context of construction spoils.

While monitoring construction between 2006 and 2008, artifacts were collected and returned to the office of Archaeological Resource Service for analysis. When human
remains or features were encountered mechanical excavation stopped and the burials or features were exposed using trowels, picks and brushes. Only the soil surrounding the burials was screened. This soil was screened through ¼ inch mesh (Evans, Smith, and Chattan 2008:28-29).

One cluster of fire-affected rock (identified as a hearth), seven burials (with an MNI of eight), and ten isolated human bone fragments were found during monitoring. Six of the seven burials were exhumed. Burial 2 was left in situ after determining that it would not be damaged by construction (Evans, Smith, and Chattan 2008:46-47). Burials 3, 4, and 5 were exhumed mechanically and the remains were found in construction spoils; therefore, there are no data regarding the manner of burial.

Burials 1 and 6 were found in a flexed position and were oriented northwest/southeast. Burials 7a and 7b were found in a semi-flexed position and were oriented east/west. Age at death ranged from 26 to 40. Burial 1 was a female and the rest were male (Evans, Smith, and Chattan 2008:49-50, 53-60). Burial 1 had moderate to severe dental attrition and had an intervertebral disk hernia which had caused degeneration to the spine (Evans, Smith, and Chattan 2008:49-50). Burial 6 showed no pathologies or trauma (Evans, Smith, and Chattan 2008:53-54).

Burial 7a showed no pathologies and Burial 7b showed signs of arthritis; however, it appears the cause of death for both was murder as puncture wounds were found in several bones and a total of eight projectile points was found in the clavical, chest, and spine areas. Spine injuries, which appeared to be a result of chopping, were found on Burial 7b. Also, the lower portion of the left leg of Burial 7b was absent and the left femur showed signs of perimortem chopping. The left ulna of Burial 7b showed
signs of a hinge fracture which are often associated with defensive wounds (Evans, Smith, and Chattan 2008:55-60).

Several items were reportedly found with all four burials. However, considering the amount of bioturbation that takes place in North Bay middens and the construction activities which led to the unearthing of the remains it is difficult to assign all of the items found near the bodies as burial related items. This is especially true when a 1968 penny is one of the items. Though it should be noted that a hearth feature was found in close proximity to Burial 6 (Evans, Smith, and Chattan 2008:53-54).

Seven obsidian samples were submitted for visual sourcing and hydration analysis. Five of the seven specimens were found in disturbed contexts. Two of the specimens were found in the soil near burial 7b. All seven showed macroscopic indicators for the Napa Valley source. Hydration measurements ranged from 1.5 to 3.68 microns (Evans, Smith, and Chattan 2008:67-68). These measurements indicate dates of 345 to approximately 1880 years ago by my calculations using Origers (1987) Napa Valley obsidian hydration rate.

Along with hydration analysis, four radiocarbon samples were submitted for analysis. These specimens consisted of charcoal reportedly found in association with burials 1, 6, 7a, and 7b. The specimen with the oldest date was from burial 1 and dated to A.D. 1000 +/− 30. The other three specimens all had much more recent dates of A.D. 1730 +/-30 for burial 6 and 1630 +/-30 for burials 7a and 7b (Evans, Smith, and Chattan 2008:68).

The authors also used the few artifacts collected during monitoring to determine the occupation period of the site. The presence of *Olivella* spire-APPED beads (A1, A1b
and A1c), saddle bead (F2b), and rectangular shaped beads (L2) indicate occupation could have begun in the Early Middle Transition Period and Middle Period (Lower Emergent Period); however, these bead types all persisted through time so they are not particularly good time indicators. The M1a bead indicates that the site was occupied during Beardsley’s Initial Late Period (1954). The Stockton and Clear Lake corner-notched point types indicate occupation between Upper Middle and Late periods (Lower Emergent and Upper Emergent periods). Based on the paucity of information collected, Archaeological Resource Service date the site from AD 970 and as late as AD 1760 (Evans, Smith, and Chattan 2008:69). However, based on their hydration measurements occupation of the site occurred as early as AD 220.

Probable dietary bone was collected between July 2006 and January 2007, and 3,099 bones were sent to ArchaeoMetrics for analysis. All potentially intrusive bone was removed which numbered 101 pieces from a variety of rodent species including pocket gopher, vole, and mole for a total of 2,998 analyzed bones. Over 50% of the bones were from fish species with mammal bones coming in second at 36%. Birds and other remains came in third and fourth, respectively (Evans, Smith, and Chattan 2008:32). Of interesting note is the presence of dog bones belonging to the Amerindian short-faced dog species (Evans, Smith, and Chattan 2008:34).

It was also noted that the preservation of small fish bones in the site was interesting as fragile fish bones generally do not preserve well in archaeological sites. Further, the site had the potential to yield important information about San Francisco Bay Area subsistence (Carpenter 2008 cited in Evans, Smith, and Chattan 2008:34).

Included in the bones submitted to ArchaeoMetrics for analysis were several bone
artifacts. These artifacts were primarily classified as bone awls and needles, though also found were bone beads, wedges, and sting ray barbs (Evans, Smith, and Chattan 2008:35-38).

Although a large amount of shell fragments was observed during monitoring, only culturally modified pieces other than those modified for consumption were collected. Shell species typical for the area were observed at the site with *Mytilus trossulus* being the most common and *Haliotis rufescens* being the least common. Ten shell beads were recovered from the site as previously mentioned and described (Evans, Smith, and Chattan 2008:39-40).

One mortar and one mortar fragment, one pestle, one hammerstone, and two cobble stones were found during the six years of work conducted at the site (Evans, Smith, and Chattan 2008:40-41). Forty-eight chipped stone tools, tool fragments, and pieces of debitage were collected during monitoring (Evans, Smith, and Chattan 2008:42-46). Two pieces of quartz were also found (Evans, Smith, and Chattan 2008:46).

**CA-MRN-14**

**Environmental Setting**

Although the area around the site has been heavily developed, and the bay marshland has been filled in, its proximity to the edge of Richardson Bay and what is left of the vegetation in the nearby hills suggests that during prehistoric times the environment of the site would have been at the interface of an oak-buckeye woodland, grassland, and saltwater marsh. There is a nearby spring and Widow Reed Creek (Moratto et al. 1974:82).
At the time of excavation professional geologists were asked to make observations of the site location. Their observations were that the site sits on a small knoll created by an old landslide. Portions of the site have been covered by sterile soil. It was estimated that this was due to mechanical leveling. Based on the amount of time needed to create the mudflats adjacent to the site, geologists estimated that the site was approximately 4500 years old. This analysis showed that the site location had four strata or layers; the first layer is the bedrock of the Franciscan Formation, the second layer being landslide material, the third consisting of the culturally created midden, and the fourth layer consisting of the overburden created from grading (Moratto et al. 1974:80).

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area (Nelson 1909). During his survey he noted that the site was marked by the location of eucalyptus trees and some old abandoned ranch buildings. At the time of the excavation in 1974 the buildings had been removed (Moratto et al. 1974:66). Under the threat of destruction from the development of a residential community, this site was partially excavated to obtain data before they were lost.

In spring 1974, the archaeological field class from San Francisco State University along with students from other educational institutions and volunteers from the Miwok Archaeological Preserve of Marin (MAPOM) excavated for 10 days. Proposed development for 1974 was delayed which allowed the San Francisco State University field class was able to make a second 10-day trip in 1975. In 1976 the site was bulldozed for the construction of the housing development (Riley 1979:iv). The first field class
reported their findings in 1974 (Moratto et al.). A later Master’s thesis was written on the faunal assemblage (Riley 1979).

Investigation Findings

The site measured 37 by 24 meters and was oval shaped. Excavation and auger borings indicated that the midden extended as deep as 300 centimeters (Moratto et al. 1974:67). The upper 30 centimeters of soil contained historical items that were from the farm complex that was located near the midden. Chert scrapers and choppers, several obsidian artifacts including two tinklers, mortars, pestles, and pecked stone fragments, a broken net sinker, a steatite pipe, bone awls, wedges, a stingray barb, two whistles, shell beads and pendants, mica fragments, clay daub, red ochre, asphaltum, and a fist-sized rock with a patina of quartz were all found at the site (Moratto et al. 1974:68-69).

Twelve features were found during excavation. Five of these features consisted of clusters of fire-affected rock (FAR) which usually included ash, charcoal, and often burnt items such as bone, shell, obsidian, and chert. Feature III consisted of a layer of ash, shell, rocks, charcoal, and human cremations. Feature IV was a location where 155 univalves were broken. Feature V and VI were hearths and Feature XI was an oven or fire pit. Feature VII was an extensive deposit described as a, “brown, sticky midden with an exceptionally high shell content“ (Moratto et al. 1974:74). Feature IX was thought to be a redwood post (Moratto et al. 1974:73-74).

Radiocarbon testing on burial 2 revealed a date of A.D. 720. Because the burial was located only 28 centimeters below the ground surface, it was believed that midden soil could have been removed from above this burial (Moratto et al. 1974:80). A second radiocarbon test was performed on charcoal from a hearth feature found in Unit I-103 at a
depth of 140 centimeters. The results of this test gave a date of AD 605. Auger borings showed that the hearth feature was 50 centimeters above sterile soil (bottom of the site). Based on this information, it was estimated that the site was 1400 to 1500 years old though time sensitive artifacts were also considered when determining site occupation (Moratto et al. 1974:80-81).

Because of the presence of the fishtail and pyriform charmstones and the grooved net sinker, Moratto placed the first occupation of the site at approximately AD 0. This would place the early occupation of the site in the Middle Horizon (Archaic Period). These 'Middle Horizon' artifacts were reportedly found in CA-MRN-20 by McGeein and Mueller which they identified as a Middle Horizon site (McGeein and Mueller 1955; Moratto et al. 1974:81). Though due to the paucity of these older artifacts, Moratto concludes that the site was inhabited sporadically during this early time and it was not until later that the site was inhabited in a more permanent manner.

In spite of the historic period items found in the upper levels of the site, Moratto did not believe that the inhabitants of the site had interactions with Europeans, Mexicans, or Americans. It was his belief that occupation of the site ended between A.D. 1400 and A.D. 1800 (Moratto et al. 1974:81).

Moratto reported, based on the faunal assemblage, that the site was occupied from spring through early fall. This finding was based on the lack of migratory waterfowl remains. Most of the faunal assemblage consisted of shellfish remains and to a much lesser extent, mammal bones. Mammal bones consisted primarily of deer and elk, with small mammals included to a lesser extent; a portion of a seal was found as well. Several fish bones were also found, including shark (Moratto et al. 1974:83).
Along with analysis conducted at the time of excavation, a special analysis was made of the shellfish remains at a later point in time. This analysis was done by Lynn Marie Riley as part of her thesis work at San Francisco State University (1979). Her analysis showed that both shellfish and bone remains suggested changes in subsistence patterns through time. Bone to shell ratios reflected an increase in hunting over shellfish gathering in the lower levels of the deposit as well as in the highest levels or in the Phase 2/Historic component (Riley 1979:76). In contrast, the middle of the deposit had low bone to shell ratios, reflecting an emphasis on shellfish gathering.

Riley’s explanation for the increase in hunting during the Phase 2/Historic component is that it potentially corresponds with the introduction of the bow and arrow into Marin County at approximately A.D. 1350 (Riley 1979:77-78). Riley suggests that as time went on and site inhabitants came into contact with Europeans they would have gained possession of firearms which also would have greatly enhanced their hunting success. This contradicts Moratto’s belief that site occupation terminated prior to contact. While no evidence of firearms was found at the site, domestic cow remains were (Riley 1979:78). The inclusion of the cow remains into her analysis again contradicts Moratto’s conclusion that the domestic cow remains are from the historic ranch located near the site and not related to contact period Native American activities.

During the Ellis Landing/Emeryville Transition there is a change in the amount of bird and mammal bone elements. There appeared to be an increase in waterfowl hunting and a decrease in land mammal hunting. It is possible this event occurred at CA-MRN-20 as McGeein and Mueller (1955) reported a similar phenomena at level 36-48". 
However, due to lack of data it is difficult to compare the two sites though it appears that the two sites are contemporaneous.

The only evidence of plant processing was the presence of a few mortar and pestle remains and stone lined ovens used for bulb cooking.

Exchange and contact with other tribes is marked most prominently by obsidian; though source information indicating specific tribes was not discussed. Other potential indicators included sandstone, steatite, schist, and quartz; however, many of these resources are within relatively close traveling distance (Moratto et al. 1974:84).

Indicators of ceremonial activity are charmstones, crystals, and mortuary patterns. According to Moratto, “bits of human bone were found throughout almost every unit” though three widely separated, relatively intact burials were found (Moratto et al. 1974:84). Moratto hypothesized the low number of burials suggested seasonal occupation of the site as fewer people died in the spring and summer months than in late fall and winter months (Moratto et al. 1974:84).

Two of the burials were adults. Both of the remains were found in very poor condition. Neither seemed to have funerary goods associated with them. Both seemed to lie in a flexed position. The infant remains exhibited a very different mortuary pattern. There were a number of artifacts associated with the remains including a necklace of *Olivella* beads and *Haliottis* ornaments, bone awls, obsidian points and tinklers, and chert tools. Moratto believed that this infant burial reflected a non-egalitarian society which is also suggested by McGeein and Mueller (1955), King (1970), and Slaymaker (1974) who believe they have seen this reflected in other Marin County sites (Moratto et al. 1974:85).
CA-MRN-17

Environmental Setting

De Silva Island is located in an inlet adjacent to Richardson Bay. During prehistoric times a salt marsh was located on the north side of the island. Although the island has been heavily developed during historic/modern times the environmental setting of the island was likely oak-buckeye woodland.

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). Since the time Nelson discovered the site, development has affected it. From 1980-1984 San Francisco State University conducted investigations there.

Investigation Findings

In 2003, Gary Pahl, Professor of Anthropology at San Francisco State University, assembled a compendium of papers written by himself and students about CA-MRN-17. He stated that the papers are largely descriptive and upon review I can not disagree (Pahl 2003:v). Little was reported regarding chronology and changes in technology, subsistence, and exchange over time. Some information about subsistence strategies was reported, but again how this changed over time was not analyzed. Considering the reported antiquity of the site it is regrettable that a more in-depth analysis of the site has not been conducted.

Approximately 60 cubic meters of soil in the deepest portions of the site were excavated (Pahl 2003:vi). Most soils were screened through ¼ inch screens with soil around features being screened though ½ inch screens to catch smaller items (Pahl 2003:viii). Four 2x2 meter units were excavated (Groza 2003:13-2; Pahl 2003:viii).
Sixty-seven features were identified. No description of feature types were made, though some of the papers mention hearths and a rock line feature (Peterson et al. 2003:9-4; Zogg 2003:5-19).

Eight burials were discovered during excavation at the site (Vasta et al. 2003:14-1). Two of these were group burials. The sex of four remains could not be determined. Two males and two females were identified. Remains ranged from loosely to tightly flexed. Orientation, when determinable, also ranged from west to north. One of the burials, a male who died between the ages of 17 and 25, had two obsidian projectile points embedded in his hip and femur (Vasta et al. 2003:14-1-14-8). Although several items were reportedly found in association with the burial, it is likely that some of these items were found in the soil near the remains as a result of bioturbation. That being said, items such as *Olivella* beads, *Haliotis* pendants, charmstones, ochre, and obsidian blades and projectile points are more likely than debitage to be burial associations.

Radiocarbon dating showed that first occupation of the site began circa 3625 B.C. (Pahl 2003:ix). Although obsidian hydration was conducted on some obsidian specimens, no analysis was conducted of the measurements.

Artifacts included bone beads and tools, fish hooks, harpoon points, a possible gorge, several possible fish spear points, net sinkers, chert debitage, cores, flake tools, obsidian debitage, bifaces, flake tools, projectile points, shell beads, spoons, pendants, a whole painted shell, shell fragments, mica ornaments, steatite and calcite ear plugs, a steatite pendant, and a charmstone (Groza 2003a: 13-2-13-6; Groza 2003b: i-ii; Medveczky 2003:10-1-10-4; Peterson et al. 2003:9-1; Scott 2003:12-1-12-32; Scott and Millerstrom 2003:6-11; Zhu and Pahl 2003:11-1; Zogg 2003:5-18)
Analysis of the avifaunal remains showed that the collection primarily consisted of duck and geese species. Approximately 35% of the bones had either cut marks or had been burnt (Zogg 2003:5-1). Unfortunately, the author reports that almost half of the avifaunal assemblage has no provenience information making any type of analysis of subsistence change over time impossible (Zogg 2003:5-17). The only information is that most of the assemblage lies between 100 and 300 centimeters with the majority occurring between 200 and 300 centimeters. Observations about some species occupying some levels over others is made; but, overall there are little data for discussion (Zogg 2003:5-17 and 5-18). The author does suggest that while most of the collection is from migratory birds, which would indicate a fall/winter occupation time, the presence of other remains suggest that the site was occupied year-round (Zogg 2003:5-19).

Analysis of the remains showed that site occupants were primarily fishing in salt marsh, mudflat, or surf zones; all of these areas would have been located on the north side of the island. Unfortunately, seasonality was difficult to ascertain as many species found at the site occupy these areas year round (Scott and Millerstrom 2003:6-7).

It was noted that a majority of the bones were not burnt with the exception of the bat ray. The authors note that historic accounts state that fish were often eaten raw (Scott and Millerstrom 2003:6-11).

While shark remains were found, no shark teeth were recovered. The authors believe that shark teeth would have been small enough to slip through ¼ inch screen (Scott and Millerstrom 2003:6-1).

Fish remain analysis showed that there is a marked drop in fish remains below 380 centimeters. The only fish remains found below this depth are bat ray and leopard
shark. This could suggest that these types of fish were utilized further back in time than others or it could be that the habitat was more conducive to these types of fish making them a more common species closer to the site (Scott and Millerstrom 2003:6-11). There is another significant drop in the quantity of fish remains below 460 centimeters suggesting that the occurrence of species was due to chance catches or brought to the site in the stomach of other species (Scott and Millerstrom 2003:6-11).

Two grasshopper remains were found in a hearth context. During historic times, grasshoppers were reportedly gathered and consumed by Native Americans (Pahl 2003:7-1).

Column samples taken from the site showed that *Macoma* sp., *Mytilus* sp., *Balanus* sp., *Clinocardium* sp., *Protothaca staminea*, *Tresus nuttalii*, and *Ostrea lurida* were species of shellfish collected and consumed at the site (Stockman et al. 2003:8-4 and 8-5). Analysis showed that *Ostrea lurida* was used early in time (from the 600-520 centimeter levels) and *Macoma* sp. were primarily utilized from the 520 centimeter level to the surface. The other species of shellfish were utilized as well but in lesser amounts to the *Macoma* sp. (Stockman et al. 2003:8-4-8-7).

**CA-MRN-20**

**Environmental Setting**

The site is located on the east side of Strawberry Point. McGeein and Mueller state that this side of the point is protected from the weather (1955:52). Since the site was discovered the point has been subject to a great amount of development. However, it is likely that during prehistoric times the environmental setting at the site would have consisted of oak-buckeye woodland, coastal brush, grassland, and saltwater marsh.
Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). In 1950 the authors visited the site and determined that it was a suitable site for their investigation especially with the impending threat of severe damage from development. The site was investigated in 1950 and 1951 (McGeein and Mueller 1955:52).

Investigation Findings

The site measured approximately 43 meters northwest/southeast and 20 meters southwest/northeast (McGeein and Mueller 1955:53). The site was gridded into five foot square units and levels were excavated in one-foot segments (McGeein and Mueller 1955:52).

Nineteen burials were found: six infants, two children/pre-adolescents, five adult females, four adult males, and two remains where the sex was undeterminable. The remains were found in tight to loosely flexed positions and were oriented primarily north, west, east, and northwest. Most of the remains had no accompanying grave goods though one infant had 277 Olivella shell beads, four Haliotis pendants, and a baked clay figurine, the pre-adolescent child had 196 Olivella shell beads, and three of the four adult males had Olivella beads, Haliotis pendants, red ochre, a bone nose ornament, and an obsidian projectile point found in association with the remains (McGeein and Mueller 1955:56-59). Based on the artifacts present, the authors also concluded that the site was occupied from A.D. 900 to A.D. 1500. This would place occupation of the site during the Lower Emergent Period (McGeein and Mueller 1955:61-62).
Five hearths, a possible storage pit, a house floor, and an interesting feature were found during excavation. The feature consisted of a hearth with a human skull (no mandible or vertebrae) resting on the top. This was covered with an inch-thick layer of midden and an inch-thick layer of Oyster shell (McGeein and Mueller 1955:54).

Artifacts found during excavation included mortars, pestles, obsidian and chert scrapers, bone awls, antler wedges, an obsidian drill, an abrading stone, two obsidian points, five net weights, a bone gorge hook, bird and shell beads, shell pendants, steatite ear plugs, charmstones, and baked clay figurines (McGeein and Mueller 1955:54-56).

An analysis of a sample of the shellfish remains showed that *Mytilus edulis* and *Macoma nasuta* were the two most commonly consumed species at the site. It also showed that *Mytilus edulis* was popular earlier in time while *Macoma nasuta* was utilized later in time though both species are present throughout time (McGeein and Mueller 1955:53-54).

