

NEW PERSPECTIVES ON THE ARCHAEOLOGICAL SEQUENCE IN THE
COYOTE HILLS AREA OF THE SOUTHERN SAN FRANCISCO BAY:
SITES, COMPONENTS AND PIECES OF THE PUZZLE

James C. Bard and Colin I. Busby
Basin Research Associates, Inc.
31162 San Clemente Street, Suite 110
Hayward, California 94544

ABSTRACT

A clearer understanding of the Middle Period in the southern San Francisco Bay is now possible as a result of various cultural resource management projects in the Coyote Hills and nearby areas. The review of data from CA-Ala-424 and other nearby sites may help in the resolution of certain long-standing settlement and chronology related "problems" in the local culture sequence. A case in point is the "missing" Phase I Late Horizon component at the Patterson Mound Site (CA-Ala-328) which is now recognized as present at other sites in the area. The Middle/Late Period Transition and Early Phase I Late Period occupation at CA-Ala-424 is reviewed. The components and their dating, using Bennyhoff and Hughes' (1983) B1 "short sequence", are discussed in terms of their importance to the understanding of the overall Middle to Late Period culture sequence and implications for local settlement patterns.

INTRODUCTION

This paper discusses the chronological placement of CA-Ala-424 in the overall culture sequence of the southern San Francisco Bay area and its fit with the B1 short sequence chronology proposed for central California by James A. Bennyhoff and colleagues. This B1 short sequence is one of a number of interpretations of archaeological phases in the Central California sequence (Bard and Busby 1986:Table 1). The structure of time units and "culture" inherent in the Central California Taxonomic System [CCTS] is used for continuity and comparison with previous research in terms of understanding the overall Middle to Late Period culture sequence.

In terms of paper organization, a short review of sites in the area precedes the summary of CA-Ala-424 and general concluding remarks. The information from the Coyote Hills region relies heavily on the systematic records and documents on file with the Northwest Information Center, California Archaeological Site Inventory, Rohnert Park.

Research Background

In general, the area appears to have been a favorable environment during the prehistoric period - with bay marshlands, freshwater streams, the Coyote hills, and even a "willow marsh" present (Thompson and West 1878:40) [Figs. 1-2]. The variety of available environments for subsistence and other resources appears to be reflected in the density of recorded sites in the vicinity of the project area.

Ethnographic data suggest that the area was situated in a wetland area within the former territory of the Chochenyo group of the Costanoan Indians (Kroeber 1925:465; Levy 1978:485) [Fig. 3].

In recent years, archaeological research has resumed in the Coyote Hills area of the south San Francisco Bay primarily as a result of cultural resource management studies associated with urban development.

As of 1983, no less than 8 archaeological surveys had been conducted within a mile of CA-Ala-424 located between Coyote Hills Regional Park and the Ardenwood Regional Preserve (Guedon et al. 1984) [Fig. 4]. Basin Research Associates has completed several archaeological programs within the Ardenwood Technology Park (see Bard and Brock 1986 for a review). Ardenwood is located on the San Francisco Bay flood plain between the East Bay hills and the Coyote Hills with San Francisco Bay to the west [Fig. 2]. Holman and Associates has conducted construction monitoring in this Ardenwood area resulting in the discovery of CA-Ala-466.

The well-known CA-Ala-12, -13, -328, and -329 site "cluster" is located ca. 0.5 mile to the northwest of CA-Ala-424. Other nearby sites include CA-Ala-392 to the east in the Ardenwood Regional Preserve and CA-Ala-330 and CA-Ala-331 to the south. Recent work by Peter Banks (1977a,b; 1983, 1984) has provided some subsurface data for CA-Ala-13 and CA-Ala-466 while Matthew Clark has presented a discussion of the results of a survey of the Coyote Hills Regional Parks Park District by Holman and Associates (Clark 1984). Basin Research Associates, Inc. recently completed a limited data recovery program at CA-SC1-424 which is now tentatively dated to the Crocker Phase (A.D. 900 - A.D. 1100) based on typological criteria (Bard et al. 1987).

As a result of the excavations in the area since 1935 and currently available comparative data from other Bay area sites, it is believed that prehistoric occupation of the area began as early as 389 B.C. and continued to just prior to European contact (Baker 1983:6; Bickel 1976, 1981).

LOCATION MAP

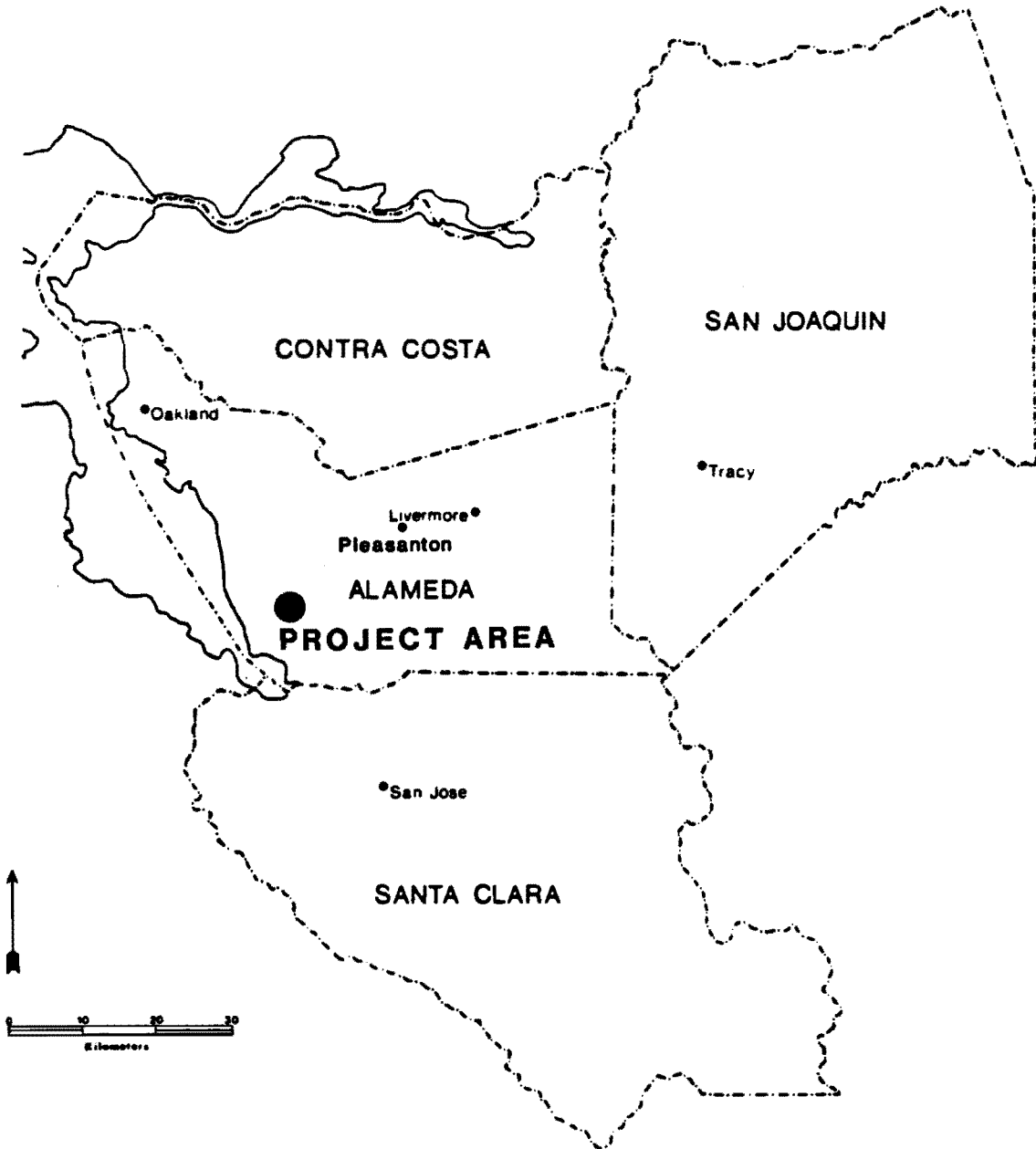


Figure 1. General Location Map