No other subsistence analysis was made other than to remark that the presence of mortars and pestles indicated that the site inhabitants consumed acorns and grass seeds; the presence of net weights and the gorge hook indicate that fishing was taking place; and the presence of deer, dolphin, porpoise, and sea otter indicate that the site inhabitants hunted for mammal species though in their summary they also mention that bird remains were present as well (McGeein and Mueller 1955:59).

The authors concluded that the site was not a permanent village (in spite of the presence of so many burials) and that it was primarily occupied during the fall and winter months with the likelihood of some summer occupation (McGeein and Mueller 1955:59).
CA-MRN-27  
Environmental Setting

The site is located at the northwest end of Richardson Bay. The environmental setting consists of grassland and oak-buckeye woodland. Although the plotted location of the sites are approximately 1500 feet from the edge of the bay, much of the bay has been filled and the edge of the bay would have been much closer during prehistoric times.

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). At that time a corral had been constructed on the site, and a spur of the Northwestern Pacific Railroad cut the western peripheral edge of the site. Nelson considered the site unworthy of excavation (King 1970:5).

At the time of the excavation the area surrounding the site had been developed with housing. Much of the nearby marshlands had also been filled and developed. Additional housing was proposed that would severely damage, if not completely destroy the site. Because this site was under threat of severe damage from the construction of a residential community it was taken upon the shoulders of Thomas King to organize volunteers to excavate CA-MRN-27 prior to destruction. Although King was a driving force, his inexperience at the time prompted him to ask David Fredrickson of Sonoma State College to take on the official duty of overseeing the project.

CA-MRN-26 was adjacent to CA-MRN-27, however, due to lack of funding this site, was not excavated. Although the project had no funding, volunteer archaeologists went door-to-door to raise donations so that laboratory costs could be paid for and the project proponent did supply a two-person crew to prevent vandalism.
Investigation Findings

CA-MRN-27 was an interesting site in that a portion of it appeared to function as a cemetery in the Euro-American sense. No cemetery, like the one at CA-MRN-27, has been found in Marin County. Fifty individuals were found within a 24 square meter area. The rest of the midden lacked any other burials. King was able to determine this as nearly the rest of the site was bulldozed under archaeological supervision and no other remains were found. Though a portion of the western side of the site was untouched and could potentially contain more burials (King 1970:7).

Two radiocarbon tests were conducted. The first was of a grave which was in a pit that had been dug into sterile soil. The second was from the mass cremation area. The date given to the burial was 320 +/-190 BC. The cremation dated to AD 20 +/-95. Radiocarbon dates suggest only a 300 year time span. An anomalous burial suggested a later use (most shallow burial), but most burials were located between 50-100 centimeters. King infers based on this that people were buried 400 years ago, but the site was primarily used 2,000 years ago.

Examination of the features found during excavation of the midden portion of the site suggested that there were structures to the southern end of the cemetery. To the north is a large semi subterranean house.

King defines a cemetery as an archaeologically visible feature with boundaries, is located in some type of relationship with a habitation site, and contains more individuals or different types of individuals than a nuclear family could supply on its own. King noted some observations about this cemetery:
1. In the center of the cemetery there is a clustering of cremations and disarticulated burials from all sexes. Associated with these remains are 62% of the total number of artifacts collected from the site. Also, the greatest variety of artifacts were collected from the disarticulated, mixed, cremations. These artifacts tended to be sociotechnic and ideotechnic items such as beads, pendants, charmstones, and whistles. A pestle and numerous projectile points made up the technomic items in the area.

2. Outside the central cluster only three burials contained a significant amount of grave goods. Two females and one infant. All three are in the southeast portion of the cemetery and grave goods were mostly non-technomic items (beads, whistles, ochre).

3. There is a tight half-circle of male burials around the central cluster. These burials are single, flexed, and are nearly without associated goods. The orientation of the burials were north and west.

4. Females and some disarticulated or anomalous males, without associated goods, were found further from the center around the periphery to the north and south.

5. The burials around the central cluster varied greatly in orientation, grave good association, and position (King 1970:20).

The central cluster area appeared to be reserved for cremations as numerous ashes, charcoal, partially burnt remains, and burnt artifacts. Due to the threat of vandalism the feature could not be completely excavated at one time and had to be done in stages. Because of this it made observations difficult. The rushed excavation could have caused confusion. In spite of the chaotic layout of the cluster, King believed that the area was reserved for the burial of cremations and that the interment of each inhumation was its own separate event versus one mass cremation. Repeated digging into the reserved area caused the churning of the cremations (King 1970:21).

King classified the few artifacts found with the burials using Binford’s division of artifact forms (1962). These three artifact forms are ideotechnic (ritual), sociotechnic (fulfilled social functions), and technomic (functional, activities associate with coping with environment) (King 1970:6-7). He further discusses the concepts of ranked
societies and how we can see this in burials. He cites Binford (1962) and Arthur Saxe (1968) as references for these ideas.

Based on the placement of males, females, and children, and the graves goods associated with the burials, King hypothesized, with a few exceptions, that women and most children did not have sufficient status to be buried in the cemetery (King 1970:22). King further infers status differentiation is observable in this cemetery in that there was a group comprised of males, females, and children who had the status of being cremated and buried in the center of the cemetery. The second group in the population seems as if their status was based on sex, age, and ability. The third group of individuals, which consist of the outer burials, seem to consist of people who could not be buried in the central cemetery and did not follow strict mortuary practices (King 1970:23).

CA-MRN-44  
Environmental Setting

The site is located on the north side of Angel Island adjacent to China Cove. On top of portions of the site are the former Angel Island Immigration Station and the Fort McDowell North Garrison. According to historical accounts, the island was heavily forested and was once called Wood Island (DeGeorgey 2007:142). This would suggest that during prehistoric times the environment of the island would have been either a tan oak-madróño woodland or a Douglas fir forest.

Site History

The site was first noted by Edward Bentley, a member of the military which was based on the island, as early as 1869 (Bentley 1869 cited in DeGeorgey 2007:5). It was not formally recorded until 1909 when it was rediscovered by Nels Nelson during his
survey of the northern Bay Area archaeological sites (DeGeorgey 2007:5; Nelson 1909). His notes on the site are very brief.

The midden was disturbed in the 1900s and again in 1941 by the construction of the buildings and walkways for the Angel Island Immigration Station. The site extends to the edge of the bluff on which it sits and has been further disturbed by the erosion of this bluff due to wave activity.

In 1965, Adan Treganza conducted limited excavations on the site to determine its research potential (Treganza 1965:N.p.). He determined that the site had been severely damaged and that no further work was recommended. He noted the potential for small undisturbed pockets of midden that could be discovered during future construction activities; however, Treganza viewed the possibility of this occurring as minimal (Treganza 1965:N.p.).

More recently in 1982, Phil Hines, California Department of Parks and Recreation archaeologist monitored a trench excavation for a water main (Hines 1983:18). His analysis was that most of the midden appeared disturbed with only one pocket of intact soil found. Ten screen loads of soil were sifted through ¼ inch mesh screen which resulted in the finding of five Native American specimens. In 2003 a backhoe trench was used to find the foundation of the Immigration Station Administration building foundation. At this time disturbed midden soil was again observed (Hines 1983:18).

In 2005, in response to proposed improvements to the park, archaeologists and Native American representative Frank Ross were contracted to monitor backhoe excavations near the Immigration Station. During this excavation undisturbed midden soil was found at least 150 centimeters deep. Construction was halted until further
investigations could be conducted. This eventually led to the hiring of Sentinel
Archaeological Research, LLC to conduct investigations at the site (DeGeorgey 2007:7).

Investigation Findings

The site was separated into three loci, Locus A, Locus B, and Locus C. Nineteen
features were found during excavation. All but one were found in Locus A, the other was
found in Locus B. These features consisted of a rock heap, ten hearths, four baking pits,
three concentrations of burnt shell, and one cache of rock snails. Eight of these features
had specimens removed for radiocarbon dating and/or obsidian hydration dating
(DeGeorgey 2007:62).

A total of 14 samples was submitted for radiocarbon dating; six from Locus A,
four from Locus B, and four from Locus C (DeGeorgey 2007:127-128). When possible
these samples were paired with obsidian hydration and flotation samples. Five of the six
samples from Locus A were taken from features, the remaining sample was taken from a
shell lenses. One of the specimens revealed an out of sequence date and was discarded
from the sample. Radiocarbon results showed that occupation at that part of the site
began in AD 680 +/-40 and ended in AD 950 +/-50.

The results from Locus B were interesting but possibly tainted by the crude oil
that had leaked onto the site. The earliest radiocarbon date for this locus was 730 +/-40
BC; however, a second sample taken from the same location had a date of AD 770 +/-40.
Similar results occurred from two samples taken nearby. The first sample revealed a date
of AD 470 +/-40 and the second sample AD 1290 +/-40. DeGeorgey felt that there were
three possibilities for such divergent ages: 1) the area had been disturbed; 2) several
temporal components had been mixed; and/or 3) site conditions (the presence of crude oil) contaminated the samples (DeGeorgey 2007:127-128).

Sixty-five obsidian specimens were submitted for hydration analysis. Measurements generally supported radiocarbon dating. This is most evident in Locus A (DeGeorgey 2007:128-135).

DeGeorgey identified the Locus A component of the site as dating to the Terminal-Late Phase of the Middle Period (End of the Upper Archaic Period). This was established through the use of radiocarbon and obsidian hydration dates and by the artifact assemblage represented by F3a and F3b Olivella beads, a well-developed bone tool industry, Excelsior Foliate projectile points, stone net weights, mortar and pestle technology, shell fish hooks, Haliotis pendants and ornaments, and non-perforated charmstones. It also showed a mollusk and fish economy consistent with other Terminal-Late Phase sites in eastern Marin County. This component is consistent with the Late Berkeley Pattern which can be found throughout the Bay Area (DeGeorgey 2007:195).

Locus B was ascribed to the Late Period (Lower and Upper Emergent periods), but of an unknown phase. Again radiocarbon dating gave dates which ranged over 2000 years (DeGeorgey 2007:196). This problem was again ascribed to contaminated soil. Thus obsidian hydration dating became the primary factor in placing this component in the Late Period. Artifacts found in this component consist of notched net weights, roughly shaped charmstones, a collared pestle, one Napa Valley obsidian Excelsior projectile point, a mussel shell fish hook, and Haliotis ornaments. These artifacts are consistent with Berkeley Pattern assemblages. Subsistence strategies consisted of fishing and gathering shellfish during this component (DeGeorgey 2007:197).
Locus C was identified as a Middle/Late Transition Period component (Lower Emergent Period). Because of the contamination from oil found during excavation of this portion of the site, the widely divergent radiocarbon dates for this locus were deemed unreliable. Thus, obsidian hydration dating and diagnostic artifacts were used to date this component. The assemblage for this component consisted of Napa Valley obsidian bifaces, a circular *Haliotis* ornament, and a large bipointed, shoulder notched, obsidian, projectile point. Also in the assemblage were expedient chert tools (DeGeorgey 2007:196).

Subsistence strategies during this time seem to be oriented toward salmon fishing and hunting of medium-large animals. There was very little marine shell in this component (DeGeorgey 2007:196).

Over 15,000 vertebrae remains were analyzed. Of these only approximately 4000 were identifiable to family or better. Most of the identifiable remains (90%) were fish (DeGeorgey 2007:138). Remains that were not identifiable to family or better were grouped into categories such as small mammal, small to medium mammal, medium mammal, etc. This grouping was still dominated by bony fish remains (93.8%) (DeGeorgey 2007:140). Based on the assemblage it is likely that the site was occupied year round (DeGeorgey 2007:169).

Several shellfish species were identified with *Mytilus trossulus*, *Macoma nasuta*, and *Nucella lamellose* being the most common (DeGeorgey 2007:193). Analysis of shellfish collection over time showed that in Locus A (end of the Upper Archaic Period) there was a great amount of *M. trossulus* shell collected which DeGeorgey believed could have represented mass striping of shell from rocks. In Locus B (Lower and Upper
Emergent Period) there were very few quantities of this species of shellfish (DeGeorgey 2007:194).

Flotation samples were examined for plant use indicators. The low sample yield suggested plant consumption was not a primary practice at the site. Because of the overlap in plant species between the mainland and Angel Island no indication of provisioning the site with mainland plant species could be clearly made (DeGeorgey 2007:186).

CA-MRN-127
Environmental Setting

The area surrounding the site has been heavily developed making a determination of the prehistoric setting difficult. The site is located at the edge of former marshland with several unnamed creeks flowing into the bay nearby. Harry A. Barbier Memorial Park and China Camp State Park are located in hills to the south of the site. The environment in the parks is primarily oak-buckeye woodland, though it is likely that saltwater marsh and grassland were located around the site.

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). The site is located on Marin County Department of Parks, Open Space, and Cultural Services land. This investigation was prompted by the Department's desire to expand and improve the county park. Since this expansion would result in ground disturbing activities that would affect the site an archaeologist was required to investigate it and evaluate the potential significance of the site and the surrounding area (Bieling and Psota 1989:1).
Investigation Findings

Horizontal and vertical extent were determined through surface survey and auger testing. Auger testing showed that the site ranged in depth from 25 to 50 centimeters (Bieling and Psota 1989:9). Surface survey showed the site measured 72 meters N/S by 38.5 meters E/W (Bieling and Psota 1989:5). Once the depth and areal extent of the site were determined, the proposed development plans were examined to assess potential affects. After discussing the plans with the Marin County Department of Parks, Open Space, and Cultural Services it was determined that the sewer lines could be rerouted to avoid the site but the water lines would remain as planned. Because the depth of the trenches for the water lines was only going to extend 15 centimeters into the site it was decided that monitoring of the trenching for these lines would be the only archaeology required (Bieling and Psota 1989:9).

Articulated human remains were found during excavation of one of the trench lines with a Ditch Witch. Trenching was halted and backdirt was examined for human remains. A 1x1 meter excavation unit was placed in such a way to determine the orientation of the burial. After orientation was determined a second unit was placed adjacent to the first so that the remains could be uncovered and removed. The units were excavated in 10 centimeter levels until the burial was reached. This was then recovered as a single unit. All dirt was screened through 3 millimeter mesh screen and all cultural constituents were kept with the exception of shell fragments and fire affected rock. Dirt from the burial was collected and wet screened in the lab to recover small fragments of human bone and small artifacts (Bieling and Psota 1989:10). A charcoal sample was taken from the soil immediately below the burial and was radiocarbon dated. All
obsidian was visually sourced and submitted for hydration analysis. Seven pieces were submit ted for chemical sourcing by XRF (Bieling and Psota 189:11). The remains were reburied by Grant Smith and Miley Holman at a nearby location in San Rafael (Bieling and Psota 189:1-2).

Excavation resulted in the finding of obsidian projectile points, bifaces, flake tools, and debitage, chert flake tools and debitage, one complete pestle, one pestle fragment, two manuports, one bone scapula saw, eleven bone fragments which have either been polished or burnt, two shell beads, one glass bead, and late 19th century material (Bieling and Psota 1989:12-15).

Due to the nature of the investigation it was determined that collecting a column sample from the excavation units would not be useful due to the shallowness of the unit in relation to the depth of the deposit. It was, however, observed that *Mytilus* sp. were the most common species of shell with Oyster and clam being second. Also noted were pieces of barnacle (Bieling and Psota 1989:22).

Only 61 pieces of non-human bone were recovered. Most of the specimens could be identifiable only to the general taxa. Only two pieces could be identified to the species and that was deer. Other bone observed were bird long and wing bone and rodent bones. Observations made during monitoring and excavation noted numerous disturbances from rodents and it was determined that since the bones did not appear to be burnt they were likely found as a result of rodents naturally living and dying within the midden soils (Bieling and Psota 1989:21-22). Three carbonized seeds were found which appeared to be a thick-shelled acorn though this was not confirmed through further analysis (Bieling and Psota 1989:23).
The burial was nearly complete and was found in submidden soil. The depth of the burial ranged from 35-60 centimeters. The head was pointed west and the torso and legs were in a semi-flexed position tilted on its left side. A thin layer of charcoal was found in contact with the burial and it was surmised that it was from some type of grave pit burning or a structure fire occurred after internment (Bieling and Psota 1989:24).

The person was a male who died at the age of 30+ years old. The post cranial remains showed that there were lesions indicative of an infectious disease. There were also an 'irregular/lumpy' surface noted on the shafts of both tibiae and fibulae which were attributed to a chronic or healed condition (Bieling and Psota 1989:Appendix 5).

Thirty-four obsidian pieces were submitted for visual sourcing and hydration analysis. Upon analysis it was determined that one of the pieces was actually human made glass that had been flaked. This piece did not have a hydration band. Two other specimens were lost and five did not have any visible hydration bands. This resulted in 26 hydration measurements which could be used to generate dates for the site. Annadel and Napa Valley obsidians were the sources identified at the site. Also, no flake measured greater that 4.2 centimeters and only one specimen had cortex which suggested that only late stage flaking, such as tool sharpening, was conducted on that portion of the site. Another supporting factor to this hypothesis was the ratio of tools to debitage (1:3.6) (Bieling and Psota 1989:27).

Due to their small size, eight specimens were inconclusively sourced. However, because of the limited nature of the excavation and report the best guess of which source the specimens belonged to was made.
Radiocarbon dating of the charcoal found in association with the burial revealed a date of AD 1630 +/-50 (Bieling and Psota 1989:29). The obsidian projectile point was a small stemmed corner-notch point commonly found in Upper Emergent Period sites. The pestle and pestle fragment were the type used with hopper mortars. The *Olivella* bead was a class E lipped bead which is diagnostic of the Protohistoric and Historic periods (Bieling and Psota 1989:30). While the historical bead indicates European contact, the authors state that the age range of the artifact could date as early as AD 1579 with the landing of Sir Francis Drake; therefore, it is unhelpful for the dating of this site (Bieling and Psota 1989:31). The practice of loosely flexed burial is indicative of the Upper Emergent Period (Beardsley 1954:28) and have been identified in other Upper Emergent sites or site components (King, Upson, and Milner 1966; McBeath 1967; McGeein and Mueller 1955; Slaymaker 1979).

Analysis of the artifacts and hydration and radiocarbon dating show that the site was first utilized during the Middle Archaic Period and was used occasionally until the Upper Emergent Period when the site began to be used intensively (Bieling and Psota 1989:32).

Based on the types of artifacts found, hunting land and estuarine mammals and fowl, shellfish collection, fishing, and gathering and processing of plants were conducted from the site (Bieling and Psota 1989:32).

Change over time was most evident with the analysis of obsidian sources and hydration analysis. When compared to a recently excavated site CA-MRN-530E in Novato and to Wickstrom’s temporally-specific obsidian based model for the southern North Coast Ranges, the authors found that it fit into Wickstrom’s findings of an
increased use in Annadel obsidian during the Upper Emergent Period which fits between 1.5 and 0.8 microns for Annadel obsidian (Bieling and Psota 1989:27-28). Wickstrom noted that this time period corresponded with a change from serrated corner-notch points to non-serrated corner-notch points, new site locations, and the use of hopper mortars and pestles (Wickstrom 1986 cited in Bieling and Psota 1989:28). Of the 26 useable band measurements, eight Annadel specimens had hydration measurements within the 1.5 to 0.8 micron range (Bieling and Psota 1989:49).

Interactions with the Southern Pomo and Wappo tribes can be inferred from the presence of obsidian from the Annadel and Napa Valley sources (Bieling and Psota 1989:32). Analysis further showed that interactions with Southern Pomo tribes increased during the Upper Emergent Period (Bieling and Psota 1989:32).

CA-MRN-152
Environmental Setting

Although the area surrounding the site has been developed, the nearby undeveloped hills have an mixture of grassland and oak-buckeye woodland. The site is adjacent to Pacheco Creek which eventually flows into San Pablo Bay. The authors estimated that during prehistoric and early historic times the bay would have been approximately ½ mile from Pacheco (Goerke and Cowan 1983:7).

Site History

The site, along with eight other sites along Pacheco Creek, was discovered during Nelson's survey of San Francisco and San Pablo bays in 1909 (Nelson 1909). He considered them all unimportant and not worth excavating. In the early 1970s, the site was threatened by development. In an effort to salvage portions of the site that would be
affected by the development, an excavation was planned with the permission of the developer William Hatch. C. William Clewlow Jr. was the project director when excavation began in the spring of 1972 with the help of volunteers from several local universities and colleges, a local middle school, a local elementary school, and members of MAPOM. Clewlow left the project after a year and Ann Ramenofsky, Elizabeth Goerke, and Richard Cowan became work supervisors (Goerke and Cowan 1983:13-14).

**Investigation Findings**

The site was excavated in a series of trenches in locations where destruction was planned. Most of these trenches comprised of two by two meter units and were excavated by hand (mostly trowel but occasionally with shovels) in either 10 or 20 centimeters increments. One trench measured 1.22 meters by two meters and was excavated mechanically. Units were excavated to an average of 86.3 centimeters. A total of 167 cubic meters of soil was screened through 1/4 inch screens resulting in 1580 artifacts. According to the author's analysis there was an average of 8.26 artifacts recovered per cubic meter (Goerke and Cowan 1983:14).

Radiocarbon dates were obtained from Burials 4 and 5 and a racemization determination was taken from Burial 4. The dates yielded from these specimens were 1270 +/-70, 1050 +/-130, and 1480 BC. These dates show that the site was occupied well within the Middle Horizon or Berkeley Pattern (Middle Archaic Period). However, the authors note that there were artifacts that suggested the site was occupied both before and after this time period. The earliest indicators were two oval saddle (F1) beads, one was found with burial 8, and three bevelled (C1a) beads. The authors spoke with James Bennyhoff to confirm that these beads are often found associated with the transition...
between the Early and Middle horizons (Middle and Upper Archaic). Other Early Horizon or transitional artifacts include an argillite pencil and three large obsidian concave base points (Goerke and Cowan 1983:52). Later Horizon (Upper Emergent Period) artifacts included small stemmed points (S1a and S1b) and two thin steatite beads (A1c) (Goerke and Cowan 1983:53).

Nine burials were found at the site. Four of these were found during monitoring which caused damage to these remains. Of these nine burials four were determined to be male, two were determined to be female, a seventh body was also possibly female. The other remains were too fragmented to make a determination (Goerke and Cowan 1983:15-18). The age at death ranged from eighteen to over forty. Pathologies and trauma noted on the bodies included deafness, arthritis, osteoporosis due to malnutrition, periodontal problems, and possibly syphilis (Goerke and Cowan 1983:15-18).

One must be careful in classifying an artifact as being associated with a burial. In northern California a great amount of bioturbation takes place that could cause artifacts to move through the ground. With that being said, the authors noted that a charmstone, a possibly worked piece of *Haliotis*, red ochre, obsidian tools, a non-utilized obsidian flake, an unusually large amount of FAR, four *Olivella* beads, two mortars, a pestle fragment, a polished bird bone tube fragment, and a quartz crystal where found associated with the burials (Goerke and Cowan 1983:17-18). Also, one of the burials, (burial 9) was found lying on a bed of charcoal, though the remains showed no signs of burning or charring (Goerke and Cowan 1983:17-18).

The authors examined the burials for social ranking and compare them with the findings of King during his excavation of CA-MRN-27 (King 1970). In King’s
reanalysis of his findings, he proposed that CA-MRN-27 was a high-ranking village while the nearby/adjacent CA-MRN-26 was for lower ranking individuals (King 1975 cited by Georke and Cowan 1983:55). Goerke and Cowan hypothesize that based on the paucity of grave goods, their poor workmanship, and their emphasis on utilitarian versus status that the people buried at the site represent lower status individuals (Goerke and Cowan 1983:55).

The artifact assemblage at CA-MRN-152 reflects a variety of activities that suggest that the site was a village where activities took place or was a home base to return to after hunting or gathering. These activities included basket making, food production, bead making, and ceremonial activities.

The site yielded 469 obsidian tools. Of these, 15 were examined to determine their source. Nine of the 15 were from the Napa Valley source and the remaining six were from Annadel (Goerke and Cowan 1983:18). While these data show that there was communication and likely trade between the inhabitants of CA-MRN-152 and the Southern Pomo and Wappo they does not show how this could have changed over time.

CA-MRN-159
Environmental Setting

The site is located on the south side of a seasonal creek which flows east into San Pablo Bay. With the exception of developed areas the surrounding environment consists of oak woodland and grassland. San Pablo Bay shore is located 2½ miles to the southeast. Before now the shoreline would have been closer. Surrounding this bay is a large marsh flat that was inhabited by shellfish.
Site History

This site was first discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). Nelson described the site as small and insignificant compared to other sites in the area; not worthy of further investigation (Nelson 1909). In more recent times the site was visited by William Roop and Katherine Flynn (Roop and Flynn 1985, 1986, 1988a, 1988b; and Flynn 1992). These visits were prompted by proposed development in the surrounding area.

The excavation of this pit unearthed human remains and it was at this point in time that Tom Origer & Associates was called to exhume the remains and assess the damage to the site and its eligibility for inclusion on the California Register of Historical Resources (Origer 1998:1)

In 1997 a pit excavated by a construction crew unearthed human remains. The pit showed that the cultural deposit extended to a maximum depth of approximately five feet. The average depth was approximately three feet. A 18.25 meter by 4.5 to 6 meter portion of the site was removed by the construction crew (Origer 1998:2).

Investigation Findings

Four burials were recovered from the site. Burial 1 was an adult male whose age at death was estimated to be between 35 and 40. His estimated height was approximately 170 centimeters and he had a very muscular frame. The jaw had been dislocated and new off-set articular facets developed to compensate. His teeth were worn and one had a cavity. He also had degenerative arthritis which was marked by erosion and spurring on bones of the lower lumbar vertebrae. Fusion of the right side of the lowest lumbar
Vertebra with the sacrum was found but this did not likely hinder motion (Origer 1998:43).

Only cranial fragments were recovered from Burial 2. There were enough fragments to provide an age of death as being between 45 and 50 years old. Also, only adult cranial and post cranial fragments of an undeterminable age were recovered from Burials 4 and 5 (Origer 1998:42-43).

Cultural materials recovered from the site consisted of bone awls, obsidian and chert debitage, cores, and edge-modified pieces, obsidian bifaces fragments and projectile points, two basalt mortars, and shell debris. The following observations pertaining to site age, activities, exchange and interaction, and change over time were made (Origer 1998:20-24).

Hydration measurements showed that some specimens are as old as the Archaic Period; however, more intense occupation of the site began during the Lower Emergent Period with Napa Valley obsidian being the most popular tool stone. Occupation continued into the Upper Emergent Period with Annadel and Napa Valley obsidian use being relatively equal. Most hydration measurements showed occupation beginning approximately 665 years ago to contact. However, a few measurements show limited occupation as early as 2500 years ago (Origer 1998:41-42).

The shift from exclusive Napa Valley to both Napa Valley and Annadel obsidian suggested some type of change in interaction and trade relations with both the Wappo and the Southern Pomo. Napa Valley obsidian is better quality and the earlier inhabitants of the site appeared to have easy access to this material. It is impossible to say whether trade with Southern Pomo was blocked for one reason or another and it opened as time
went on, or if trouble began with the Wappo overtime, therefore, Annadel was sought after because access to Napa Valley became more limited (Origer 1998:42).

Although there was a small number of lithic specimens, the ratio of tools to debitage and the ratio of obsidian sources suggest that Annadel arrived at the site in a more complete tool form than Napa Valley (Origer 1998:42).

The presence of debitage, bifaces fragments, and projectile points showed that hunting was one of the activities that took place from this site. Bone awls suggest sewing and basketry making. Faunal remains and FAR show that food was brought back to the site and processed. Food types include shellfish, mammals, and acorns though the small size of the two mortars suggested that they could also have been used for grinding food for people with few teeth or sore teeth/gums (Origer 1998:42).

Based on the findings from this investigation it was determined that the undamaged portion of the site still has integrity and data potential (Origer 1998:41).

**CA-MRN-170**

**Environmental Setting**

The site lies near what would have been in prehistoric times the shore of San Pablo Bay. The area surrounding the site has been greatly modified due to filling activities, creek channelization, and both industrial and residential development. During prehistoric times the environment surrounding the site would have been in the interstice of oak-buckeye woodland, grassland, and saltwater marsh.

**Site History**

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). The site remained relatively intact, and it was
investigated between 1970 and 1972 (Chavez 1976:22-23). Chavez states that the site was excavated because it was under threat of destruction from development but he did not specifically explain what type of development was planned to take place.

During this time the site was investigated by students from Laney College in Oakland under the direction of Ann Ramenofsky, Contra Costa College in San Pablo under the direction of George Coles, and San Francisco State University under the direction of Michael Moratto (Chavez 1976:25).

Investigation Findings

The site measured approximately 50x50 meters and extended to a maximum depth of 200 centimeters (Chavez 1976:24). At the beginning of the first season of excavation a datum was established and the site was gridded into 2x2 meter units. Forty-one 2x2 meter units, two 1x2 meter units and two backhoe trenches were excavated (Chavez 1976:27-28). All but one unit was excavated in 20 centimeter levels (Unit No. 117 was excavated in 10 centimeter levels) and all soil was passed through ¼-inch screen.

A large number of shell artifacts (n=1117) was found at the site. Most of these were beads made from *Olivella* shells (n=1078). The remaining 39 items were primarily beads from other shell species, along with 8 abalone ornaments and ornament fragments, and three shell spoons (Chavez 1976:32-50).

Bone artifacts included bird whistles, bird and mammal bone tubes and bead fragments, polished bird and mammal bone fragments, fragments of bird and mammal incised bone, bone awls and awl fragments, pins and pin fragments, and several tools (Chavez 1976:50-64).
The obsidian points found in the site were small, corner-notched and serrated side-notched arrow points common to the Lower and Upper Emergent periods. Several bifaces, cores, scrapers, blanks, drills, utilized flakes, and flakes were also found (Chavez 1976:64-77). Chavez reports that Tom Jackson visually sourced the obsidian from the site and determined that 80% of the obsidian was from the Napa Valley source and 20% was from the Annadel source (Chavez 1976:65). Appendix III shows the distribution of chipped stone artifacts; however, no source information was included.

Chert projectile points of similar style to the obsidian points were found, as well as chert and chalcedony bifaces, scrapers, cores, knives, choppers, gravers, drills, and utilized flakes (Chavez 1976:77-82).

Several mortars, pestles, and hammerstones, and fragments of all of these were found. Seven miscellaneous pecked stone items were also found. Some of these were merely stones with some pecking on them, and they possibly functioned as anvils. One stone had red ochre on its surface, and one had been pecked to create a concave surface but was not classified as a mortar (Chavez 1976:86-87).

Charmstones, steatite pipes, steatite beads, ear plugs, stone pendant fragments, a sinker, a burned stone, five "lithic curiosities", and five "natural mineral and stone object" were found (Chavez 1976:87-92).

Two baked clay figurines, two pieces of clay with basket impressions, four baked clay tube fragments, and nine pieces of burnt or sun-baked clay were found in the site. One of the figurines was described as resembling a female torso, while the other figurine was a torso of unidentifiable sex but incised lines seemed to depict ribs (Chavez 1976:92-93, and 112).
Several historical items were found primarily in the upper 40 centimeters of the site. A few items were reportedly found between 100-120 centimeters. This included square and wire nails, shotgun and .22 caliber shell bases, amorphous metal, wire, a large threaded nut, a small metal knob, broken glass and porcelain, a spoon, three buttons, and one button fragment (Chavez 1976:112-113). It appears no historical research was conducted to determine the origin of these items. Chavez reports that at the time of excavation the land was used for cattle grazing (Chavez 1976:23). If no buildings were located nearby it appears odd that so many items were found at this place. It is possible that the site was occupied during historical times by Native Americans. No study was made to determine the age of the shell casings which could aid in determining this hypothesis.

Nine burials were encountered during the course of excavation. Individuals were placed on their left side but orientation varies. Burials 1 and 2 were found buried together. Burials 4 and 6 were buried with *Olivella* beads. Sex and age (with the exception of stating whether it was adult or child) was undetermined for most of the burials. Two of the burials were determined to be female and one male. Two of the burials were determined to be infants (Chavez 1976:113-116). One of the infants was found below Feature No. 21, a house floor (Chavez 1976:129).

Twenty-eight features were found during the course of excavation. These included hearth-like structures, fire-pits, house floor remnants, ash and shell lenses, and cooking areas which were defined by concentrations of fire-affected rock and ash (Chavez 1976:122-132).
Two radiocarbon samples were submitted for analysis. One of these samples was from Burial 4 which was found on bedrock at a depth of 120 centimeters. The date from this sample was AD 600 (Chavez 1976:137). *Olivella* bead types from this burial (F2b, F3a, and F3b) indicated that the burial was at least 300 years older than the radiocarbon date. Other burial associated items, steatite ear plug, bone strigil, and red ochre all suggest a Middle Horizon (Upper Archaic) time (Chavez 1976:138).

The second radiocarbon sample was of a piece of charcoal found on a house floor remnant at 75 centimeters. This sample yielded a date of AD 1530. Chavez points out that this is the exact same date that Jackson got from one of his samples at CA-MRN-14. Both samples were associated with clam disc beads (Chavez 1976:140).

Clam disc bead types A1b and A2a are indicative of Phase 2 of the Late Horizon (Upper Emergent), as are the steatite beads, tubular and incised bird bone artifacts, and small obsidian projectile points (Chavez 1976:140-141).

Chavez stated that bulldozing activities in 1975 revealed a severely damaged infant burial with trade beads (Chavez 1976:142). Considering the previously mentioned historical items found at the site, it seems the site was occupied to some degree into the historical period.

*Mytilus edulis* remains were the most dominant shellfish with *Ostrea lurida* coming in second and *Macoma nasuta* third. Very small amounts of *Protothaca stamina*, *Acmea sp.*, *Balanus carious*, *Tresus nuttalli*, *Saxidomus nuttalli*, *Trachacardium quadragenarium*, *Clinocardium nuttalli*, *Thais lamellose*, and *Haliotis sp.* were also found (Chavez 1976:29-30).
The most common mammal bones observed at the site were deer, jackrabbit, cottontail, and Botta pocket gophers. In smaller amounts squirrel, chipmunk, raccoon, bobcat, and rat were observed. No detailed study of the faunal remains has been conducted (Chavez 1976:30).

No effort was made to identify the avifauna remains though it was noted that a concentration occurred between the 60 and 100 centimeter levels (Chavez 1976:31). Little can be said on the marine remains as well. The presence of sturgeon, shark, and rays was noted. Chavez cited Jackson stating that most fish remains would likely have fallen through the ¼-inch mesh used at the site (Chavez 1976:31).

The limited amount of study on faunal remains, artifacts, and features suggests that the site was occupied year round.

Obsidian and chert scrapers and awl-like tools suggest animal skin processing and clothing production. Mortars and pestles suggest acorn processing as well as some of the various cooking features observed during excavation (Chavez 1976:145).

Chavez interpreted evidence of rank ascription from differences in burial associated items and that the inhabitants had a form of non-egalitarian society that had been suggested by others throughout the county (Chavez 1976:143).

The numerous house floor remains show that several structures were constructed at the site; though none of the boundaries of the floors were determined during excavation. One house floor (Feature No. 26) showed evidence of a post hole (Chavez 1976:147).

The presence of obsidian suggests contact and exchange with Southern Pomo to the north and Wappo to the northeast. Chavez further suggested that the occurrence of
clam-disc beads, but the lack of clam remains indicates trade with inhabitants in the Point Reyes and Bodega Bay areas where extensive clam-disc bead production occurred (1976:149).

CA-MRN-192
Environmental Setting

The site is located adjacent to Highway 101 in northwestern Novato. Due to historic mining activities, fill for development, and lowering sea levels, the edge of the bay has retreated. Currently the Bay shore is approximately 4.5 miles southeast of the site. During prehistoric time it is likely that the shoreline would have been half that distance. Although the area has been heavily developed, based on the surrounding environment it is likely that during prehistoric times the surrounding environment would have consisted of oak-buckeye woodland and grassland.

Site History

Nelson reportedly stated that there were buildings on the property during his survey. The residents told him that several burials were found when they excavated the cellar. When McBeath visited the site during his survey the buildings had been removed but the cellar was still in place. Although it was not clearly stated, the site was investigated because of a proposed Highway 101 widening project (McBeath 1967:1).

Investigation Findings

Units were placed in the area of the site that lay within the right-of-way and in areas that had received the least amount of disturbance (McBeath 1967:2). At the time McBeath reported that no large-scale excavations had been performed in the area so complete data recovery was planned for the portion of the site planned for development.
The site was divided into a 3x3 meter grid in which units measuring 1x2, 1x3, and 2x3 meters were excavated (Hansen 1970:31). Levels generally measured 10 centimeters. Dirt was first screen through 1-inch mesh to remove large rocks. This soil was then screened through ¼ and ⅜-inch screens. Under poor weather conditions soil was wet screened through ⅛-inch mesh (Hansen 1970:31-32). A trench excavated with power equipment was cut through the deepest portion of the site.

The trench was excavated to a depth of 300 centimeters and in the bottom of the trench a unit was excavated to a depth of 500 centimeters. Obsidian points from this bottom level were submitted for hydration analysis. Side wall observation noted that there were less concentrations of shell from 0-80 centimeters, but that it increased from 80-130 centimeters. Bone increased in depth from 0-130 centimeters with a decrease noted between 80 and 110 centimeters. No data are available for levels deeper than 130 centimeters (Hansen 1970:51).

Three hearths, two rock concentrations, and two ash lenses underlying burials were found. Hansen reports that no house floors were found while excavating though some were observed in the side walls of units (Hansen 1970:50).

Seven burials were found during excavation. All of these were damaged from rodent activity. Orientation was tentatively established for only four of the burials; two were oriented north/south and two were oriented east/west (McBeath 1967:5). Six of these burials were adults and one was an infant. No sex data were reported (McBeath 1967:7). Some items were reportedly found in association with the burials. These items included chert scrapers, worked stone pieces, a mortar fragment, two bone awls, and two baked clay tubes (McBeath 1967:6). However, McBeath had stated that the site had been
damaged by rodent activity so these items may not be funerary items (McBeath 1967:5).

Projectile points found at the site included obsidian lanceolate or leaf-shaped, corner-notched, large corner-notched expanding stem, a concave base point, and two diamond shaped points similar to Beardsley’s N4b type (Hansen 1970:35-36). Obsidian knives, scrapers, cores, and tinklers and chert scrapers, reamers, and drills were also identified at the site.

Several mortars and mortar fragments were found at the site including a miniature or paint mortar. Along with mortars, several pestles and pestle fragments were found (Hansen 1970:43-44).

Three items described as “pebble tools” were found at the site. All three items were river cobbles approximately the size of a duck egg. All of them showed battering wear on one side. One of them has red ochre on the battered end suggesting these stones were used with the paint mortars (Hansen 1970:44).

Two grooved stones were found that were likely net weights. Two steatite pipes were also recovered. Three charmstones (one of which was broken), two quartz crystals, a sting ray barb, and a condor bone awl with an end worked and polished were found (Hansen 1970:46-47). Twenty-eight shell beads and pendants, a piece of perforated mica, and several baked clay items which were classified into four categories: baked clay figurines, baked clay tubes, fortuitous inclusions, and clay basketry impressions were found (Hansen 1970:48-49).

Thirty-two pieces of bituminous coal, three pot sherds, a bone button, two large square nails or spikes, and a boar tusk were also found. Hansen states that there were buildings on the property and that the historical items are likely from historical era

The radiocarbon samples submitted for analysis were considered too small and contaminated and were not reported on in Hansen's thesis (1970:54). This meant that the only usable data were derived from artifacts and hydration analysis. Based on the presence of the types of beads, projectile points, pendants, baked clay figurines, bird bone whistles, and quartz crystals, Hansen estimated that the site was occupied during the Middle Horizon (or Upper Archaic Period) with a Late Horizon component (Lower and Upper Emergent Period) represented by steatite beads, clam disc beads, rectangular Haliotis pendants, finely incised bird bone, steatite pipes, A1a and A2a mortars and small serrated and non-serrated obsidian points (Hansen 1970:55-56).

The two obsidian samples taken from the unit placed at the bottom of the bulldozer trench gave hydration measurements of 4.1 and 3.8. No source information about the specimens was given and no attempt by Hansen was made to convert these measurements into dates (Hansen 1970:56). For his Master's thesis, Thomas Jackson sourced obsidian from several sites in Central California, CA-MRN-192 included. His analysis showed that approximately 75% of the obsidian sourced from the site was from the Napa Valley source and 25% of the obsidian was from Annadel (Jackson 1974:147). Based on this information it is likely that the specimens were from the Napa Valley source and when the measurements are converted into dates the base of the site dates to 455 BC and 100 BC. This would suggest that first occupation began at the end of the Middle Archaic Period and beginning of the Upper Archaic Period.

Hansen felt that during the Emergent Period occupation of the site was for seasonal collection of shellfish. This was due, in his opinion, to the limited number of
mortars and pestles, the lack of wealth related artifacts, the absence of a dance house floor, and the site abandonment during the Late Emergent Period (Hansen 1970:60). He cites Gould (1964) as hypothesizing that during this period Bay shore inhabitants moved inland to further incorporate acorn into their diet which was easier to store than shellfish (Hansen 1970:59-60). He also postulated that the site could have been abandoned during the Upper Emergent Period because of European contact (Hansen 1970:60).

Although Hansen believed there were no wealth or ceremonial items found, shell beads and pendants were found at the site and are often associated with items of wealth. Also, quartz crystals, steatite pipes, baked clay figurines, red ochre and the tools necessary to make it into paint, and charmstones are often items signifying ceremonial activities. Also, Hansen noted that structure floors where observed in unit sidewalls. It is possible that a dance house existed and was not found during Hansen's investigation.

Obsidian and chert projectile points and faunal remains indicated that hunting activities and bird and animal processing took place at the site. The large amount of shellfish remains shows that shellfish collecting was a major activity as well. Although Hansen felt there were not many mortars (3 complete and 106 fragments) and pestles (3 complete and 39 fragments), their presence indicated plant processing. Scrapers show that clothing production took place at the site and many of the bone tools suggest basket production.

Trade is most easily identified by the presence of Annadel obsidian from Southern Pomo territory to the north and Napa Valley obsidian in Wappo territory to the northeast. Steatite is also not native to Marin County. The presence of clam disc beads indicate that trade was occurring between the site inhabitants and people living on the Pacific Coast.
The site is located at the northeast side of the base of Burdell Mountain and is approximately 5.5 miles northwest of the mouth of the Petaluma River with San Pablo Bay. The surrounding environmental setting consists of oak-buckeye woodland and grassland.