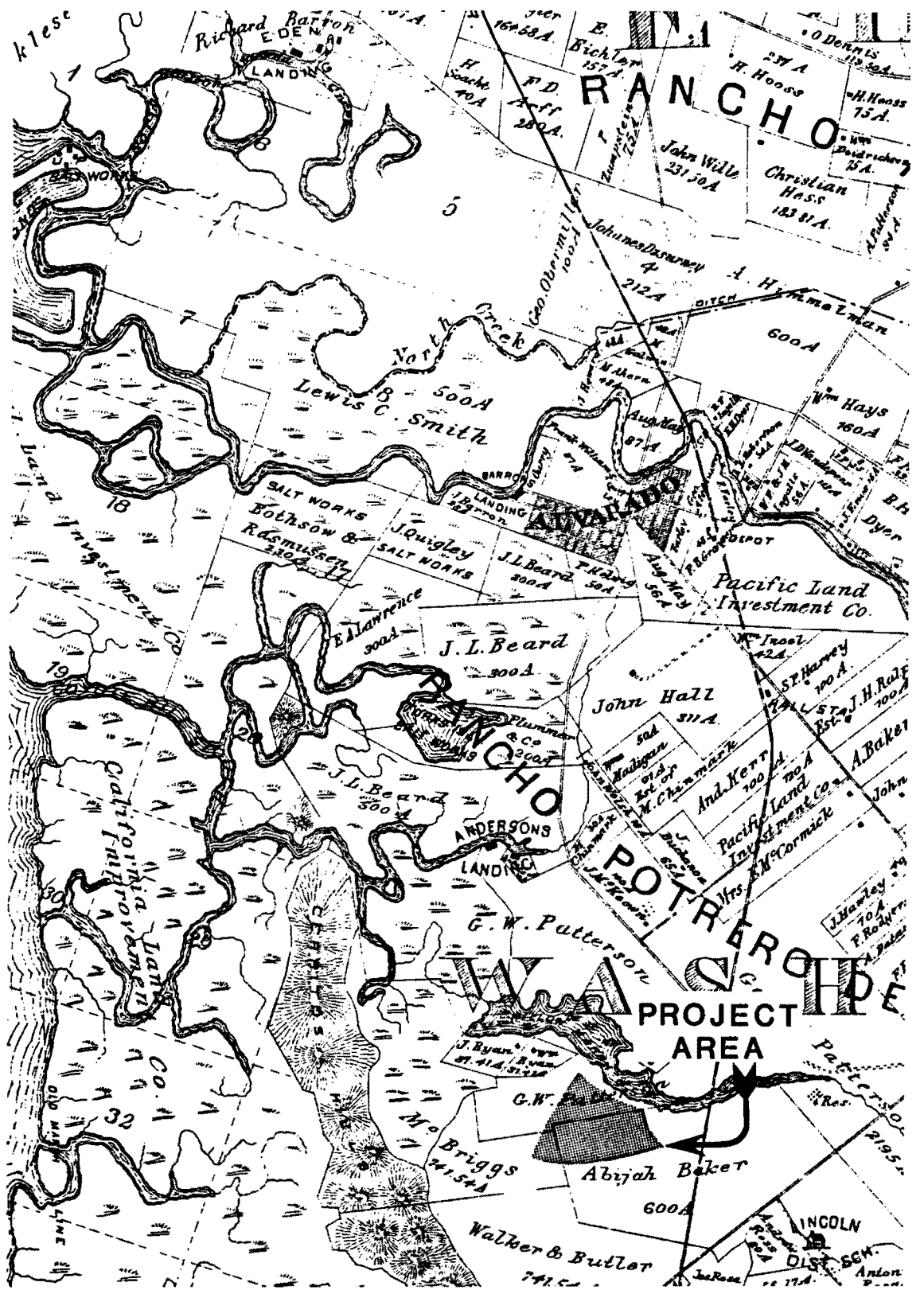


Figure 2. Project Area, 1878 (Thompson and West 1878:40)