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909). In 1957 Adan Treganza excavated the site while he was looking for evidence of Sir Francis Drake (Treganza 1958). From 1971 to 1978 Slaymaker conducted site investigations. Over time he accumulated over 50,000 artifacts and determined that the site dated from AD 1300-1850 (Hines 1996:9). Slaymaker also had the site listed on the National Register of Historic Places in 1972 (Hines 1996:3).

After the land was acquired by the California Department of Parks and Recreation in 1977 boundary determinations were conducted and it was decided that what was once considered a part of the site was a separate site and designated CA-MRN-526 (Hines 1996:9).

The current investigation was conducted because the Marin Municipal Water District proposed to construct a pipeline through a portion of Olompali State Historic Park.

Investigation Findings

In 1996, 24 backhoe trenches and two jacking pits were excavated along the proposed pipeline route to determine if buried deposits were present (Hines 1996:19).
This operation was monitored by Hines and Native American, Kathleen Smith. Some soil from trenches that were in areas that were considered cultural was screened through mesh to look for cultural items (Hines 1996:20-21).

These trenches and pits yielded fragmented shell, obsidian and chert flakes, a mortar, and darkened soil; all of which indicate that buried cultural deposits were present in the project area (Hines 1996:27). A burial was also found in one of the backhoe trenches. When the burial was exposed the Native American monitor asked that the burial remain in situ and that no further disturbance be conducted. However, before the burial was covered certain observations were made. The burial was in a pit that was 40 centimeters below the ground surface. The remains were buried in a flexed, seated position, and the burial was facing east. Soil excavated around the burial was screened. Only a few bone fragments, obsidian flakes, and a polished stone with two pecked marks were found. All of these items were reburied with the burial (Hines 1996:42-43). Kathleen Smith suggested the polished stone was a 'money stone' used by Pomo to manufacture shell disc beads (Hines 1996:43).

Nineteen units of varying size were excavated by hand both along the proposed pipeline route and outside of the project impact area. The units were excavated in 20 centimeter levels and all soils were screened through ¼-inch screens (Hines 1996:20-21). A total of 10.35 cubic meters of soil was excavated (Hines 1996:28).

Obsidian projectile point fragments, bifaces, chert and obsidian flake tools, chert and obsidian debitage, and chert and obsidian cores were found in the excavation units (Hines 1996: 29-37).
Sixteen obsidian specimens were analyzed for source and hydration data. Analysis showed that eleven of the specimens were from the Annadel source and the remaining five were from the Napa Valley source. Hydration measurements ranged from 6.9 to 0.9 microns. All of the Annadel specimens dated to the Lower and Upper Emergent Period as well as two Napa Valley specimens. The remaining Napa Valley specimens dated to the Archaic periods (Hines 1996:39-40). The Napa Valley specimen that had a measurement of 6.9 microns yields a date of 4880 BC. (using Origer’s 1987 rate and adjusting for EHT).

Based on collection of artifacts and the hydration information it was concluded that early use of the site was as a seasonal or temporary camp which started during the Lower Archaic. The site then appears to continue through to contact times (Hines 1996:47).

CA-MRN-254
Environmental Setting

The site is located on the east side of the confluence of Black Canyon Creek and an unnamed tributary on the campus of Dominican College. In prehistoric times the plant community would have been oak-buckeye woodland and grassland. It is approximately 1.5 miles from the bay shore.

Site History

This site was discovered by Nels Nelson during his survey of the northern Bay Area archaeological sites (Nelson 1909); however, an official recorded was not prepared until 1955 by Adan Treganza. He described the site as measuring 167x167 meters and 4-4.7 meters deep (Treganza 1955). However, when he excavated the site two and three
years later to look for evidence of a Sir Francis Drake landfall on San Pablo Bay, he described the site as measuring 167x133 meters and 3.3 meters deep. When Treganza excavated the site he excavated a 10x80 foot long trench. Under the direction of Albert Elsasser three 3.3x2 meter units were also opened and excavated to 2 meters deep. A portion of Treganza’s trench reached a depth of 2.7 meters. Neither of these depths reached the bottom of the deposit though they estimated that the deposit was over 3.3 meters deep. Treganza also noted “some burials” near pits 1a and 1b and a shallow burial on the north side of the midden. Beginning in 1971 Slaymaker conducted excavations on the site as a part of an archaeological field methods class he taught at the college (Bieling 1998:2).

In response to proposed development to take place on the property, Holman & Associates was contracted to conduct a multi-phase investigation of the site. Changes to the Master Plan required survey of campus property. Along with the Master Plan changes, construction of a gymnasium and parking lot were proposed in close proximity to CA-MRN-254. Augering, performed to determine the extent of the site, found that the northern edge of the site extended close to the proposed project. It also showed that in spite of being damaged in historic times, it still had a considerable amount of intact deposit. Augering further showed that in places the site extended three meters deep and contained distinguishable layers. Human bone was also identified in one of the auger units. These combined findings reinforced the hypothesis that the site was a potentially significant cultural resource (Bieling 1998:1).

Holman & Associates worked with Dominican College to change their plans so that the building would be situated outside site boundaries. The parking lot would then
be placed on top of the site which would ‘cap’ the site and protect it. Removal of vegetation, construction of the parking lot, and installation of utilities would still have an adverse affect on the site and require an investigation of the site (Bieling 1998:1).

Holman & Associates consulted with the Federated Coast Miwok (now known as the Federated Indians of Graton Rancheria) throughout the process. Eugene Buvelot had been designated the Most Likely Descendant (MLD) by the Native American Heritage Commission. Because scheduling conflicts prevented Buvelot from being on the site at all times, Grant Smith was appointed in his stead. The handling of artifacts and human remains were guided by their wishes. Human remains and funerary items were collected, analyzed, and returned to Smith for reburial at Point Reyes (Bieling 1998:1).

**Investigation Findings**

Eleven auger units, six 1x1 meter units and two contiguous 1x2 meter units were excavated. Based on auger units, portions of the site exceeded three meters in depth and showed that the site exhibited stratigraphic layers (Bieling 1998:54). Units were excavated in both 10 centimeter arbitrary levels and stratigraphic layers. Because of these layers and the identification of features with associated dates, the author was able to associate unit depth with archaeological components (Bieling 1998:146). This aided studies such as subsistence change over time.

Three intact burials were discovered during the course of excavation. Burial one was a female whose age at death was estimated to be 35-45+. Two displaced anterior teeth were extremely worn and lower lumbar vertebrae showed osteophytic lipping. The body was oriented to the northeast (Bieling 1998:55). The author notes that the burial was found in a depression, however, during excavation they discovered a thin layer of
charcoal underneath the remains which seemed to conform to contours of the depression (Bieling 1998:62). This layer of charcoal suggests preinterment grave pit burning. Several bones exhibited burning or heat damage. All of these factors suggest that grave pit burning may have been part of a mortuary ceremony (Bieling 1998:202). A sample of this charcoal was submitted for radiocarbon dating and it produced a date of AD 1480 +/- 150. (Bieling 1998:62)

Burial 2 and 3 were found to be interred at the same time (Bieling 1998:55 and 203). Burial 2 was a male who lay flexed and on his right side with arms semi-extended and crossed between the legs in the pelvic region. The skeleton was oriented northeast with the cranium facing roughly west. Five centimeters east of the twelfth thoracic vertebrae an obsidian bifaces was found. It is unclear if it is associated or not (Bieling 1998:203). With the exception of natural disturbance factors (soil compaction and tree roots) the body was intact. The skull exhibited heavy robust features as did the skeleton. Many skeletal characteristics suggested the man was very muscular. He was estimated to be 5’6”. His age at death was between 35 and 45 years.

Traumas and pathologies found on Burial 2 included two small, healed lesions in the cranium. The superolateral patellar surface showed signs of a healed fracture on the left side. One proximal foot phalanx showed evidence of infection. Several dental defects were noted (Bieling 1998:203).

Burial 3 was oriented northeast and rested on its right side (Bieling 1998:203). The body was flexed with its right arm extended between its legs with its left arm tightly flexed with the hand under the chin. No artifacts were found associated and the charcoal sample found underneath proved to be too small to yield radiocarbon results. The burial
was nearly intact with only some damage caused by roots and/or rodent activity. This person was a female who stood approximately 156 centimeters tall. She died at between 30 and 40 years old (Bieling 1998:204). Pathologies noted on the body consisted of a head trauma and possible evidence of a long standing dislocated clavicle.

Thirty-four isolated human bone fragments were recovered from six test units. All fragments were from adults except one sternum segment. Included in these fragments were six charred cranial fragments found in Unit 5 between 10-80 centimeters. Suggesting possible evidence of a cremation or preinterment burning. However, the author believes there is stronger evidence for this in the charred remains found in Unit 6 at 160-200 centimeters. These items consisted of five charred and calcined cranial fragments, an ulna midshaft fragment, and three small femur or tibia fragments (Bieling 1998:204).

Thirteen features were found during the course of excavation. These features include FAR rock concentrations and layers, a scatter of artiodactyle bones, ash lenses, ash and shell layers, and a concentration of charcoal (Bieling 1998:59-87).

Twelve charcoal samples were subjected to radiocarbon dating (Bieling 1998:137). Three had to be discarded do to anomalous dates. The remaining samples showed that occupation of the site occurred 1800 years ago. Hydration samples from the same provenience do not corroborate this date, however, and it was determined that bioturbation caused small items, such as obsidian flakes and artifacts, to move throughout the site. There were four hydration measurements that indicate possible earlier use of the site, though, this could be due to recycling of older artifacts or flakes (Bieling 1998:140). Occupation of the site terminated sometime during the Upper Emergent Period. This is
evidenced by the types of projectile points and glass beads that were found.

Obsidian analysis shows that Napa Valley obsidian was the primary source utilized throughout time and that use at the site seems to have extended from the Upper Archaic through the Upper Emergent where use declines slightly. Annadel was used sporadically through the same time but use seems to have increased during the Upper and Lower Emergent periods (Bieling 1998:213).

Analysis of the midden indicates that two meters of the deposit where formed during the first 500 years of occupation. This slows dramatically after this point. This slowing, it is hypothesized, is due to less sustained occupation of the site.

The greatest number of bird bones found were from waterfowl which inhabit Central California from late fall to early spring. This shows occupation of the site during this time of the year. However, the presence of other animal and bird remains shows that the site was occupied year-round.

Five flotation samples were submitted to Sonoma State University for flotation and archaeobotanical analysis. These samples showed that many of the species identified were well documented local food resources; therefore, the presence of these taxa was likely due to cultural activity. Samples associated with Later Period (Lower and Upper Emergent) contexts had the greatest diversity of species. What was also noticed about these Late Period (Lower and Upper Emergent) samples was the high number of grass seeds compared to Middle Period (Upper Archaic) samples. Interestingly, an abundance of sunflower (Asteraceae) and bean (Fabaceae) were found in Late Period (Lower and Upper Emergent) samples as well as buckeye. Goosefoot (Chenopodium sp.) was only present in Middle Period (Upper Archaic) sample #5. (Appendix I)
Faunal remains were examined to see if the site fit into the 'cervid economy' mode (Simmons 1992:75). Analysis showed that this model was reflected in this site and that there was a marked artiodactyl decrease with a waterfowl use increase during the Late Period (Lower and Upper Emergent) (Sieling 1998:151-162).

Icthyofaunal analysis showed a focus on sturgeon over time which consisted of 74.4% of the fish remains identified. To a lesser extent Chondrichthines and salmon were the next most common fish in the collection. This subsistence strategy is contrary to what was observed at sites CA-MRN-14 and CA-MRN-20; however, the environment in which these sites lie is different from CA-MRN-254. CA-MRN-17 is within a similar environment to CA-MRN-14 and CA-MRN-20; however, there must have been some conditions that were conducive to sturgeon harvesting because this site exhibits sturgeon use as well (Bieling 1998:180).

Bieling's analysis showed that ¼-inch samples were required to develop a true picture of the taxa present at the site. This is due to the way the shells of a variety of species fracture. Shellfish remains showed that Mytilus trossulus was the dominate species throughout the site in all but one provenience. It also showed that the portions of the site that contained the greatest diversity of taxa where on the mound. Furthermore there are two lenses (at 60-90 centimeters and 130-210 centimeters) within the mound that have a greater diversity of taxa as well. Shell 'dump' events which occurred before and after deposition of these two lenses did not exhibit the same amount of diversity. It is possible that these two lenses indicate more intensive occupation during these times.

Overall the shellfish analysis showed that Mytilus trossulus was the primary shellfish procured at the site throughout time in spite of other shellfish exploitation
models for the bay area (Bieling 1998:200)

CA-MRN-255/H

Environmental Setting

The site is located next to an unnamed tributary to Corte Madera Creek which feeds into San Francisco Bay. The site is near the foot of hills which have an oak-buckeye woodland and chaparral environments (Bieling 2000:2.2).

Site History

The site was recorded in 1955 by Adan Treganza while looking for signs of Sir Francis Drake’s landing. Because Chinese pottery was reported at the site, Treganza excavated a single unit, which revealed a 1-meter thick shell mound. Treganza believed that he was excavating the lower levels of a once much larger site and that the upper levels had been removed by the Remillard brickyard (Bieling 2000:4.1). The Ross Valley Wastewater Treatment Plant was constructed in 1940, and over the years it was expanded and remodeled several times.

Before the most recent study, the site had been subject to limited archaeological investigations. In 1978 a surface survey was conducted along the Sir Francis Drake Boulevard right-of-way. In 1980 field survey of the parcel and six auger holes to the west of the site were conducted. One of the bore holes showed that a thin shallow layer of midden extended to the northeast side of the parking lot and five other borings made at the south end of the parcel showed that the site extended there as well. In 1974 and 1980 test excavations were conducted on the portion of the site which lies on the adjacent Remillard property. An archaeologist was also present when four backhoe trenches measuring 3 meters long by 2 meters deep were excavated (Roop 1975). These
investigations showed that the site extended to the south as far as Sir Francis Drake Boulevard, and contained intact deposits over 1-meter deep. The historic portion of the site was investigated in 1985 (Bieling 2000:4.6-4.7).

**Investigation Findings**

This site investigation was prompted by the proposed sale of the property for development. The parcel was currently the site of the Ross Valley Wastewater Treatment Plant in Larkspur. The districted has applied for a use permit to dismantle the existing wastewater facility which included both subsurface and above ground structures. The site would then be graded and prepared for sale for future development (Bieling 2000:iii).

The investigations reported on in this report began in 1997 when 13 backhoe trenches were excavated to determine whether there were undisturbed prehistoric and historic deposits, and to examine the site’s stratigraphy. This investigation revealed both disturbed/redeposited midden and intact midden as well as intact historical soils (Bieling 2000:6.1).

In 1998 and 1999 removal of infrastructure was conducted which resulted in the finding of intact midden, burials, and historic era deposits. Because the proposed development after the sale of the property would result in the complete destruction/removal of the midden deposit a rapid recovery operation was conducted (Bieling 2000:6.1-6.3 and 6.20-6.30).

During excavations of the site, the Most Likely Descendant from the Federated Indians of Graton Rancheria, Tim Campbell monitored the excavation. When he was unavailable Gene Buvelot, John Jimenez, and/or Frank Ross acted on his behalf.
During the course of this investigation five 1x1 meter and two 1x2 meter units were excavated. One of the 1x2 meter units and the 1x1 meter unit were excavated to uncover the burial (Bieling 2000:6.3). During the excavation of these units a second burial was discovered (Bieling 2000:6.5). A third unit was excavated to examine the conditions in a visually different area of the midden (Bieling 2000:6.6). Excavation of historic features relating to the brick factory also occurred but will not be reported on in this document.

To examine the very lowest levels and to aid in the identification of stratigraphic layers in the site a backhoe trench was excavated. The trench was excavated 1.5 meters deep. This cut showed that what was thought to be the base of the midden sitting on bay mud (and likely was) was underlain by a thick layer of Mytilus shell. The author believes that this layer was a result of an intensive discard event that was created during initial occupation. This portion of the site was then covered with bay mud during an estuary expansion event which occurred after initial occupation. A sample of charcoal collected 10 centimeters above this layer was used for radiocarbon dating (Bieling 2000:6.19).

After the excavation of standard units, intact midden soils were removed systematically and wet-screened through ¼-inch mesh. Disturbed soil was removed as well and wet-screened. This was done to recover all human bone and diagnostic artifacts. Thirty cubic meters of soil was removed (Bieling 2000:6.19-6.20).

No unit exceeded 1.1 meters in depth, and from the deposit, 34 soil samples equaling one gallon were taken. Seventy-two radiocarbon samples were retained, and of these, six were submitted for testing (Bieling 2000:1.12). Only 38 obsidian specimens were found during the course of the excavation; five of which had been worked. Thirty-
seven specimens were submitted for hydration analysis (Bieling 2000:1.12).

Two intact burials were found together. A secondary inhumation and a disturbed burial were also found. The two burials found together were a female who died around the age of 30 and a child who died between the ages of 3 and 5. Both individuals appeared to be buried at the same time giving the impression that this was a mother/child burial. Unfortunately, due to the degraded nature of the bones no other osteological information was obtained (Bieling 2000:10.1).

The third burial was also fragmented and disturbed. No information about the body was discernable (Bieling 2000:10.3). Several pieces of human bone were also found throughout the excavation (Bieling 2000:10.4).

Radiocarbon dating showed that the site was occupied from 770 BC to AD 60 or during the Early Period (end of the Middle Archaic Period and the beginning of the Upper Archaic Period) and before the beginning of the Intermediate Middle Period (Upper Archaic Period) (Bieling 2000:9.1).

Hydration results were more broad with measurements being as old as 2811 BC (Middle Archaic Period) and as young as A.D. 1902 (Historic Period). However, when anomalies are excluded the mean is more consistent, though younger than the radiocarbon dates and range from 333 BC to AD 619 (Upper Archaic Period). These dates suggest occupation was during the Middle Period (end of the Middle Archaic Period and the beginning of the Upper Archaic Period) (Bieling 2000:9.4).

Five components were identified. These stratigraphic components allowed for the analysis of faunal bone analysis, artifact yield and assemblages, hydration dating, and debitage rates (Bieling 2000:9.10). Artifact yield and assemblages showed that fishtail
chamstones are the dominate form and bone tool counts are higher in the early components.

Most shellfish remains were not collected; however, 427 large pieces were saved, and these represented eight different species. Species from four marine habitats were identified, though the most dominate was from bay environments (Bieling 2000:8.1-8.3).

The majority of the faunal assemblage was from birds who live in the bay area during the late fall, winter, and early spring months (Bieling 2000:11.10). The only other remaining taxa that suggest seasonality was the presence of black bear which typically would have been less available during winter months (Bieling 2000:11.10-11.11). Analysis of the assemblage shows that the site was occupied year round (Bieling 2000:11.11).

Bieling compared the faunal assemblage from CA-MRN-255 with nearby site CA-MRN-254. Although the sites are in close proximity to each other, they have very different assemblages. One factor may be that CA-MRN-254 is located inland while CA-MRN-255/H is located adjacent to the bay shore. This would have made exploitation of waterfowl easier.

The change from a ‘cervid economy’ to a waterfowl economy is evident at CA-MRN-254; however, no other attempt was made to examine changes over time at CA-MRN-255. While CA-MRN-255 also represents a ‘cervid economy’ indicative of a Middle Period (Upper Archaic) site, the anomaly of having an higher percentage of waterfowl is likely due to its proximity to the habitat of these birds (Bieling 2000:11.13-11.14).
Fish remains found at the site are from four taxa including sharks, rays, sturgeon, and salmon (Bieling 2000:12.1-12.2). The remains of these species are often found in sites located in the East Bay, and this similarity is thought to be a result of fishing using watercraft (Bieling 2000:12.2).

CA-MRN-357
Environmental Setting

The site is located on the south side of San Antonio Creek which serves as a portion of the boundary between Marin and Sonoma counties. The environmental community that the site is located in consists of grassland with some scattered oak and riparian species.

Site History

The site was discovered in 1955 by Ralph Milner while hunting on George Perry's property. Milner noticed that there were human bones eroding from the stream bank and found two burials. Upon returning the following day to recover the remains, Milner found that the remains had been disturbed by vandals. Upset by this Milner surface collected the site for the next two years (King et al. 1966:20).

In 1957, the site was rediscovered by three young boys (Richard and Alvin Baldwin and Thomas King) who immediately began excavations which they designated as Trenches A and B. These trenches revealed two more burials. After finding the burials the boys began to work with trowels, paint brushes, screens, and took notes as they excavated. As a Christmas gift that year one of the boys received Robert Heizer's *Manual of Archaeological Field Methods* (1949) (King et al. 1966:20). The following summer the boys began to excavate five by five foot units four feet deep. Excavations
continued as the boys grew and when Thomas King went into the naval service in 1962 Ralph Milner took over command of the operation. The excavation continued over the years until 1965 (King et al. 1966:21).

Investigation Findings

It is not clear exactly how many 1.5x1.5 meter units were excavated but it was at least 14. Soil was excavated in 30.5 centimeter levels and screened through ¼-inch screens (King et al. 1966:21).

Nine burials were excavated from the site. Two and potentially three burials were also excavated by pot hunters. The only data on the remains were that they ranged from being loosely to tightly flexed, and heads were generally oriented to the west. Six of the bodies were male, one was female, one was an adolescent of indeterminate sex, and one was an adult of indeterminate sex. Six of the remains were determined to have died between the ages of 50 and 80 years. Five burials had items associated with them. These items included 28 Olivella beads, a charmstone, a mortar fragment, an earplug or charmstone, an obsidian point, a quartz crystal, a bone awl, several shell fragments, charcoal, a chert and an obsidian scraper, and limonite traces (King et al. 1966:40-47). A flat stone was found partially covering one of the burials. The authors hypothesized that the flat stone signified either a way of preventing the dead from rising or a way of preventing the remains from being disturbed by animals (King et al. 1966:90). The authors also felt that the age of the remains was interesting as they seemed much older than other remains found throughout the county (King et al. 1966:89).

Materials collected from the site over the years included obsidian serrated, nonserrated, and lanceolate projectile points, bifaces, and flake tools, chert scrapers and
drills, shell, bone, and steatite beads, a quartz bead, a steatite pendant and pipe fragment, mortars, pestles, bone tools and gaming pieces, charmstones, an ear plug, net weights, backed clay lumps and figurines, and a basalt pebble with a black substance that glued sand to the exterior. Although the black substance was thought to be asphaltum, it did not bubble or burn when exposed to heat (King et al. 1966:52-70).

Age was based on antiquated hydration methods and the analysis of only 10 points. Their measurements showed that occupation of the site ranged in date from nearly 2000 BC to AD 775 (King et al. 1966:82). No source information is given so it is difficult to truly assess their data. However, using Origer’s (1987) hydration rate and assuming that the point was manufactured from Napa Valley obsidian, the measurement of 2.2 microns yields a date of approximately AD 1250. This date is consistent with the Upper and Lower Emergent Period artifacts found at the site.

Two components were identified at the site. They were classified as Perry A and Perry B. Perry A ranged from the upper 6-12 inches at the western end of the site to 24-36 inches at the eastern portion of the site. This component is marked by an increase in FAR and low shell content relative to Perry B. Artifact types found in this component consisted of corner-notched points, serrated non-barbed points, clam disk and rectangular Olivella beads, a flattened pebble, flat-bottomed mortars; though mortars of all types were common in this component, as are pestles. Obsidian from the Maacama source (identified by Ralph Milner) was present though most of the tools are of an unidentified translucent source (King et al. 1966:84). Based on King’s description the obsidian could be either Franz Valley or Napa Valley.
A zone between Perry A and B was identified by a decrease in all artifacts except charmstones which increased (King et al. 1966:84). While the authors note this could technically be classified as another component there were no other characteristics noticed in this zone. No indication was given as to how deep this zone was.

None of the artifacts identified in Perry A were identified in Perry B. Perry B did contain the baked clay figurine and a steatite pipe fragment, though the small number of these items cannot allow for interpretation. Shell content was greater and FAR content less. Chert and Annadel obsidian use is higher in this component as are bone tools. There are less mortars and pestles and pigment mortars and there are no clam disk beads or rectangular *Olivella* shell beads. In their stead are round *Olivella* beads. Lanceolate points are found in both components (King et al. 1966:84).

Activities identified as taking place at the site included hunting, gathering, plant and animal processing, gambling, and ceremonies. Hunting and animal processing was evident by the projectile points and faunal remains. Gathering and plant processing was evident by the mortars and pestles. Gambling was suggested by the presence of the perforated deer astragalus (King et al. 1966:89). Ceremonial activities, marked by the presence of the charmstones and a quartz crystal, were a possibility.

Exchange is indicated by the presence of obsidian from Napa and Sonoma counties. This suggests interactions with the Wappo and Southern Pomo, respectively. The lack of structures and the age of the remains suggests that the site was used seasonally (King et al. 1966:90).
CA-MRN-402

Environmental Setting

The site is located on the north side of the base of Shroyer Mountain. Although there are several farms and ranches nearby the land has not been heavily developed. The environmental setting of the site and its surroundings consist of oak-buckeye woodland, Douglas fir forest, grassland, and riparian habitat along Halleck Creek and several small drainages that flow nearby.

Site History

The site was found in the fall of 1970 by Edward Mitchell Love. At the time Love was an anthropology student at San Francisco State College (now University). Love was searching for the ethnographic village of Echa-tamal which had been documented by Isabel Kelly (Dietz 1976:73).

Investigation Findings

In the summer of 1971, two field classes excavated the site under the direction of Charles Slaymaker and Winfield Henn. The site measures 42 meters north/south by 42 meters east/west and it was gridded into 6x6 meter squares. These 6x6 meter quadrats were further divided into 1.5x1.5 meter excavation units. A total of 39 units was excavated in 10 centimeter levels. All soils were passed through ½-inch screens. Of the 39 units, 27 reached sterile soils (Dietz 1976:75). Materials were accessioned at the Adan E. Treganza Anthropology Museum at San Francisco State University and the Miwok Archaeological Preserve of Marin (Dietz 1976:77).

Two burials were found during excavation. The first burial was found at the base of the site in sterile soil at a depth of 40 centimeters. The burial was not well documented and Dietz's memory was that the burial was in a flexed position. The second burial was
also not documented well, and there is no provenience information associated with this burial (Dietz 1976:77).

Seven features were found during excavation, and these included four fire-affected rock concentrations, concentrations of ash (one found on sterile soil), and a hard-packed soil area which was likely a house floor. Dietz indicates that poor records were kept concerning these features as well (Dietz 1976:77-79). A cache of six sandstone pebbles was found though not classified as a feature. It was found 15 centimeters below the ground surface. The stones ranged in size from 16.6x13.5x8.1 millimeters to 36x19.9x17.9. Dietz points out that Isabel Kelly recorded Maria Copa as stating that round pebbles were used in a game like jacks (Deitz 1976:118-119).

A total of 5,513 artifacts was recovered from the sites, and of these, 4,980 were of Euro-American manufacture. The most common items were glass fragments, the second square nails, and the third trade beads. Other items found included personal items and adornments, clothing articles, hardware, tools, fishing equipment, horse tack, and domestic items. The remaining 533 items were manufactured by Native Americans (Dietz 1976:79). These items include obsidian projectile points, chert drills, a charmstone fragment, a sandstone pendant fragment, abraded slate objects, a steatite plug, a modified quartz crystal, sandstone pebbles found in a cache, pestle fragments, mortar fragments, bone gaming pieces, cordage impressed asphaltum, bone awl fragments, scapula tools, incised and polished bird bone, clam disc beads, and lithic debitage and flake tools (Dietz 1976:80-119, 263-265, and 269-275). A bangle made from tin was also found and according to Dietz is the only item that was made from Euro-American materials into a Native American item (Dietz 1976:80).
Dietz divides time from AD 1400 to AD 1884 into four time periods. Prehistoric (1400-1817), Missionization (1817-1833), Post-Mission/Early European Settlement (1833-1849) and American (1850-1884) (Dietz 1976:176). Dietz deduced that the site was first occupied during his Prehistoric Period, which placed the site in the Late Horizon (Lower and Upper Emergent periods). Typical Late Horizon markers included serrated and non-serrated points, clam disc bead types, certain mortar types, and a phallic shaped charmstone fragment (Dietz 1976:175-182).

Dietz concluded that the site was not occupied during his Missionization Period nor during the Post-Mission/Early European Settlement. The presence of trade beads and a brass ring with the inscription "Our Lady of the Help" was thought to be from a later period in time.

Following the short hiatus, the site was reoccupied during the American Period when Native Americans were left landless. After Americans made living on the nearby Tinicasio land grant extremely difficult, the Native Americans petitioned for possession of the land grant in 1854 (Dietz 1976:196-197). It is also possible that Timothy Murphy, who had served as administrator and alcalde and juez de paz at Mission San Rafael, lived at the site. After secularization Murphy had remained 'in charge' of the Native Americans from the mission.

Echa-tamal originally lay on the lands of Henry Halleck who likely allowed the Native Americans to live there in exchange for labor. Dietz states, based on ethnographic information, that Jose Calistro lived at Echa-tamal. In 1872 he purchased the property which would have provided a little more security for those living on the site (Dietz...)
Unfortunately, Jose Calistro died in 1875 and his family moved away from the village. Dietz believes the site was abandoned within 10 years after the second occupation period based on the artifactual remains (Dietz 1976:202).

CA-MRN-406

Environmental Setting

The site is located on the College of Marin (COM) campus on the northeast bank of Corte Madera Creek. At one point Corte Madera Creek was navigable by boat (Goerke 1994:21-24). In prehistoric and early historic time the marsh was much closer than it is today. Silt and fill have shrunk the marshland significantly. The hills to the north have consist of an oak-madrorno and mixed evergreen forest. It is likely that the environment around the site was similar,

Site History

This site was surprisingly missed during Nels Nelson's survey. First note of the site was made by Ward Austin President of COM. In 1928-1929 Austin noted in a draft report that there had been an 'Indian mound' near the barn that served as the Art building. Austin ordered that the area be leveled and the extra dirt be used for fill for a parking lot and also used for planting. He further mentioned that there were many artifacts including bowls, pestles, and ear ornaments (Austin quoted in Goerke 1994:8-9).

A campus newspaper published an article in 1930 about a mortar fragment found by students digging in the athletic field. They estimated that had it been complete it would have measured two feet deep by one foot in diameter. Based on the article it seemed that finding Native American artifacts was a common occurrence on campus and that the location of the 'Indian mound' was well know (COM Publications cited in
In 1934 a science professor found a skull and lower jaw in a different portion of the campus (Austin cited in Goerke 1994:12). This location was noted on the Geology Lab notes from a 1964 excavation. Austin further remembered that two skeletons were found during the excavation of an electrical conduit, and more were found during the library building construction (Austin cited in Goerke 1994:12).

In 1964, Steve Bruff, a campus geologist taught the class 'Informal Archaeology' with teacher's aid David Baver. The artifacts analyzed during this class were from CA-MRN-406 and reportedly consisted of arrowheads, grinding and scraping stones, spear points, clam shells, animal bones, necklaces, and other hunting and household items. Also uncovered were the remains of four adults and a child. Bruff estimated that the site boundaries were between the library and science building, in the proposed campus center (COM Publications cited in Goerke 1994:12). However, in a newspaper article he estimates that the site extended from the library to the parking lot near Olney Hall (Independent Journal cited in Goerke 1994:12).

In 1968 John O'Kane, another geology instructor at COM, removed remains from two large holes, reportedly excavated for electrical lines near the southwest corner of the Austin Science Center building (O'Kane cited in Goerke 1994:12 and 14).

In the spring and summer of 1971, John McBeath excavated units on campus. Faunal and shellfish remains were collected which would contribute to subsistence and settlement pattern analysis. Unfortunately, McBeath's notes as well as several artifacts were stolen the following year. In 1973 McBeath transferred to the Indian Valley College campus and took the materials excavated with him (Goerke 1994:14).

During the next 30 years four more excavations took place. Two of these
uncovered human remains and a third found horse remains. The most recent excavation was conducted for a sculpture. Archaeologists and Native American excavated the foundation and nothing was found (Goerke 1994:14-15).

**Investigation Findings**

Goerke’s study was conducted using information that was over 30 years old. Because of this made answering all of the research questions developed by the class difficult to answer. Primarily, context for many of the artifacts was non-existent. On top of this, artifacts from the collection had been stolen over the years.

Several human remains were found on campus over the years. Most of the time skulls or skull fragments were the only thing recovered. Although a few items were reportedly found associated with some of the burials, it is difficult to discern based on the notes. Goerke estimates that between 14 and 17 individuals were uncovered (Goerke 1994:40). Although she states later in her text that it is likely more remains were found, but, it is impossible to know an exact number (Goerke 1994:40 and 41).

Only a few burials had associated artifacts, and these are both minimal and questionable. Only the burials excavated from the 1968-1969 excavation pits had orientation information which was east to west, and in the fetal position.

After he left the school John McBeath had the opportunity to conduct some analysis of the skeletal remains. He noted that one of the adults had a sacralized fifth lumbar vertebra and the fifth lumbar was fused to the sacrum. He noted this could be an inherited trait and if this skeleton could be compared with others in the area it could reveal family relations.
Other analyses were conducted later in time, and it was found that many of the remains also had septal apertures on the humerus (Goerke 1994:43). In general, the remains from the site showed that the individuals were in good health. No evidence of healed fractures or malnutrition was noted (Goerke 1994:47).

An analysis of the dentition of the burials recovered from CA-MRN-406 as well as other remains that the COM had in their possession was conducted. While the analysis is interesting, without knowledge of the age of the burials, then changes through time are not observable and without locational information they were unable to determine differing subsistence affects based on environment.

Stone items found at the site included a soapstone pendant, a serpentine sinker, a slate pencil/awl, pestles, mortars, charmstones, earspools, hammers, and anvils. Seventy-two stone items were found (Cooper and Sheridan 1994:56). Unfortunately, several items were taken from the basement of the ‘Old Science Center’; therefore, they can not be formally described. However, a former student, Teresa Miller Salzman, who had seen some items in the basement drew and described what she remembered for the purposes of the 1994 report. She remembered seeing a blue steatite plummet-shaped charmstone, 4-5 small plummet-shaped blue steatite beads, one large mortar made of either granite or sandstone, and an 18” long metate made from basalt (Cooper and Sheridan 1994:65 and 67).

Ninety-four obsidian tools and fragments were found in the collection. Nine of these items were sourced with 7 belonging to the Napa Valley source and two to the Annadel source. A biface classification included stemless excelsior points, one concave base biface, one obsidian biface that had been resharpened into a perforator or a drill,
and several bifaces that were lanceolate shaped (Smith 1994:67-71).

Seventy-seven chert tools were found in the collection. Nineteen of these are bifaces of which nine are drill/perforators. The rest of the chert tools consist of biface fragments, unifaces, and edge modified pieces (Smith 1994:75-77).

Although 16 *Olivella* shell beads were listed on the original catalog sheets, only 8 remain in the collection. Two abalone pendants were also in the collection (Wheeler 1994:78). The only piece of baked clay found in the collection was a fragment that had 5 indents placed on one side and 3 on the other (Wheeler 1994:80). Also found were twelve quartz crystals (Goerke 1994:82).

Only 22 pieces of bone were identified as tools and one item was classified as a bone whistle (Fletcher 1994:77-78). Non-human and non-artifactual bone remains consisted of 1549 fragments weighing 975.38 grams. With the exception of the horse skeleton the bone specimens were heavily fragmented making identification of genus and species was very difficult. Most of the remains were identified as bird. Mammalian remains included deer, elk, dog/coyote, jackrabbit, mole, sea otter, and gopher. Fish remains included salmon and sturgeon (Gordon 1994:83).

Seven metal buttons and button fragments were found in the collection as well as a fired bullet (Wheeler 1994:80). Unfortunately, it was not clear whether these items were intrusive to the site or if they reflected potential contact period occupation of the site.

Although Goerke notes that there are no temporally diagnostic artifacts in the collection, Nadine Smith states in her analysis of the chipped stone specimens that five projectile points were found and all belong to the "excelsior" stemless type of point, one
artifact had a concave base, one obsidian biface had been resharpened into a perforator or drill, and several specimens were lanceolates (Smith 1994:67 and 71).

Nine specimens were sent in for obsidian hydration analysis and radiocarbon dating. Obsidian hydration gave measurements ranging from 6.1-1.2 microns. The specimens were from Napa Valley and when the hydration band measurements are converted to dates, the oldest date is approximately 3500 BC. Radiocarbon dates of from two individual human femurs were 1623 BC and AD 1735. Because the obsidian item that revealed a date of 3500 BC actually had two hydration bands on it, the second one yielding a later date of 700 BC, Goerke gave a conservative date for the site occupation as being between 1623 BC to AD 1735 (Goerke 1994:53).

During the 1971 excavations, shellfish remains from two units were collected. It was these remains that were analyzed for the report because they represented a complete profile of the two units. Analysis showed that there seemed to be little change over time suggesting that the midden could have been very disturbed. The primary species utilized at the site were Macoma nasuta and Ostrea lurida. The third most common shellfish were Mytilus edulis with a variety of other shellfish in smaller quantities (Gralapp 1994:83-84). Other species found in the sample included Mytilus californianus, Clinocardium nuttalli, Protophaca staminea, and Balanus sp.

Several other sites have been recorded in the Corte Madera drainage. Robert Raush analyzed the sites in the drainage and determined that, based on Kroeber’s description of a village community, and Slaymaker’s work in the Miller Creek drainage that CA-MRN-406 is the central settlement for the village community of the Corte Madera drainage. There are 17 sites in the base and he believes that 13 of these
contribute to the village settlement. These sites include CA-MRN-67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, and 312. Raush further believes that CA-MRN-76 was another permanent village within the community (Raush 1994:29). He notes that excavation would be required to determine if they were contemporaneous or not.

CA-MRN-471
Environmental Setting

The site is located on the south side of the major tributary to Arroyo San Jose which feeds into San Pablo Bay. While the Bay itself is located approximately 3.5 miles to the west, at one time there stood a large marsh in between. This marsh has been subject to siltation and fill. It is likely that the Bay was much closer during prehistoric times. Elevation rises sharply both to the south and the west to the Big Rock Ridge. It was noted by the author that in the summer time 30% of the site receives day long shade, which progresses to 80%. Winds are generally from the northwest due to topography and in the summer there is little to no wind in the morning until mid afternoon when a gentle 5-8 mile wind prevails. The slopes of Big Rock are covered with tan oak-madrón woodland. The Arroyo San Jose Valley contains oak-buckeye woodland and grassland.

Site History

When the site was discovered by Tom Jackson in 1969 some portions of it had been eroded by the creek and at the time of the excavation there were some “minor potholes”. In 1969, 10 cubic meters of soil were hauled from the site to the lawns and planters of the Novato Unified School District which owned the property. John McBeath learned of the activities and convinced the District to stop. Unfortunately, this notified local pothunters of the site’s presence and during the next year several vandalism acts
were conducted by locals (Jackson 1974a:4).

The site was slated for development. The author was assured by the developers that the site would be ‘capped’ to prevent destruction (Jackson 1974a:preface). Because of the threat that the developer would start work at any time, excavation methods, such as use of a power trencher, were conducted to expedite the investigation process. Heavy rains ended the excavation (Jackson 1974a:8).

**Investigation Findings**

Units were set on a north/south axis and were positioned to form a trench. Units were excavated in 10 centimeters levels with the exception of two units (HF-II in 20 centimeter levels and F-1 in 15 centimeter levels). All bones and flake waste were collected. Artifacts were placed in individual bags and marked with the appropriate provenience information (Jackson 1974a:7).

A power trench was excavated using a small tractor. This trench was excavated to save time and manpower and to provide information about an area of the site that the crew worried would not be excavated due to time constraints. The trench consisted of four 3 meter by 1.2 meter units for a total of four trench units. The trench was oriented along an east/west axis. This trench was located at the northern end of the central one-third of the site. It was first planned that the trench would be excavated in 20-centimeter levels, but reality showed that it was done less precisely. The dirt from each excavated level was placed on a tarp and screened with materials collected. After completion of the trench, though imprecise, it was deemed a worthy exploit due to the time constraints (Jackson 1974a:7).
One burial was found while a tractor was working for the Novato Unified School District. The burial was located two meters north of unit FF-II. No orientation was determined. The few remains recovered showed that the burial was of a child who died between 5 and 8 years of age. A *Haliotis* pendant was found with the remains which was discovered 50 centimeters below the surface (Jackson 1974a:22).

A sub-adult inhumation was found in unit A-3. It was complete with the exception of the cranium though the mandible was present. The remains were tightly flexed and the individual lay on its left side and back. The spine was oriented nearly due east/west. It was tentatively determined that the remains were male. No grave goods were found. The remains was in a pit that had been excavated into the sterile soil below the midden between 60-70 centimeters (Jackson 1974a:22). The remaining human remains were human teeth found throughout the midden.

Between 30 and 40 centimeters a large feature of FAR and ash was found. When first discovered the feature extended out of the unit so multiple units were set up to investigate the feature further. Included in the feature were found large numbers of *Olivela* and clam beads. Toward the end of the investigation two infant cranial fragments were found. All of the artifacts were burnt. Tree roots and rodent activity had disturbed the feature. The feature ranged in depth from 35-80 centimeters and was called feature CJ (Jackson 1974a:22).

Four major structures were identified. These were called Structures I, II, III, and IV. All of the structures were semi-subterranean and were excavated 20 centimeters below the base of the mound. The floors were very hard packed and well prepared. The smallest diameter structure measured five meters. Each of the structures appeared to
have been covered with an earthen roof. On structures I and II the roof measured 14 centimeters thick. Structures II, III, and IV appeared to have been burnt. No posts were found because none of the centers were excavated (Jackson 1974a:23).

Jackson reported that the materials in the site were very similar to those excavated on Limantour Estero by King and Upson (1970). Artifacts included clam disc, *Olivella*, bird bone, and steatite beads, bone tools, *Haliotis* pendants, obsidian lanceolate, serrated, and non-serrated points, mortars, pestles, and stone net weights. Jackson concluded that much of the assemblage strongly suggests that occupation of the site dated to Phase 2 of the Late Horizon (Upper Emergent).