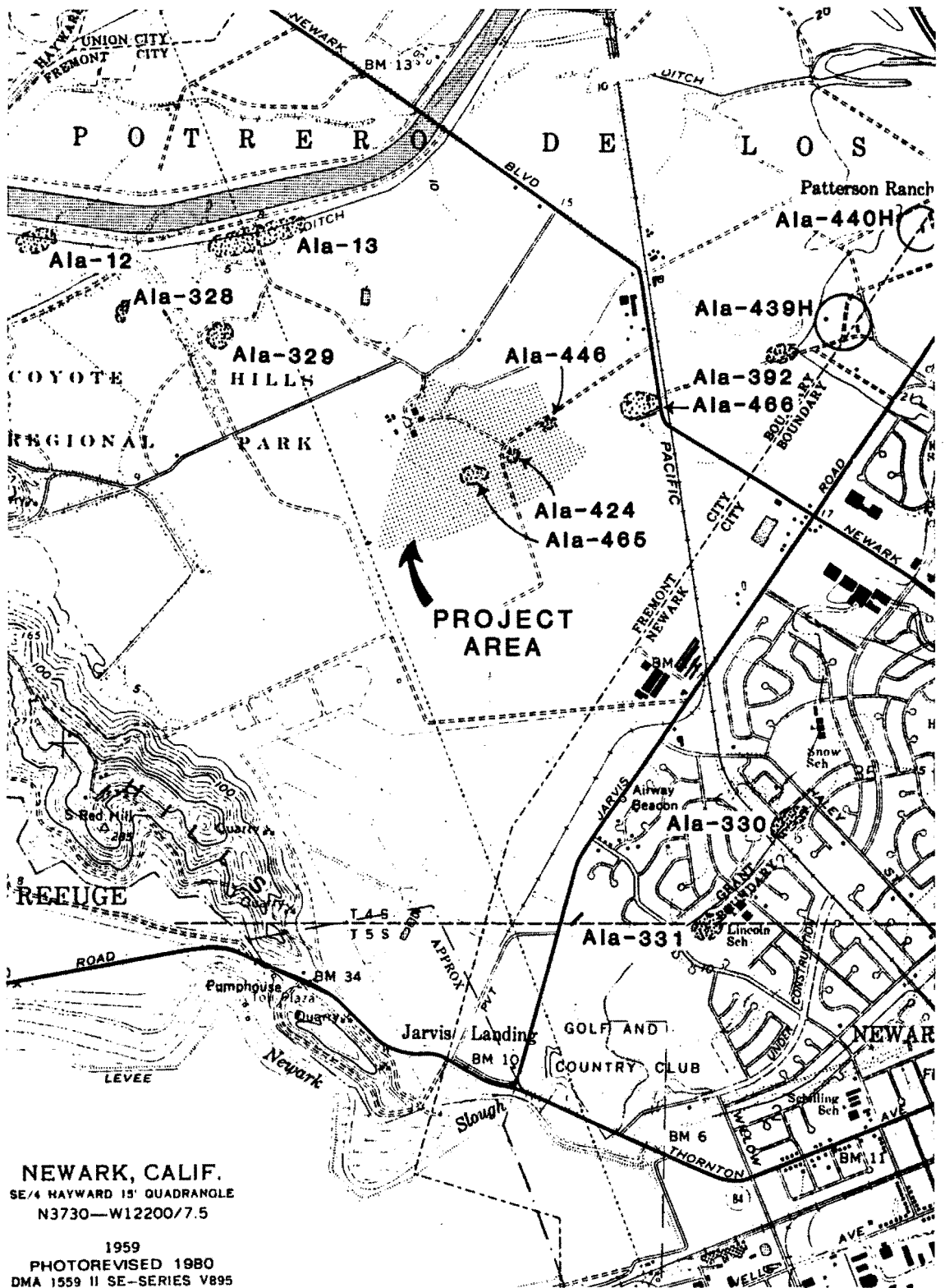


Figure 4. Project Location with Archaeological sites in the Vicinity

The collections from the Patterson Mound (CA-Ala-328), are still the focus of analysis and interpretation (Davis and Treganza 1959; see Bickel 1976, 1981). This site's importance to the understanding of the Middle Period or "horizon" in central California cannot be underestimated.

Davis and Treganza (1959:69) assigned the name Patterson Facies to the "C" component from the site based on differences in specific traits with other sites of Middle Horizon age in the Bay Area. The Patterson Facies is believed to represent a time of transition between the Early and Middle Horizons and is dated, using Bennyhoff and Hughes' (1983) B1 chronological scheme, to between 500 B.C. and 200 B.C.

A primary research problem at the site is the apparent lack of a Phase 1 Late Horizon occupation - the "missing component" (see Coberly 1973). The lack of a Phase 1 occupation is puzzling since CA-Ala-328 has both Phase 2 Late Horizon (Component A) and Middle Horizon or Middle Period occupations (Component B) present.

Coberly's research at the Ryan Mound (CA-Ala-329) suggests three explanations for the lack of a Phase 1 Late Horizon at CA-Ala-328. First, it is possible that the site was simply not occupied and the inhabitants relocated to the Ryan Mound which has a pronounced occupation during Phase 1 Late Horizon. Heizer (1949) rejected this idea since a culturally sterile layer or erosion surface was not present between the Middle Period and Phase 2 Late Horizon materials. Bennyhoff (1986:68) suggests that mission record research may show that the Ryan Mound may have been occupied by the Bay Miwok during the Phase 1 Late Horizon rather than by an Ohlone or Costanoan group.

A second explanation is that the site was inhabited during the Phase 1 Late Horizon but, due to lack of trade or cultural lag, did not receive any characteristic time markers. Coberly (1973) rejects this explanation because it implies that occupants of the Patterson site did little trading while the Ryan Mound, 300 yards distant, was in touch with other Phase 1 Late Horizon sites.

The third explanation posits that Phase 2 Late Horizon "markers" originated or appeared early in the Bay region, at the same time as Phase 1 markers appeared in the interior. The Phase 2 Late Horizon materials from the Bay area later diffused to the interior sites. This explanation implies that the "standard sequence" for the Bay area would be the Middle Period followed by Phase 2 Late Horizon. In addition, it also implies that (1) the Ryan Mound is contemporaneous with the Phase 2 Late Horizon materials at the Patterson Mound, or, (2) that the Ryan Mound is possibly later than Phase 2 Late Horizon, and may represent a

cultural diffusion from the interior (i.e., Phase 1 Late Horizon materials).

Coberly concluded that the Ryan Mound had ties with the interior which the Patterson Mound did not have. She also found that the sequence for the Ryan Mound did not fit "neatly" into the Patterson sequence and that no conclusions about their temporal relationship could be reached. In addition, she suggested that differences between the two sites may be closely related to subsistence patterns although little data are available to support this conclusion. Finally, she suggests that it is not likely that the Ryan Mound occupation represents a relocated phase of the Patterson occupation.

In spite of Coberly's explanatory efforts, little is known about the relationship between the two sites during the Late Period making comparative data from other nearby sites of interpretive interest. Data from the Middle Period, and in particular, the Middle/Late Horizon Transition Period, are needed to understand the archaeological sequence in this part of the southern San Francisco Bay and to resolve the Patterson/Ryan sequences.

SITE CA-ALA-424

We are concerned with one of the several prehistoric sites located in the Ardenwood Technology Park [Figs. 4-5]. Initially, CA-Ala-424 was described as a badly disturbed and dispersed area of shell fragments with 2 small pieces of chert debitage, some fire affected soil, and limited fire-cracked rock (see Breece 1981). This site was thought to have been destroyed during the previous grading of the Ardenwood subdivision.

Nine burials with a minimum of 11 individuals were recovered in 1985 (Bard and Brock 1986) [Fig. 6]. Agricultural practices, as well as recent grading and filling, had destroyed or altered the original ground surface resulting in the removal of approximately 15-46 cm of sediment. The burials were exposed just below the graded surface (0-5 cm) in a compact prehistoric midden and ambient clay soils (Bard and Brock 1986:11).

The burials were discrete inhumations in two separate clusters. Burials 2 and 3 formed a small cluster located 300 feet to the northeast of the larger burial concentration of Burials 1 and 4-9. Burials 1 and 6-7 were found in a midden matrix just below the present surface. In the case of Burials 1 and 5, a second individual was discovered in the laboratory during the skeletal analysis yielding a minimum number of 11 individuals from the site. Only 2 of 9