Two charcoal samples were submitted for radiocarbon dating. The items submitted were a piece of burnt wood from Structure III and a piece of charcoal resting on the floor of Structure II. The Structure II sample produced a date of AD 1350 and Structure III sample produced a date of AD 1550 (Jackson 1974a:86). This would suggest that initial occupation of the site occurred during the middle of the Lower Emergent Period.

The presence of the four structures is interesting as is the near absence of human remains. The author hypothesized that there is either an off-site cemetery or that the site was occupied during the spring when there were the fewest deaths.

**CA-MRN-529/530/530E/II**

**Environmental Setting**

The site straddles Novato Creek just upstream from a point that during prehistoric times would have been the edge of the ecotone of oak-buckeye woodland and grassland and the saltwater marshes of northwestern San Pablo Bay (Clark et al. 1992:28).
Site History

Holman & Associates had been working with the Marin County Flood Control District for several years leading up to the excavation of this site. In 1987 auger borings showed what was originally thought to be the presence of two sites within the project area that required formal investigation to evaluate the resource (Clark et al. 1992:12). The site was thought to be two separate sites because a) CA-MRN-529 was a shell midden and CA-MRN-530 contained no shell, and b) the two sites were on opposite sides of the creek and CA-MRN-529 was slightly downstream from CA-MRN-530. Later investigations showed that these two sites where contiguous with a third shell midden (designated CA-MRN-530E) lying in between making it one large site that straddles the north and south side of the creek (Clark 1992:13). In 1992 investigations were conducted at the site (Clark et al. 1995:23).

Investigation Findings

A total of 12 units was excavated (Clark et al. 1992:56 and 94; Clark et al. 1995:23). Units 1-3, 5, 6, 8, and 12 began as 1x2 meter units but toward the bottom of the site only 1x1 meter of the unit was excavated. Units 4, 7, 9, and 11, were excavated completely as a 1x2 meter units. Unit 10 initially started as a 1x2 but another adjacent 1x1 meter unit was excavated to expose feature 10-3. The upper levels of units 1-4, and 6 were dry screened through ¼-inch screen. The bottom levels were wet screened through ⅛ inch screen. Soils from units 5, and 7-12 were completely wet screened. Most historic disturbance was in the upper 50 centimeters; however, other units showed evidence of deeper disturbances, one (unit 3) had disturbance to a depth of approximately 250 centimeters (Clark et al. 1992:56-105; Clark et al. 1995:).
Several features were found during excavation. These features included two hearths, two possible dismantled hearths or ovens, three clusters of fire-affected rock, a possible trash pit or fire pit, two baking pits, a small rock mound, a fire pit, an area containing burnt midden and shell that had been packed hard, an ash lens, and a possible sweathouse pit (Clark et al. 1992:138-149). No intact burials were found during excavation, only isolated bone fragments (Quinn 1992:259-260).

Artifacts found at the site included shell beads, pendants, and spoons, bone beads and tools, basalt, chert, chalcedony, obsidian, and ryholite debitage, obsidian projectile points, chert and obsidian bifaces, chert, chalcedony, and obsidian cores, chert, chalcedony, and obsidian flake tools, one obsidian tinkler, one obsidian and two chert stones, one pestle and pestle fragments, mortars and mortar fragments, handstone, three pieces of groundstone, a slate ‘pencil’, quartz crystals, a possible baked clay earspool, a net sinker, a lump of baked clay with grass impressions, a stone pendant, and a mica fragment (Clark et al. 1992:150-175; Clark et al. 1995:84-97, and 100-101). Trade beads, a clay pipe, and a metal crucifix were also found at the site (Clark et al. 1992:175-176; Clark et al. 1995:98-100).

Of the samples submitted for radiocarbon analysis, ten samples yielded dates (Clark et al. 1992:241). The sample associated with the possible sweathouse pit which had been excavated into sterile soil revealed the oldest date of 1730 BC which would place first occupation of the site during the Middle Archaic Period (Clark et al. 1992:243). The authors pointed out that this would make the site coeval with CA-MRN-152, another older Marin County site.
In spite of this older date, all of the other radiocarbon dates are less than 2000 years old, which suggests that more intense occupation of the site occurred from AD 440 through AD 1260, or during the end of the Upper Archaic Period and the first half of the Lower Emergent Period (Clark et al. 1992:241-244). The thickest hydration measurement was 6.4 microns (Napa Valley). Although the authors state that this represents a date of approximately AD 1000 (Clark et al. 1992:281), my calculations (confirmed by Thomas Origer) suggest a date of approximately 4000 BC.

Overall analysis of the obsidian artifacts and debitage showed that Annadel was the most common obsidian compared to Napa Valley by a ratio of 2:1. Trace amounts of Borax Lake obsidian were also observed. Hydration analysis of 108 specimens showed that while Napa Valley obsidian was used throughout the occupation of the site, Annadel obsidian seemed to be used primarily during the Upper Emergent Period (Bieling 1992:191; Clark et al. 1995:102-105).

Lithic analysis showed very little evidence of early reduction activities taking place at the site which would mean that lithic items were primarily arriving to the site in partial tool form (Bieling 1992:1991-1992; Clark et al. 1992:232). This suggests that the purpose of this site was not for manufacturing lithic tools since the authors point out that chert is readily available in Novato Creek (Clark et al. 1992:228).

Exchange or interactions are marked by the presence of Annadel, Napa Valley, and Borax Lake obsidians. Annadel obsidian is located in the territory of the Southern Pomo, Napa Valley Obsidian is located in the territory of the Wappo, and Borax Lake obsidian is located in the territory of the Southeastern Pomo. Of particular interest note is the presence of Monterey chert (Clark et al. 1992:227). Monterey chert can be found
along the San Francisco Peninsula to the south and in Mendocino County to the north. While its presence more likely represents interactions with southern tribes, there is the potential that site inhabitants had some type of interaction with Northern Pomo or even Yukian tribes.

There is some intra-site patterning seen through lithic analysis as the shell midden portions of the site (MRN-529 and MRN-530E) contained more Napa Valley obsidian than the non-shell midden portion of the site which contains Annadel obsidian. Radiocarbon dating show that both portions of the site were generally created and occupied at the same time. Faunal analysis showed that two very small flecks of shell were found in the non-midden portion of the site. The data suggested that the vastly different strategies reflected at these portions of the site likely represent an interaction between two culturally different groups (Clark et al. 1992:283-284).

CA-MRN-601
Environmental Setting

The site is situated on the west flank of Burdell Mtn. at an elevation of approximately five hundred feet above sea level. A spring and a small drainage which flows into a tributary of Novato Creek are located nearby. The surrounding vegetation belongs to oak-buckeye woodland and grassland (Origer 1992:3)

Site History

This site was discovered in 1990 by Nelson Thompson and Lowell Damon. They described the site has having dark soil (possibly midden) with a sparse scatter of obsidian and chert flakes and some fire affected rock (FAR). The site was located near a spring and a dirt road had been constructed through the site. Investigation of the site was
prompted by Marin County Department of Parks and Open Space who wanted AT&T to place their fiber optics line in the existing road rather than damage trees by going off the road to avoid the site (Origer 1992:1). After the site was examined it was determined that the site consisted of a sparse lithic scatter. It was determined that no new information could be obtained from further investigation and that the project could proceed.

**Investigation Findings**

The site measured 90 x 120 meters and extended to a depth of 70 centimeters. Approximately 2.65 cubic meters of soil were excavated. As the site was reexamined for the project it was determined that the dark soils were not midden soil and there was no FAR present. Because of this the site was classified as a sparse lithic scatter and was investigated using the California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (CARIDAP) for the treatment of sparse lithic scatters (Origer 1992:1)

Only chert and obsidiandebitage was recovered from the site. Obsidian was likely brought to site in complete or near complete forms and sharpened, while chert was brought in a more raw form, likely found nearby (Origer 1992:16). Obsidian sources found at the site included Annadel, Napa Valley, and a very few Mt. Burdell obsidian flakes (Origer 1992:14).

Due to the sparseness of the site, all of the obsidian flakes were cut for hydration analysis. Obsidian hydration showed that the site was first used 2400 years ago (3.6 microns). Between 3.6 and 2.8 microns ago the site was used sparingly and Napa Valley obsidian was the dominant source with only one flake of Annadel having hydration measurements at this time. From 2.1 (AD 1200) to 1.0 (AD 1825) site use seems to
increase with Annadel being a more dominant source though Napa Valley is still in use (Origer 1992:14-15). Since no artifacts were found, hydration analysis is the only method of determining occupation of the site. This analysis showed that the site was occupied primarily between 2400 and 300 years ago (Origer 1992:17).

Intra-site patterning was noticed during analysis. In the northern portion of the site Napa Valley hydration measurements were larger (older); though it should be pointed out that the sample was small (Origer 1992:15). Along with hydration measurements, obsidian flake size was different between the northern and southern portions of the site. Flakes tended to be bigger in the northern portion of the site, while in the southern portion of the site they tended to be smaller. The author suggests two possibilities. The first is that some stages of lithic reduction took place at discrete places within the site. The second possibility is that varying flake sizes reflect different lithic reduction steps used at different periods of time (Origer 1992:17).

Obsidian source analysis showed that the site occupants had interaction with the Wappo throughout time but something negative happened in their trade relationship approximately 800 years ago with the introduction of Annadel obsidian in higher quantities from Southern Pomo territory (Origer 1992:15). Without further study it is difficult to say what could have happened between these two groups.

CA-MRN-611
Environmental Setting

The environment of the small island is difficult to discern because a residence had been constructed on the island and eucalyptus trees had been brought to the island. However, based on the environment of the nearby West Marin Island the environmental
setting during prehistoric times would have been coastal brush. While Luby (1994) stated that no freshwater has been found on the island it is unclear if none was found during his investigations, or if this has been officially determined. The reason for this uncertainty is that a residence has been located on the island for several years.

Site History

San Francisco State University was contacted by the Marin Island’s conservation group, Friends of the Marin Islands, who wanted the site investigated because it was reportedly the place where Chief Marin lived after escaping from the Mexicans in 1824 (Luby 1994:105 and 107). In 1992 the site was excavated by students.

Investigation Findings

Three one by two meter units were excavated in ten centimeter levels. All soil was screened through \( \frac{1}{8} \)-inch screens and soil samples were collected for further analysis. The collection was accessioned at the Treganza Anthropology Museum at SFSU (Luby 1994:113-114).

The midden was stratified. The top layer was loose black soil containing crushed shell. The middle layer was composed of finely crushed shell with some concentrations of mussel shell. The bottom layer was black soil. This layer was similar in appearance to the top layer but contained more cultural and ecofactual constituents. Four hearths were found during excavation.

An interesting feature was four charmstones found at the base of the midden that were covered with ash as if they had been burned. The charmstones were made of basalt and had traces of asphaltum. The charmstones were fishtail and pyriform shapes. These shapes are indicative of the Berkeley Pattern (Upper Archaic). Based on radiocarbon
dating and obsidian hydration analysis the site was dated to AD 210 to AD 1510 (Luby 1994:114). No groundstone was found though several obsidian scrapers and bone tools (usually associated with basketry making) were recovered.

Clam and mussel were the most common shellfish species, with oyster occurring in much lower amounts. An examination of the faunal remains recovered from the site showed that several 'sea duck' bones were found as well as marsh birds such as the common loon and the great blue heron, though in much lower numbers. Some of the bones had been cut, burned, or both (Luby 1994:114).

Harbor seal pup bones, black tailed deer and mead vole as well as fish bones were also recovered. Some seal bones were also found; these had been burned (Luby 1994:114). Luby's speculation based on the faunal material was that the site was occupied in the winter and early spring (Luby 1994:115).

Based on the location of this site it was assumed that this small shell midden would represent a specialized camp. The findings from the site suggested that it was inhabited seasonally and used for collecting shellfish, hunting marine animals, and hunting birds.

CA-MRN-673

Environmental Setting

This site is located on an east facing slope just above a small drainage that feeds into Keyes Creek which empties into Tomales Bay. The surrounding vegetation would likely have consisted of open grassland. The site is located approximately 2.75 miles from the mouth of Keyes Creek and Tomales Bay. According to historic documents, this creek was once navigable by small schooners (Munro-Fraser 1880:403-405). Over the
years it has silted in significantly.

**Site History**

This site was first discovered in 2005 during Steen and Beard's survey of the parcel (Steen and Beard 2005:8). At the time of the survey the parcel was serving as the community's park and the project proponent was planning on making improvements to the park. Steen and Beard found a small linear area of soil containing shell fragments at the west end of the parcel. This shell concentration was difficult to investigate because nearly the entire area was overgrown by Himalaya berries. Also found throughout the parcel was a sparse scatter of chert and obsidian flakes; however, ground visibility was hampered by imported sand which covered portions of the park (Steen and Beard 2005:8). Beard and Steen recommended that the site be investigated prior to park construction to determine the extent and nature (significance) of the site (Steen and Beard 2005:8).

**Investigation Findings**

In May 2006 the project proponent contracted with Tom Origer & Associates to conduct the recommended investigations. This involved an investigation of the shell concentration at the west end of the park and the chert and obsidian flakes found widely scattered throughout the park. Seven 50x50 centimeter square units were excavated for the sparse lithic scatter (Steen and Origer 2006:9).

The shell concentration soils were investigated using shovel test probes and one 50x50 centimeter unit (Steen and Origer 2006:10). These investigations showed that the shell concentration was oriented in a north/south linear band adjacent to the street. The shell fragments were found in brown, non-midden soil. Based on their investigation they
determined that the shell was contained within imported soil placed in the park to help level the ground at that location (Steen and Origer 2006:24).

Hydration band measurements suggest that that site was a location where obsidian was knapped, perhaps during two periods. The first period being around AD 1500 and the second occurring around AD 0. The hydration profiles span multiple periods, and this indicates that this is a multi-component site. No temporally diagnostic specimens were found (Steen and Origer 2006:22-23).

Obsidian source data suggest that various groups could have occupied the site at specific points in time. There was a dominance of Napa Valley obsidian early with a strong shift to Annadel obsidian later in time. This is indicative of a possible population replacement or restriction in the acquisition of Napa Valley obsidian later in time. It is tempting to postulate that the use of Napa Valley obsidian earlier in time related to a pre-Coast Miwok occupation, while the dominance of Annadel obsidian (some 500 years ago) coincides with Coast Miwok occupation that took place after about 1,000 to 2,000 years ago when it has been hypothesized that the Coast Miwok moved into the area (see Moratto 1984:560 et seq.) (Steen and Origer 2006:23).

The dominant class of recovered materials was obsidian and chert chipped stone tool manufacturing waste. Clearly, the reduction of obsidian and chert was the most common activity at the site. Debitage analysis revealed several flake types (e.g., dorsally-complex and complex-complex) that are characteristic of mid-range to later stages of the lithic reduction process, although some Annadel and chert cortical specimens suggested earlier stages of reduction. The paucity of bifacial tools and edge-modified specimens suggest that tool use did not take place there; rather tools were made or refurbished there
for use elsewhere (Steen and Origer 2006:15-18, 23).

The small body of constituents recovered at the site reveals little information about possible changes in technology over time. The types of constituents remained virtually constant with depth (through time). The lack of temporally diagnostic artifacts and the co-occurrence of prehistoric and historic/modern specimens from the top to bottom of the site matrix suggest a mixing of materials from different time periods that makes discrimination of temporally sensitive assemblages difficult. However, hydration data indicate a shift from Napa Valley obsidian use early to Annadel obsidian use late in time (Steen and Origer 2006:23).

Napa Valley obsidian was the dominant material used at the time of initial occupation, but the site saw a shift to Annadel obsidian later in time, ca. 500 years ago. Analysis of recovered obsidian specimens showed that affiliations with different groups may have occurred through time. Napa Valley obsidian suggests ties to those who controlled this type of obsidian. Napa Valley obsidian commonly derived from sources in the Napa Valley was controlled most recently by the Wappo. The presence of Annadel obsidian suggests ties to the Southern Pomo, the group that most recently controlled the territory containing this source (Steen and Origer 2006:23).

CA-MRN-674
Environmental Setting

The site is located approximately east of Muir Beach. It is located at the southern end of a small alluvial fan on the southeastern edge of Frank Valley. The local environment has been heavily impacted during historic times from fill, the channelization of Redwood Creek, residential construction, the construction of State Highway 1, and
large-scale landscaping (Psota 2007:7). Based on the surrounding hills located within
Golden Gate National Recreation Area the contact environment would likely have
consisted of coastal brush, grassland, riparian vegetation along the stream, and saltwater
marsh.

Site History

In 2002 an archaeological survey was conducted for the Big Lagoon Wetland and
Creek Restoration Project. During the time of that survey, 16 soil cores were extracted.
The following year (2003) 7 more cores were taken to enhance the data collected the
previous year. It was from the analysis of these cores that it was determined that a buried
archaeological site was located near Highway 1. The site was identified as a shell
midden located between 150 and 170 centimeters below the current ground surface
(Meyer 2005). In 2006 the site was investigated to determine it’s eligibility for inclusion
on the National Register of Historic Places. Nick Tipon of the Federated Indians of
Graton Rancheria served as the Native American monitor.

Investigation Findings

Six exploratory trenches were excavated to depths of 110-195 centimeters to
determine the horizontal extent of the site. A great difficulty to the excavation of the site
was the presence of ground water which continuously flooded the trenches. Three
trenches were widened, shored for stability, and frequently pumped of their water so that
four 1x1 meter excavation units could be established. Only one unit produced any
cultural material. A total of 1.35 cubic meters of soil was excavated (Psota 2007:15).
The site was estimated as measuring at least 25x25 meters though no trench units were
placed in Pacific Avenue therefore there is the possibility that the site extends under the
road (Psota 2007:19).

Soils were wet screened through six millimeter mesh. Fire affected rock was measured by weight, volume, and count and left in the field. All other cultural material was collected. A 20x20 centimeter column sample was taken from unit 3 (Psota 2007:16-17).

Although no features were found it was noted that a concentration of fire affected rock, charcoal, and bone fragments was in the lower levels of the site. This suggested to Psota that a hearth feature could be present in an unexcavated portion of the site (Psota 2007:23).

Chemical sourcing of the small collection of obsidian pieces found at the site (n=26) showed that all but two pieces were from the Napa Valley source. The remaining two were from the Annadel source. This shows very limited contact with Southern Pomo tribes and more interaction with Wappo (Psota 2007:26).

Hydration analysis suggested that occasional occupation of the site for one hundred and fifty years began during the Lower Emergent (AD 1200). Then the site appeared to be abandoned until it began to be used intensively between AD 1600 and 1700. These dates do not correlate well with the radiocarbon samples (Psota 2007:45).

The presence of 2 projectile points, 7 bifaces, 4 cores, 13 modified flakes, and 359 pieces of debitage show that limited hunting and tool production and resharpening took place at the site (Psota 2007:23). A fragment of greywacke was cataloged as possibly being either a net sinker or a charmstone. The presence of this specimen could suggest either fishing or ceremonial activity. Based on the location of the site, it is very likely that the item was a net sinker. However, a small quartz crystal was found, and crystals are
often assigned ceremonial significance (Psota 2007:27).

Faunal analysis showed that the site was used for hunting dear and sea otter and collecting shellfish (Psota 2007:45-46). Black tail deer and sea otter remains found at the site showed evidence of butchering. Pocket gopher remains were not burnt or butchered so they were probably natural components of the soil. Several species of fish and birds were also found (Psota 2007:28-29). Although 920 bones were found at the site, shellfish was the most numerous constituent (Psota 2007:27 and 29). *Mytilus californianus* is the most numerous species with *Balanus* sp. second. Analysis by level showed that although *Mytilus californianus* continued to be the most dominant species throughout time, the upper levels showed more diversity (Psota 2007:29-30).

It was concluded that CA-MRN-674 represented a special activity site utilized seasonally. Analysis of subsistence remains shows a sharp shift in strategy in a short amount of time which possibly reflects changes in climate. The site was considered distinctive due to the low number of sites with components dating to the Late-period (Estero phase), the paucity of sites in the Muir Beach area, and the interesting artifact assemblage the site yielded. Psota determined that the site was eligible under Criterion D for inclusion on the National Register of Historic Places (Psota 2007:47-48).

**SUMMARY**

Along with the extensive list and descriptions provided above, several other sites in Marin County have been excavated. Unfortunately, either these excavations did not produce enough data or the reports did not convey sufficient information to contribute to this study. This is due to a variety of factors such as limited investigations (for example, site boundary determination), the period at which the study was conducted utilized
limited or antiquated methods, the items collected during excavation were never fully analyzed, or the report was deficient.

Little can be said regarding limited investigations as site boundary determination or a variety of other factors could have been the reason; however, the investigations that were never fully documented, analyzed, and written up have left a gap in the knowledge generated by archaeologists, and their presence is a mark on the profession. To try to present these unexamined sites on a more positive note, they provide a potential opportunity for a future student looking for a dissertation or thesis topic that would help to atone for the sins of our predecessors. No field work would be required as the collections have already been excavated, cleaned, and in many cases cataloged. The following is the list of sites where limited studies were performed or insufficient reports were written; but, this list demonstrates that there are numerous opportunities for research if one were to analyze these collections. It is somewhat distressing that the following list is longer than the list of sites that was found to be useful contributors to this thesis.
| CA-MRN-10/11 | McGeein, M.C. | 1949 |
| CA-MRN-42/43/45 | Hines, P | 1983 |
| CA-MRN-70/71/72 | Cartier, Bocek, and Whitlow | 1979 |
| CA-MRN-76 | no report but mentioned in Gifford 1916, Kroeber, 1953 |
| CA-MRN-78 | Treganza, Adan | 1957 |
| CA-MRN-80 | Treganza, Adan | 1957 |
| CA-MRN-100/101 | Desmond, L. | 1996 |
| *CA-MRN-115 | Meighan | 1953 |
| CA-MRN-138/139/140/141/142 | Slaymaker, C | 1974, 1977 |
| CA-MRN-158 | Melander and Slaymaker | 1969 |
| CA-MRN-168 | Melander and Slaymaker | 1969 |
| CA-MRN-174 | Holman, Clark, and Wiberg | 1987 |
| CA-MRN-281 | Treganza, Adan | 1957 |
| CA-MRN-315 | no report but mentioned in Gifford 1916, Kroeber, 1953 |
| CA-MRN-365 | Origer, Ledeuhr, and Steen | 2007 |
| CA-MRN-372/373 | Treganza, Adan | 1966 |
| CA-MRN-374 | Novato Senior High Archaeology Club | 1967 |
| CA-MRN-383 | Stillinger, R. | 1978 |
| CA-MRN-403 | Slaymaker, C | 1974, 1977 |
| CA-MRN-464/465 | Chavez, D. | 1995 |
| CA-MRN-495 | Chavez, D. | 1995 |
| CA-MRN-524 | Roop, Duddy, and Flynn | 1982 |
| CA-MRN-603 | Peak & Associates, Inc. | 1982 |

*Note at the time of writing, Tsim Schnieder of University of California, Berkeley is conducting work on this site for his dissertation.*
Chapter 8. Synthesis

This chapter is divided into the archaeological themes of settlement patterns, site structure, cultural chronology, subsistence, social organization and interaction, technological changes, and contact period studies. A brief summary of previous studies pertaining to each theme is described and then data from my study are analyzed.

The purpose of this chapter is to analyze the data presented in the previous chapter from 23 archaeological sites in Marin County to: (1) examine how the data compares with current models and (2) look at the data to see if new models should be adopted. The results of this chapter will direct what is said in chapter 9 as it is in this chapter that I will: (1) identify research ‘dead zones’, (2) identify research areas that would benefit from further study, and (3) make recommendations to cultural resource managers that will focus and guide them in future work.

SETTLEMENT PATTERNS

Study on this theme is deficient in spite of the years of archaeological investigation conducted within the county (Stewart 2003:145). Stewart observed that this was especially true regarding seasonality and sedentism which are research areas that contribute to settlement pattern analysis (Stewart 2003:145).

Previous Settlement Pattern Studies

Thomas King looked at settlement patterns on the east side of Marin County. His hypothesis stated that during the Middle Horizon (no calendric dates were specified by King so the assumption is he is refers to the Upper Archaic Period) people became more sedentary because of the availability of resources along the bay shore. This stability contributed to an increase in population. However, as populations increase and enough
resources to supply the population decrease, King surmised that daughter groups would ‘bud-off’ to establish ancillary settlements in less resource rich environments (King 1974:46).

King argued that these groups that were resource-marginalized would have been forced to interact more often with their parent group through trade. This would have contributed to a ranked social structure with the daughter groups now economically and socially bound to the parent group (King 1974:46). Thus, at the beginning of the Middle Horizon, sites were established along the bay shore and as time went on and groups split off, they moved inland to utilize other environmental settings.

Lightfoot and Luby looked at diachronic changes to construction, use, and abandonment of shell mounds in the East Bay (2002:264). They argued that from A.D. 700 to 1100 Native groups were going through a transformation where former large village mounds were being abandoned as villages, but the locations were still being used as ceremonial centers. Small to medium peripheral mounds were then being used as primary villages (2002:277). Lightfoot and Luby offer several hypotheses for this, such as subsistence and environmental changes, population movements, or population intrusion; however, they believe this change was due to resource overexploitation (Lightfoot and Luby 2002:277-279).

Because Van Dyke’s (1972) and Slaymaker’s (1974) analysis of settlement patterns has been discussed in Chapter 5 it will not be repeated again here.

**Current Settlement Pattern Findings**

It is difficult to make conclusive statements regarding settlement patterns. Most of the sites included in this study are of one type (shell middens) and they are located in
the relatively same geographic location (along or in close proximity to the San Francisco Bay shore). Analysis of shell midden settlement patterns suggests that during the Upper Archaic Period several sites were established along the bay shore which spanned hundreds of years of continuous occupation. This suggests long standing stable resources and/or well established subsistence patterns that were conducive to sedentism.

Because only six sites gave sufficient information to discuss seasonality this analysis is limited. Of the six sites, four contained faunal remains which suggested year round occupation (CA-MRN-17, 44, 254, and 255/H). CA-MRN-14 was occupied spring through early fall and CA-MRN-20 was thought to be occupied fall and winter.

The data do not seem to fit into either King (1974) or Lightfoot and Luby's (2002) settlement pattern analyses. Because sites seem to have very long occupation periods, and no younger sites appear as time goes on, it appears that King’s ‘budding off’ pattern is not supported. While Lightfoot and Luby found that Bay shore shell mounds were abandoned late in time and people moved inland establishing non-shell middens my findings do not correlate. However, this could be due to lack of data.

SITE STRUCTURE

Site structure study involves the examination of the physical characteristics of the site. This includes both horizontal and vertical dimensions. Vertical changes are often seen in the field through soil changes. Analysis of site constituents, such as debitage and faunal remains, can show these changes in the laboratory. Horizontal changes can be also be seen through soil changes in the field, but more often distribution of artifacts and features is how this aspect of site structure is examined (Neumann and Sanford 2001:211).
Previous Site Structure Studies

No previous studies have been conducted in the Bay Area on site structure. The closest site that has been subject to this type of study is the Mostin Site (CA-LAK-380/381) near Clear Lake (White and King 2007). White and King examined the previous description of the site as a village with a cemetery component.

Current Site Structure Findings

Site structure analysis was conducted at only six sites (CA-MRN-14, 27, 254, 255, 529/530/530E, 601). Two of these only addressed vertical changes, or site stratigraphy (CA-MRN-254 and 255). These changes were indicated by presence of shellfish remains. The other two sites (CA-MRN-529/530/530E and 601) discussed horizontal changes.

At CA-MRN-529/530/530E a portion of the site was identified as a shell midden while another portion of the site appeared to be a non-shell midden. Site dating showed that both portions of the site were created concurrently. Although portions of the site were created at the same time, their constituents suggested vastly different subsistence strategies. This could represent either that two different groups of people were utilizing the site at the same, or nearly the same, times, or intra-group variation.

CA-MRN-14 was a shell mound containing a variety of constituents. Riley, in her examination of the faunal remains from the site discussed the horizontal and vertical distribution of faunal remains (Riley 1979). This analysis showed how subsistence changed over time. At CA-MRN-601, Origer (1992) showed through the use of hydration analysis that portions of the site were used during early occupation while other portions of the site were used toward the end of occupation.

Although his study was more thoroughly mentioned in Chapter 7, Thomas King
argues that his analysis of the areal placement of cremations, burials, and artifacts at CA­MRN-27 reflected a ranked society (King 1970, 1974:38).

**CULTURAL CHRONOLOGY**

The purpose of this section is to summarize the age and occupation times of the sites included in this study. It will also summarize some of the dating techniques used to establish these dates.

**Obsidian Hydration Analysis**

Obsidian hydration analysis has become another in the growing series of dating tools used by archaeologists working in California. It is especially helpful in situations where archaeological sites do not have appropriate organic material that could provide useful radiocarbon dates.

Obsidian hydration is, “a process whereby an obsidian specimen absorbs water to form an outer layer of increased density which consequently raises the index of refraction, creates a mechanical strain, and is visible under proper microscopic conditions” (Origer 1982:1). After a variety of factors are accounted for, this measured layer can be converted into a date. Thomas Origer sought to determine if obsidian hydrated at a set rate so that archaeological sites and artifacts could be dated (1982). Origer was able to determine hydration rates for the two obsidian sources (Annadel and Napa Valley) in close proximity to Marin County.

**Temporal Artifacts**

In 1987 Bennyhoff and Hughes reanalyzed shell beads in California and the Western Great Basin and developed an updated typology for bead types. This typology was meant to help determine temporal units (Bennyhoff and Hughes 1987:86).
King hypothesized that the development of the Clam Disc Bead horizon was due to resource stress on groups and that beads were used as a medium of exchange often used to procure food resources (King 1970:285-286).

This research theme primarily revolves around refining dating schemes. Obsidian hydration dating is a debated dating tool (Jones and Hayes 1993; Origer 1982; Wickstrom 1986). However, there is no denying the amount of information it has the potential to provide. Continued refinement of its use will aid the field. In 2002, Randall Groza attempted to further refine Bennyhoff and Hughes' bead typology (Groza 2002). It still remains to be seen if his addition will need future refinement.

**Middle Archaic Period**

There are six sites that were found to date to the Middle Archaic Period primarily by radiocarbon dating but also by obsidian hydration analysis (CA-MRN-17, 152, 159, 193, 357, and 406). Although CA-MRN-193 had hydration measurements that date to the Lower Archaic Period, the few measurements and the limited manner of the investigation does not instill enough confidence in me to place this site in the Lower Archaic Period. If future work finds that this site does date to the Lower Archaic Period, CA-MRN-193 will be the oldest known site in Marin County.

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1 It should be noted that when this study was written, Caltrans had contracted with Far Western Anthropological Research Group to conduct investigations along the Novato Narrows corridor for the widening of Highway 101. Several sites, CA-MRN-193 included, were to be examined, thus more information regarding the original data of occupation might be revealed.
With most of these sites, early occupation was dated by obsidian hydration analysis. It appears in the case of CA-MRN-193 and potentially CA-MRN-357 that the sites were task-specific locations that were used in a limited manner for many years. It was not until later in time, very likely when Native Americans became more sedentary, that activities took place that contributed to midden development.

**Upper Archaic Period through Emergent Periods**

Beginning in the Upper Archaic Period several sites were established in Marin County which, in many cases, remained occupied until at least the end of the Lower Emergent Period and sometimes into the Upper Emergent Period. CA-MRN-27 is the one exception to this observation. Occupation at this site spanned only approximately 300 years with one very late burial occurring approximately AD 1600.

**SUBSISTENCE PATTERNS**

Subsistence pattern analysis is another way for archaeologists to look at how cultures changed through time. Because of the dynamic environment of the San Francisco Bay Area archaeologists have been able to correlate certain environmental changes with changes in subsistence strategies. For early archaeologists the most obvious signs of a subsistence practices were the massive mounds made with shell. However, it has been argued that these mounds were constructed for a purpose, and not merely a result of years of refuse deposition. Regardless of the purpose of the mounds, it can not be denied that shellfish gathering was an important part of Bay Area prehistoric subsistence. The following are descriptions of different subsistence strategies that have been identified for the San Francisco Bay Area.
**Diachronic Shellfish Patterns**

Early research found that shellfish harvesting changed from oyster to mussel to clam over time (Gifford 1916). Bennyhoff reportedly hypothesized that the oyster/mussel shift occurred circa AD 430 and the mussel/clam shift occurred circa AD 800 (in Elsasser 1978:39 and Moratto 1984:262). Although Moratto suggested this is due to bay sedimentation (1984:259) others felt this was due to over exploitation (Gifford 1916 and Broughton 1999:71).

**Cervid Economy**

Analysis of mammalian faunal remains in San Francisco Bay Area sites revealed diachronic changes in hunting strategies. Up to the Upper Archaic Period Native Americans focused their hunting on artiodactyls (deer and elk). During the Upper Archaic, marine mammals (primarily harbor seals and sea otters) began to be hunted in low quantities. As time went on Simmons observed a steady increase in marine mammal hunting while deer and elk decrease. Terrestrial carnivores were hunted in relatively similar quantities throughout time with dogs/coyotes being the dominant species (Simmons 1992:74-75).

By the Emergent periods marine mammals became the dominant hunting species with sea otters being dominant. Overall artiodactyl hunting decreases, although there is a considerable decrease in elk hunting compared to deer (Simmons 1992:75).

**Current Subsistence Pattern Findings**

Several of sites included in this study contained faunal remains that would have contributed to a study of subsistence patterns. Unfortunately, most reports only note the presence of food types (i.e., fish, mammal, shellfish species) and do not discuss changes through time. For example, remains at CA-MRN-170 were not analyzed except to note
the presence of shellfish, mammal, fish, and avian remains (Chavez 1976:30). However, other sites (CA-MRN-14, 44, 254) had relatively extensive studies conducted on the faunal remains.

Shellfish analysis at CA-MRN-254 did not reflect the oyster/mussel/clam model. Instead analysis showed that Mytilus trossulus was the primary shellfish consumed at the site throughout time (Bieling 1998:200). CA-MRN-44/H did reflect the change from oyster-to-mussel-to-clam model; however, frilled dog winkle harvesting increased along with bent nose clams. At CA-MRN-14 Riley found that the site also reflected the model, though during the Upper Emergent Period clam procurement began to decline and mussel increased (1979:69-74).

Only CA-MRN-254 reflected a cervid economy. However, instead of an increase in sea mammal remains as time went on, Bieling found that waterfowl procurement increased (Bieling 1998:151-162). Riley saw this pattern at CA-MRN-14 as well.

Analysis of the plant remains from CA-MRN-44/H was done to answer questions about seasonality, to observe differences between island and mainland sites, and to see if provisioning was taking place (were mainland resources being brought to the island?). It was impossible to conclusively answer any of these questions primarily due to the great amount of plant species overlap between Angel Island and the mainland.

Analysis of plant remains was also completed at CA-MRN-254. The study found that in late period (Lower and Upper Emergent) samples there was a high number of grass seeds compared to Middle Period (Upper Archaic) samples. An abundance of sunflower (Astercaea), bean (Fabaceae), and buckeye were found in later period (Lower and Upper Emergent) samples.
Icthyofaunal analysis at CA-MRN-254 showed a focus on sturgeon over time which consisted of 74.4% of the fish remains identified. To a lesser extent *Chondrichthines* and salmon were the next common fish in the collection. When Bieling compared these findings with subsistence strategies from CA-MRN-14 and CA-MRN-20, he found they did not match. However, the environment in which these sites lie is different from CA-MRN-254.

No broad analysis can be made of subsistence strategies in Marin County from existing data. Primarily this is due to a lack of in-depth study by archaeologists to address subsistence changes over time. However, as just described, it appears that some sites are not exhibiting the subsistence strategy characteristics of previously conceived Bay Area models therefore, new models need to be studied.

**SOCIAL ORGANIZATION AND INTERACTION**

This section looks at the evidence for the way that the Coast Miwok structured themselves and interact with others during prehistoric and contact period times. This is difficult to discern archaeologically, however, archaeologists have devoted a great amount of time to this pursuit. Study of this is often performed through analysis of mortuary practices and burial goods, warfare, and trade goods. The following is a summary of local studies regarding this theme.

**Mortuary Practices and Burial Goods**

With the exception of King’s analysis of CA-MRN-27 (1970) Luby’s analysis of CA-ALA-328 is the closest relevant study of mortuary practices in the Bay Area. His analysis led him to believe that there may be cultural characteristics that would suggest social control that may not be observed in mortuary patterns (Luby 2004:24). He chose
to examine burial ‘inequalities’ versus ‘rank’ since rank may not be expressed in an egalitarian society (Luby 2004:5 and 6). Luby thought that the study of other themes, such as trade networks, would be an important addition to Bay Area mortuary studies (Luby 2004:9). Mortuary studies could also contribute to other Bay Area research themes such as social organization and settlement patterns (Luby 2004:24).

Of potential interest is the date of the cemetery at the base of CA-ALA-328. Luby states that it dates to approximately 500 BC and that approximately 100 burials were located in this cemetery (Luby 2004:2-3). King places the period of use for CA-MRN-27 between 300 BC and AD 0 (King 1970:6). Lightfoot suggests that the low number of cemeteries found in the Bay Area could be a result of the field methods employed (Lightfoot 1997:131).

Because King’s analysis of CA-MRN-27 (1970) has already been described in Chapter 7, it will not be repeated here.

**Current Study Findings - Mortuary Practices and Burial Goods**

While nearly every site included in this study contained burials, none of the sites (with the exception of CA-MRN-27) resulted in the finding of western societies’ definition of a cemetery. Social stratification was examined at CA-MRN-152 and it was determined that the poor quality and paucity of material suggested there was no evidence of social ranking or that the individuals were low ranking. This finding maintains the theory that the Coast Miwok were an egalitarian society. The other sites included in this study often recovered too few remains or the remains were disturbed or fragmented to conduct an ample intra-site study.
Exchange

The two most obvious and primary indicators of exchange and interaction between Coast Miwok tribes, and between Coast Miwok and other Bay Area Native American tribes in Marin County sites is the presence of obsidian and shellfish/seashells. The two closest obsidian sources are located within one to two days travel of Marin County. Although shellfish are indigenous to bay and ocean edges of Marin County, indications of trade and interaction from the ocean side to the bay side would be evident by ocean species (e.g., abalone). The development of shell beads as a currency would also indicate trade.

Obsidian

In his analysis of obsidian exchange in Central California, Jackson (1974:70-71) concluded in his thesis that Napa Valley obsidian was primarily found in east county sites while Annadel was primarily found in west county sites with some Borax Lake and Mt. Konocti obsidian in the mix. He also observed that no diachronic changes occurred in any portion of the county (Jackson 1974:70-71).

In his dissertation Jackson examined obsidian exchange through the distribution of projectile points in Central California. Jackson further looked at how it reflected the historic boundaries of Native American groups and how obsidian reflected social interactions (Jackson 1986:2-4). In Marin County, he looked at obsidian from nine sites, four of which (CA-MRN-138, 193, 402, and 471) are included in this study (Jackson 1986:83). Jackson’s findings on obsidian source distribution in Marin County were generally the same as his thesis. Based on the presence of Annadel and ethnographic documents, Jackson concluded that there were significant interactions between western Coast Miwok and Southern Pomo (1986:84). His conclusions are similar between the
eastern Coast Miwok and Wappo, except no familial relations are noted in ethnographies, only trade (1986:87).

Shellfish

Shellfish exchange has primarily been studied through bead exchange. However, *Haliotis* pendants and mussel spoons are also found in archaeological sites. Although there are bay species of mussels, shell spoons are often made from ocean mussel, likely due to their size and more robust shells (Thomas Origer, personal communication 2009).

**Current Study Findings - Exchange**

Debitage studies at sites CA-MRN-127, 159, 254, 601, and 673 showed that Napa Valley was the dominant obsidian used until the Lower and Upper Emergent periods when Annadel use increased.

Analysis at CA-MRN-193 showed the exact opposite obsidian utilization, though the study was limited. CA-MRN-357 also reflected a change from chert and Annadel use early in time and Napa Valley later in time, though, debitage analysis was based on visual sourcing only. No XRF nor obsidian hydration analyses were conducted to confirm this conclusion.

Of note is the presence of Monterey chert at CA-MRN-529 (Clark et al. 1992:227). Monterey chert occurs naturally along the San Francisco Peninsula to the south and in Mendocino County but is not found naturally in Marin County. Monterey While its presence more likely represents interactions with southern tribes, there is the potential that site inhabitants had some type of interaction with Northern Pomo or even Yukian tribes.

Of the 23 sites examined, 20 lie on the east side of the county. Of these 20 sites,
16 contained ocean dwelling shellfish species. Often times in the form of *Olivella* beads or *Haliotis* pendants. This suggests inter-tribal trade/exchange across the county. However, this only shows trade goods going east. It is unclear based on the few sites located in the western portion of my study area what trade good was traveling west. It is possible that Napa Valley obsidian was kept by east side people, and they traded away the poorer quality Annadel obsidian to the west side people. At this point in time it is impossible to determine what was being traded west.

**Warfare**
No studies on warfare have been conducted in the San Francisco Bay Area on this topic. Most studies appear to be focused on Southern California (Lambert 1998; Lambert and Walker 1991).

**Current Study Findings - Warfare**
Very little evidence of warfare was observed at the Marin County sites included in this study. However, the two sets of remains found together at CA-MRN-5 had defensive wounds and projectile points embedded in their skeletal remains. One burial at CA-MRN-17 also had projectile points embedded in its femur and hip. The only other site that may contain evidence of warfare was CA-MRN-20. At this site a female was found without feet. No study was conducted to determine if her feet were removed before or after death. Because so little evidence of warfare was found (n=four burials, and dating was only conducted at CA-MRN-5, no discussion can be made regarding warfare. It should be noted though that it is possible that little warfare occurred since it was not found in most sites and that the evidence of violence were isolated events with graves.
TECHNOLOGICAL CHANGES

Technological studies have primarily been restricted to obsidian analysis. One study has been performed on groundstone. Archaeologists conduct obsidian tool analysis to not only improve chronologies, but to aid in the refining of this dating tool.

Previous Technological Change Studies

During the course of Origer's hydration study (1982), he was able to seriate chronologically projectile point types for this region, and demonstrated a change in tool technology over time. This seriation corresponded with chronological periods/patterns and helped define when technological changes, like the incorporation of the bow and arrow, had occurred (Origer 1982:85).