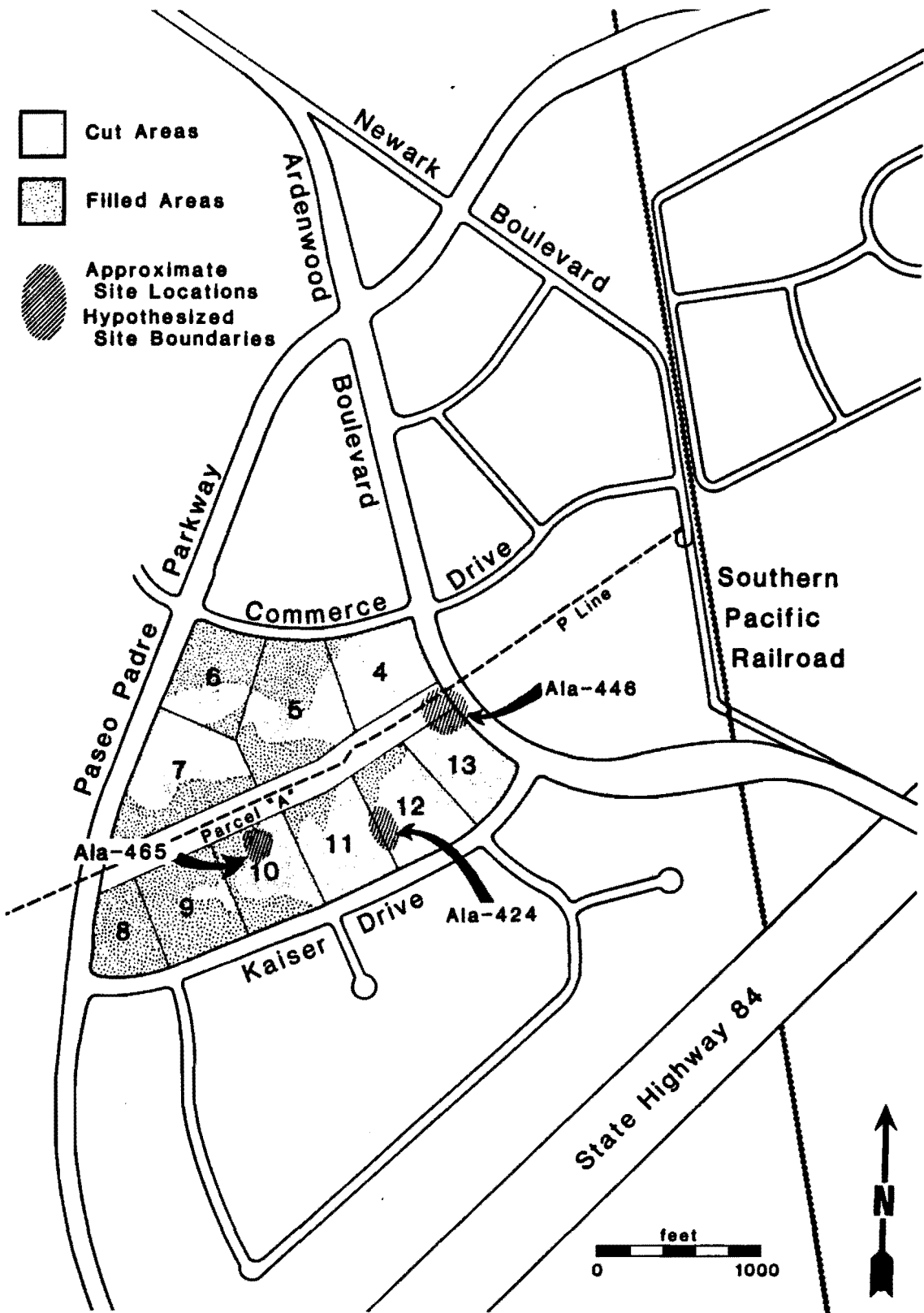
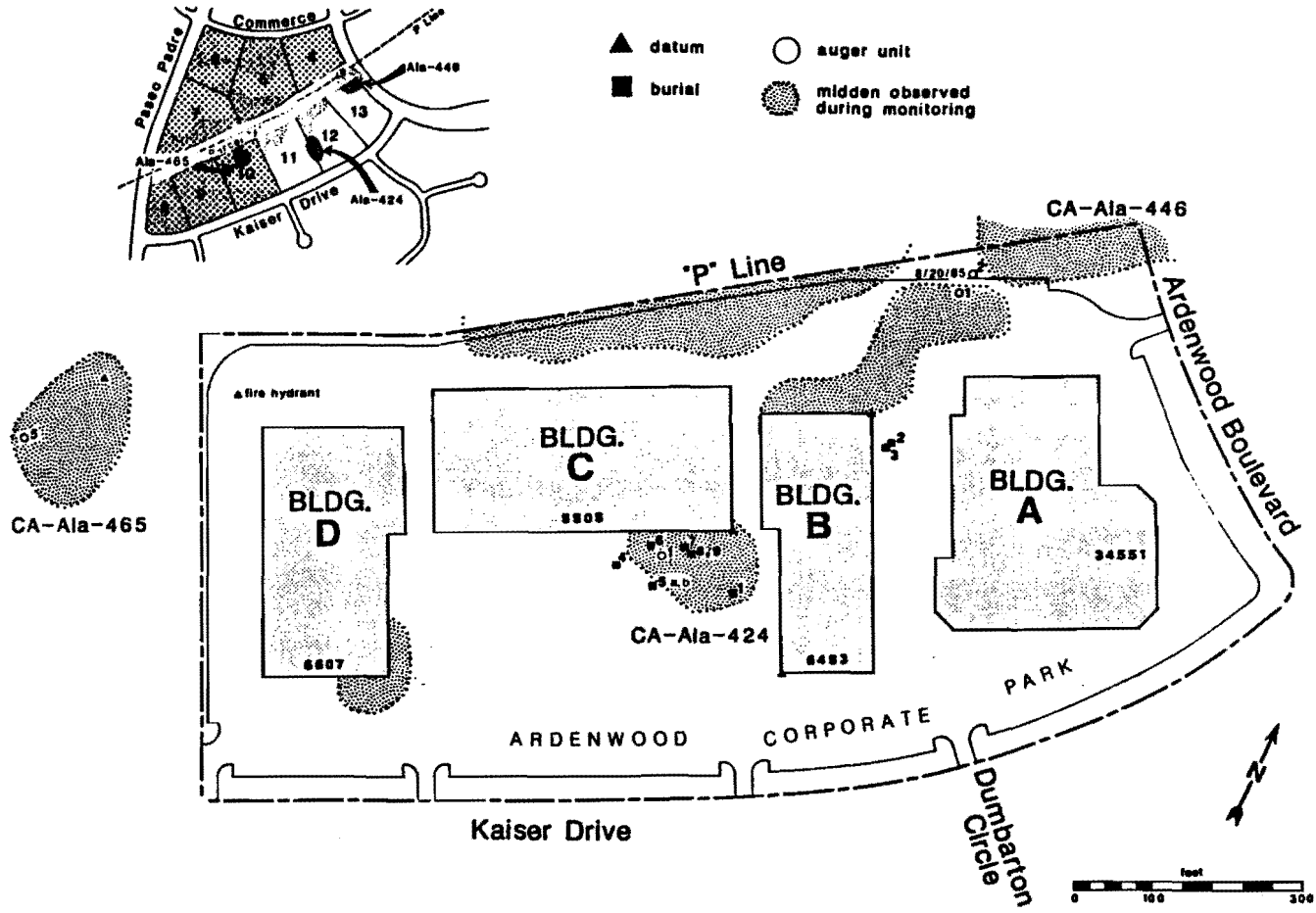