Mikkelsen examined groundstone to see if resources could be associated with certain groundstone types. She looked for evidence of how specific tools were used and attempted to examine if specific resource use could seen through milling tool types (Mikkelsen 1985:3). What she found was that no one resource could be attributed to one tool type (Mikkelsen 1985:191). Although she was able to recognize that some tool types were for tasks (i.e., grinding slabs for grinding seeds) she was unable to replicate use wear patterns that could identify use wear with specific resources (Mikkelsen 1985:195-197). Since tools could not be meaningfully associated with resources no examination of economics was possible.

Mikkelsen also summarized previous groundstone classifications. Based on her examination, classifications were poorly defined and function was undefined (Mikkelsen 1985:135). Based on this she surmised that the confusing nature of classification schemes has hindered meaningful analysis. She suggested that further analysis of

**Current Technological Change Findings**

Because of the longevity of occupation at many of the sites, technological changes are apparent when projectile points are examined. However, no technological changes were observed at CA-MRN-27, 127, 159, 193, 601, 611, 673, or 674. For CA-MRN-27, 127, and 159 this is likely due to the relatively brief occupation period of the sites during periods of time when projectile point technology was not changing. It is interesting that CA-MRN-193 did not contain evidence of technological change since it was occupied for so long. However, this could be due to the relatively limited investigation conducted by Hines (1996). It is very likely that future investigations of the site will reveal a wealth of information about local prehistory. The remaining sites, CA-MRN-601, 611, 673, and 674 were relatively small, task-specific sites which may not have required a variety of tool types.

Lithic reduction analysis was conducted at CA-MRN-529, 601, and 673. At these sites there was very little evidence of early obsidian reduction activities taking place which would mean that obsidian is primarily arriving to the site in partial tool form. This is also true of the chert at CA-MRN-529, which is interesting since the authors point out that chert is readily available in Novato Creek. However, at CA-MRN-601 and 673 chert was brought in a more raw form, likely found nearby.

No analysis of groundstone was conducted at any of the archeological sites included in this study.
CONTACT PERIOD

Only one study has been conducted that examines contact period exclusively (CA-MRN-402). Unfortunately, while a great amount of archival research was done on acculturation and the interactions Coast Miwok had with Europeans during contact, no attempts were made to relate the archaeological data to the archival research in the study of CA-MRN-402.

Several of the sites in this study contained European items (CA-MRN-5, 127, 159, 170, 192, 193, 254, 402, 406, 529/530/530E) which would suggest some form of contact. Several other sites which were not included also contained an interesting variety of European items; CA-MRN-115, 138, 139, 374.

SUMMARY

A great amount prehistoric archaeological study has been conducted in Marin County. Most of this was prompted by environmental laws enacted over the last 30 years. However, there are several places where more and better research is required. The original intent for the conclusion of this study was to make recommendations for future work on themes that would benefit from more research, such as settlement pattern studies. While these recommendations will still be included in Chapter 9 I feel my study would be incomplete if I did not include recommendations on reporting style, the need for clear research designs, and the need to comprehensively study all possible themes using site constituents, not just brief, broad analyses, or interest related studies. Chapter 9 contains my recommendations.
Chapter 9. Future Research

The paucity of artifacts available in much of California to interpret cultures means that what is available must be thoroughly analyzed (Mikkelsen 1985:199).

Several studies have been conducted on a variety of archaeological themes during the one hundred years of archaeological research in Marin County. There is a great amount of work and I do not begin to suggest all of it has been included in this thesis. It is my goal, however, that summarizing these data will not only help CRM consultants do their work, but do better work.

After summarizing the data from CRM reports in Chapter 7, and summarizing the data in Chapter 8, I now can make recommendations for further work. However, before I begin with recommendations for research, I have some general observations and critiques about CRM report styles. I then include recommendations made by the Federated Indians of Graton Rancheria (FIGR) for future work. Many members of FIGR are Coast Miwok descendants. Since it is their culture we are studying I believed that it was important to include their interests into this work. Third, I list my recommendations by theme in the same order as in Chapter 8. After recommendations for each theme have been made, I also advocate that CRM consultants need to take a more active role in presenting their data to the general public.

GENERAL RECOMMENDATIONS

After analyzing nearly 60 site reports I have general recommendations regarding report style and structure. Although my experience in the field is limited, I feel this can be somewhat of an advantage for the purposes of this study as I can look at these reports both as almost a ‘lay person’ and as a professional. The benefit of viewing it as a ‘lay
person' allows me to determine how understandable the report would be to someone from a permitting agency as well as the general public. The benefit of reading the report as a professional allows me to see what information is presented or not presented and, again, how understandable the report is written. Some of these recommendations parallel the guidelines put forth by the California Office of Historic Preservation in *Archaeological Resource Management Reports (ARMR) Recommended Contents and Format* (1990), which should be reviewed in addition to this thesis. The following are my recommendations for making excavation reports better for all.

**What is the purpose?**

Although more reports are including a research design or research questions into their reports it was my observation that this was not always the case. Reports should include a research design that contains a clear list of questions, and a list of data requirements to address these questions. A clear summary of how the questions were addressed or not addressed should be included at the end of the report. Although it is nearly 20 years old the California Office of Historic Preservation developed a bulletin to help archaeologists develop good research designs (California Office of Historic Preservation 1991) which lists several components that should be incorporated into a research design.

**Less is more**

There is no denying that complex sites have a large amount of archaeological data to be analyzed and reported on. And it seems that archaeologists have a passion for charts, graphs, and tables of numbers; however, to make things easier and clearer for the reader, the long complicated analysis should potentially be provided as an appendix and
clearly summarized in the Findings or Conclusions portion of the report. This is not to say that charts, graphs, and tables should not be used in reports; however, a clear concise summary of findings will help cultural resources management practitioners extract information from reports in a speedier manner.

**Be More Descriptive**

This recommendation primarily applies to artifact descriptions. This is not the first time that a call for better descriptions as well as standard terminology has been requested (see Bennyhoff and Hughes 1987:84-85 and Mikkelsen 1985:199-200). A more complete description of artifacts will help in cultural chronology studies. It will also help in site comparison studies. This has been a long standing issue and needs to be resolved.

Another area that was somewhat lacking good descriptions were units (such as changes in soil appearance and structure). A strong look should be taken at CRM reports to see where things can be gleaned, and where they can be enhanced.

**What did you find?**

A master catalog should be appended to every report. Although this was mostly a problem in older reports, reports as recent as 2007 did not include a catalog. Also a standard way of cataloging should be developed that will help make comparing sites with one another easier.

**Methods**

Considering my limited professional experience, I will not presume to criticize the methods of others. However, after David Bieling analyzed the faunal remains from CA-MRN-254 he suggested that screening material through \( \frac{1}{4} \) inch screen is required to develop a true picture of the taxa found at the site. This is to collect small fish remains
that would fall through ¼ inch screen. By collecting these remains archaeologists would be able to examine another subsistence strategy used by Native Americans.

Glassow (1997:151-152 and 159) recommends more radiocarbon dating at archaeological sites. He also advocates that radiocarbon findings be sent for inclusion on California Radiocarbon Dates which is published and maintained by Coyote Press.

FEDERATED INDIANS OF GRATON RANCHERIA

I could not have completed this study without incorporating concerns and requests from FIGR. It is their ancestors we primarily study in Marin County. In the past, this study has not always been done respectfully or with their approval.

Despite the enactment of laws which have attempted to improve relations between archaeologists and Native American communities, archaeologists should go above and beyond the legal requirements and incorporate Native American wishes into our work. This is true of both CRM professionals and academics alike.

Some of FIGR’s recommendations echoed those I have already included earlier. However, recommendations provided by FIGR that were in addition to my own are provided below:

• Standards (a check list) should be developed by the State Office of Historic Preservation in consultation with cultural resources managers and Native American tribes for the proper development of archaeological research designs.

• Native American presence should be essential to public education on archaeology and site preservation. Baskets and points describe only a small portion of the culture. Therefore Native Americans and archaeologists should work together to educate the public on the importance of preservation and/or archaeology.

• CRM practitioners tend to shy away from new techniques and methods. This is either a result of the dictates of permitting agencies or financial restraints.
CRM practitioners should study and incorporate new techniques and methods into their studies.

- CRM practitioners should be required to attend annual seminars on new techniques and theories so they do not become stagnant in their work.

RECOMMENDATIONS FOR FUTURE WORK

Settlement Patterns

Because CRM consultants are project focused on a specific piece of land and the resources thereon, it can be difficult, and sometimes unfeasible, to discuss regional settlement patterns. This is the case in Marin County however, the problem is largely because little study has been done on this theme. In areas that have received little settlement pattern study, CRM consultants should at the least include information on, seasonality. This will help archaeologists with help with future settlement pattern study (see Subsistence Patterns in this chapter for a discussion of Seasonality).

The Settlement Patterns theme is the most deficient in research. Of the sites included in this study, nearly 80% are located on the east side of the county. Only two sites have been investigated inland (though still primarily on the east side of the county) and three sites have been investigated on the west side of the county. Analysis of sites in different environmental settings and different site types throughout Marin County should be conducted to create a better picture of settlement patterns. Since the cultural resources management work is dependent upon contracts, this is an area that is unlikely to be expanded upon immediately. However, analysis of any collections from interior and west coast sites would help contribute knowledge to this theme.

Other places in the state seem to suffer the same deficiency in settlement pattern research (Glassow 1997:155). However, I echo Lynn Gamble and Chester King’s
caution that making inferences about settlement patterns without enough information is
dangerous to the field (1997:72).

Future research potential for settlement patterns should include the following:

- More reports should include complete analysis of faunal collections.
- When faunal analysis is conducted a determination of seasonality should be
  made, though which season and why needs to be made explicit.
- More sites throughout the county should be studied so that settlement patterns
  can be determined.
- A variety of site types should be studied throughout the county.

Site Structure

Very few reports addressed site structure in their study. While this may be due to
the nature of the site, (i.e., this is the only noticeable structure change) stating this in the
report would help clarify this for future researchers. Site structure study is useful in that it
can provide information about task-specific areas, changes in subsistence, changes in
trade, and changes in settlement patterns. An example of the importance of site structure
analysis is that of site CA-MRN-529/530/530E which potentially showed a site where
interactions between two different groups occurred over a long period of time.

As one can see these observations not only contributed to site structure analysis
but could contribute information about social networks, exchange, and interactions.

Future research potential for site structure should include the following:

- Analysis of site structure differences between inland, bay shore, and ocean side
  middens.
- Analysis of site structure differences between like sites and different site types.

Cultural Chronology

As previously mentioned, no sites which date to the Paleo-Indian or the Lower
Archaic periods have been found in Marin County. Starting with the Middle Archaic
Period archaeologists begin to see a few sites occupied (CA-MRN-17, 152, 159, 193, 357, and 406); however, most sites date to the Upper Archaic or later periods.

These findings could be due to the biased nature of investigations in the county which have primarily focused on bay shore sites. Though other possibilities could be that older sites are buried or have eroded into the ocean or Bay. Sites from the Paleo-Indian and Lower Archaic time periods would primarily consist of task-specific camps. It is likely that obsidian would be the only constituent that would provide dates since no methods have been developed to date other tool stone.

An examination of the county from a geoarchaeological stand point would help identify old landforms where older sites could be found. Good examples of this are the studies Sonoma State University has conducted for Golden Gate National Recreation Area at Muir Beach. Although the sites found during their study did not date to the Paleo-Indian or Lower Archaic periods, their studies showed that agricultural activities caused 110 centimeters or over 3.5 feet of siltation to occur in Frank Valley which buried a site. A second buried site was found at the intersection of this valley and Green Gulch (Psota 2007:19; Meyer 2002:3). Work done in the Muir Beach area is an excellent example of how quickly sites can be buried and why geoarchaeological studies should be incorporated into studies where sensitive areas are identified through these studies.

As new technology becomes available, further refinement of cultural chronologies can be developed that would aid in site dating. These refinements will continue to aid both archaeology and cultural resources managers.

Future research potential for cultural chronology should include the following:

- Incorporation of geoarchaeology could help find older sites in the county.
- Further refinement of obsidian hydration as a dating tool.
Further refinement of bead typologies as a dating tool.
Further refinement of other artifacts as dating tools.

Subsistence Patterns
Archaeologists have devoted a great amount of study to this theme. This has led to several observations about subsistence change over time (Broughton 1999; Gifford 1916; Simmons 1992). As mentioned in the previous chapter most reports discuss some data regarding subsistence, however, what is lacking are more complete analysis of change over time on sites that contain plant and faunal remains. While some sites (i.e. lithic scatters) may not contain subsistence related constituents, several sites which contained faunal remains were not fully analyzed.

What is also lacking is an analysis of data from interior sites. This again goes back to the lack of data in general about interior and west coast sites which is primarily due to the amount, or lack thereof, of development in the interior and west side of Marin County.

Not all sites will have the appropriate data to discuss seasonality. For example, CA-MRN-601 and 674 are lithic scatters with no faunal remains. However, of the 23 sites analyzed only 6 reports discussed seasonality (CA-MRN-14, 17, 20, 44, 254, 255). When one takes into account that at least 54 sites have been excavated in Marin County and only 6 of them have reported on seasonality, this represents approximately 10% of the sites. This means that potentially 85% of the sites excavated contain data that would contribute to this theme.

It should also be pointed out that a few of the reports did state make statements such as, 'the site was a seasonally used site'. However, no clarification was made as to
which season(s) site(s) was being used. If the data are insufficient to make a
determination in which season the site was being utilized, this should be clarified in the
excavation report during the discussion.

Future research potential for subsistence patterns should include the following:

- Analysis of faunal remains from more sites in the county.
- Analysis of faunal remains from sites other than those on the east side of the
county.
- Analysis of faunal remains from more sites in the county.

Social Organization and Interaction

It is unfortunate that, with the exception of exchange, very little study has been
conducted on this theme. Because very little has been said on Marin County mortuary
practices, this is an area that would benefit from expansion. A lot can be learned from
these types of studies including social organization, the health of the individual during
points in time, and how groups interact with each other. Caution should be taken before
this is conducted. Often times tribes would prefer that no destructive studies be
conducted on human remains or mortuary items, or that they be left alone altogether. Out
of respect requests should be made to the Federated Indians of Graton Rancheria before
any mortuary studies be conducted in their traditional territory.

Warfare has received no attention in Marin County. That being said, very little
evidence of it was found during this study. This could simply mean that there was little
evidence for warfare, however more in-depth studies need to be conducted to determine if
this is the case.

Discussions of obsidian exchange through time were only made at two of the sites
investigated. In some cases this was because at the time of excavation obsidian studies
were still in their infancy in the San Francisco Bay Area. However, several recent reports
did little to discuss obsidian trade and how it changed over time.

Fredrickson felt that obsidian was an extremely important resource that would help archaeologists understand a variety of themes such as settlement patterns, social organization, and exchange (David Fredrickson, personal communication 2007). Obsidian can be an excellent data source for determining social interactions and exchange. Because obsidian can be sourced to a location that is in a tribe’s territory and it can be dated, it can help archaeologists examine how this changed over time.

Future research potential for social organization and interaction should include the following:

- In-depth analysis of mortuary practices (with permission).
- Further analysis of potential warfare or violence.
- Analysis of obsidian use and how it changed through time from unanalyzed excavations in the county.
- Analysis of obsidian use and how it changed through time from sites throughout the county.

**Technological Changes**

Because of the development of obsidian studies a great amount of information can be learned from its analysis. Since several studies of projectile point type changes over time and have been and continue to be analyzed, my recommendation is that an analysis of debitage studies be included in every report. Due to the dearth of information on debitage, a standard way of analyzing debitage should be developed to help with site comparisons. All researchers should consider analyses that take into account lithic studies espoused in the CARIDAP (1998).

In 1969 Fredrickson looked at changes through time by analyzing habitation residue, or non-artifactual remains. His hypothesis was that no change would occur
within chronological periods but that evidence for change would occur during the transitions from one period to another (Fredrickson 1969:105). Fredrickson was able to see through his analysis changes occurring at period transitions. The changes he observed were marked by differences in shell, bone remains, and debitage stone and size (Fredrickson 1969:120-123).

Fredrickson's paper is a good example of how non-artifactual remains can provide insight into diachronic changes in archaeological sites. While not everyone should necessarily take the same approach as Fredrickson, he does show that further analyses of these types of data are important.

This theme can overlap to some extent with cultural chronology since artifact typology data contributes to the study of chronology. For recommendations on this please refer back to cultural chronology.

Future research potential for technological changes should include the following:

- Analysis of debitage for potential evidence of change over time.

**Contact Period**

Only Stephen Dietz's contact period study of acculturation and the Coast Miwok has been conducted in Marin County. Ten of the 23 sites included in this study contain contact period items suggesting interaction with Europeans and/or Americans. This shows that the data are present for someone interested in expanding on this theme. These studies are important as they give a face to marginalized communities and show that they were not bystanders as their lands were taken and their way of life destroyed.

I echo Kent Lightfoot's concern that there seems to be a division between
archaeologists who study prehistory and history. This division is not helpful to contact period studies (Lightfoot 1995:200). He suggested that a more integrated approach should be encouraged through the incorporation of questions that relate to native people, ethnic pluralism, and European expansion (1995:211).

Both Kent Lightfoot at Fort Ross and Stephen Silliman at the Petaluma Rancho have provided excellent examples of contact studies in Northern California.

Future research potential for contact studies should include the following:

• Since several sites date to the Upper Emergent and contain contact period materials there is a plethora of materials to conduct contact studies. Contact studies would provide a large amount of data about interactions between Native Americans, Europeans, and other ethnic groups and should be conducted.

• Silliman’s work at the Petaluma Adobe has shown how studies on labor can provide scholarship for contact and historic period interactions. This work could also be performed on sites, like CA-MRN-402 which was located on a ranch, and other contact period sites located on ranches to see how these interactions differed in other parts of the county.

Public Archaeology

There is one last issue that was not mentioned in any of the reports I read but should be emphasized. Numerous studies have shown that when the local community is involved with a conservation initiative and they are educated about its benefits, they are more likely to continue to participate in conserving their resources (Grimwade and Carter 2000; Kolavalli and Kerr 2002; Liedberg Jönsson 2004; Middlestadt et al. 2001; Moser et al 2002). This outreach by archaeologists to the general public has come to be known in the United States and other places around the world as public archaeology (Carman 2000).

In the past, management methods for cultural resources included total exclusion or limited access to sites by the public (Grimwade and Carter 2000). The problem with
this, however, is that the purpose of preserving our heritage is so we can enjoy and appreciate our past. In recent years to gain a larger support group for the preservation of cultural sites, archaeologists/cultural resources managers have attempted to develop plans that incorporate public interpretation and community involvement into site preservation and management strategies (Grimwade and Carter 2000; Moser et al. 2002; Levine et al. 2005; Lewine, Lee, and Salem 2002).

It has also been argued that before a site can be presented to the public, an assessment of significance of the site and its value to the public should be conducted (Carter and Bramley 2006; Grimwade and Carter 2000; McKercher and du Cros 2002; McKercher and Yo 2006). This is a ask that CRM consultants often do therefore in many cases this step is already be complete. Unfortunately, cultural resources management data rarely get distributed to the public.

Along with presenting information to the general public about local archaeology, professionals and students alike need to present and publish their data in archaeological journals and conventions. This applies to those who do not expand their research beyond Marin County or California's borders. Archaeologists are working throughout the world with the same issues we in California are dealing with and to exclude their information because it is foreign is detrimental to our work.

Below are suggestions for inclusion of Public archaeology in projects.

- Incorporating archaeologist interpretations and Native American viewpoints is an excellent way for the public to see how people lived in the past and how they have maintained their heritage now. Although this work has already been voiced by the Federated Indians of Graton Rancheria, I feel that it can not be stated enough.

- Large-scale projects, like apartment complexes, shopping malls, and hotels, which affect archaeological sites should incorporate displays in recreation rooms or lobbies which provide education on the types of cultural resources that once stood
there and why archaeological work was done. This will help the public understand why cultural resources management is an important industry. Ways of doing this should be included in cultural resources management reports as a mitigation measure.

SUMMARY
When I first began this project, my hope was to help the field of CRM by focusing research on prehistoric sites by discussing the current state of research so that professionals can assess the state of information in the field, identify research gaps, and make recommendations for further research. While studies have been conducted on all of the research themes in the county I believe my analysis shows that many of them require further research.

Several research gaps could be filled by reanalyzing collections that were either excavated at a time when analytical methods had not yet been developed (i.e., obsidian sourcing and hydration analysis), or the collections were never fully analyzed. There are many sites in Marin County that have the potential to yield valuable information related to its prehistory (see the list of deficient site reports in chapter 7). What makes this even easier is that no field work or further site destruction needs to be done to obtain this information; the material have already been recovered.

CRM consultants make choices. They have personal interests that they choose to focus their research on. There is nothing wrong with this. I chose to write my thesis on prehistoric archaeology. However, what I hope that I have shown with this study is that by choosing to focus on specific studies within a site, such as faunal analysis overdebitage studies, CRM consultants are excluding data. These exclusions only serve to mar the profession.

Not all of my recommendations are mine alone. Many of my recommendations
are echoes of recommendations that have been made for over 20 years. Consultants need to take steps to incorporate the recommendations outlined in this study so that the field of CRM can advance.
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