Figure 5. Construction Impacts, Parcels, and Archaeological Sites

Figure 6. Ardenwood Parcels 11-13: Archaeological Sites, Human Burials, and Auger Units



burials had grave goods or associated cultural material present. The temporal relationship between and within the two burial clusters could not be determined. However, because all the burials were found at about the same depth, evidence for intrusive interments was lacking, and since the preservation of the remains was similar, it is possible that all of the burials in each cluster are roughly contemporaneous.

Generally, the burials were flexed or tightly flexed. The individuals were oriented with the head S or SW and the body and legs NE to NNW. One was in a supine posture while another had an extended torso. The presence of a burial pit was detected for over half of the burials.

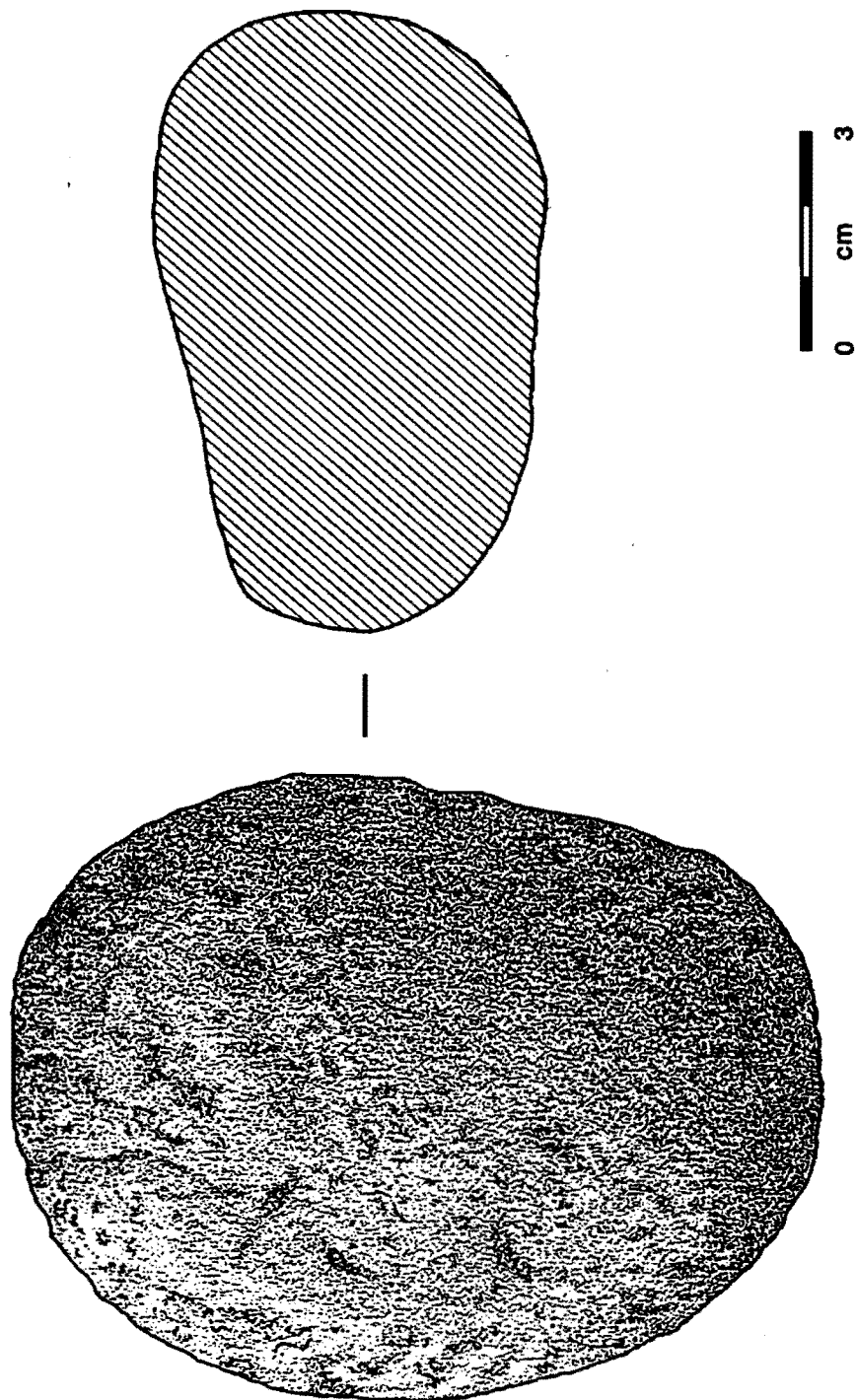
The recovered individuals include 3 subadults (0-15 years) and 8 adults (15+ years). Average age at death of the adults was 30.4 years (range: 20 - 40+). Burials 5a, 6, and probably Burial 3 were male, while Burials 1, 2, 4, 7, 8 were female. Burial 1 also included a neotate; Burial 9 contained a ca. 1 year old child, and Burial 5b was a 8-10 year old child. Stature estimates range from 4'9" to 5'2" in females with one male (Burial 6) estimated at 5'6". Regardless of sex, the height of the majority of the adults is ca. 2-3" taller than that of contemporaneous prehistoric people in the region. At present, the biological significance of variability in height is uncertain.

Individual health seems to have been fairly good and traumatic injury minimal. The early stages of arthritis are the predominant observed pathology (3 of the 8 adults). The spine, lower limbs (knee) and temporo-mandibular joint show mild degenerative changes. Of the three, the knee is relatively the worse affected.

Only two of the burials had associated cultural materials. A single shell bead was found with Burial 1. Burial 6 yielded, in direct or indirect association, a serrated edge obsidian projectile point fragment, an obsidian biface fragment, Olivella shell beads and a charmstone. Artifacts recovered from non-burial contexts included lithic debitage, a bifacial mano, a pestle, a banana-shaped elongate pestle, a pestle blank, and a charmstone blank [Fig. 7a-e].

Burial Description and Grave Goods

Burial 1 was badly disturbed resulting in the loss of much of the skeleton. The recovered remains are few, fragmentary and incomplete and represent a female ca. 25-30 years of age and rather tall (5'2"). From the in situ elements, burial posture was judged as tightly flexed, lying in a pit, oriented with the head to the SW and legs NE. Primary elements of the skeleton are present and were in



**FIGURE 7A. FC 85/8/16-16 BIFACIAL MANO
GRANITE
CA-ALA-424**

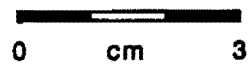
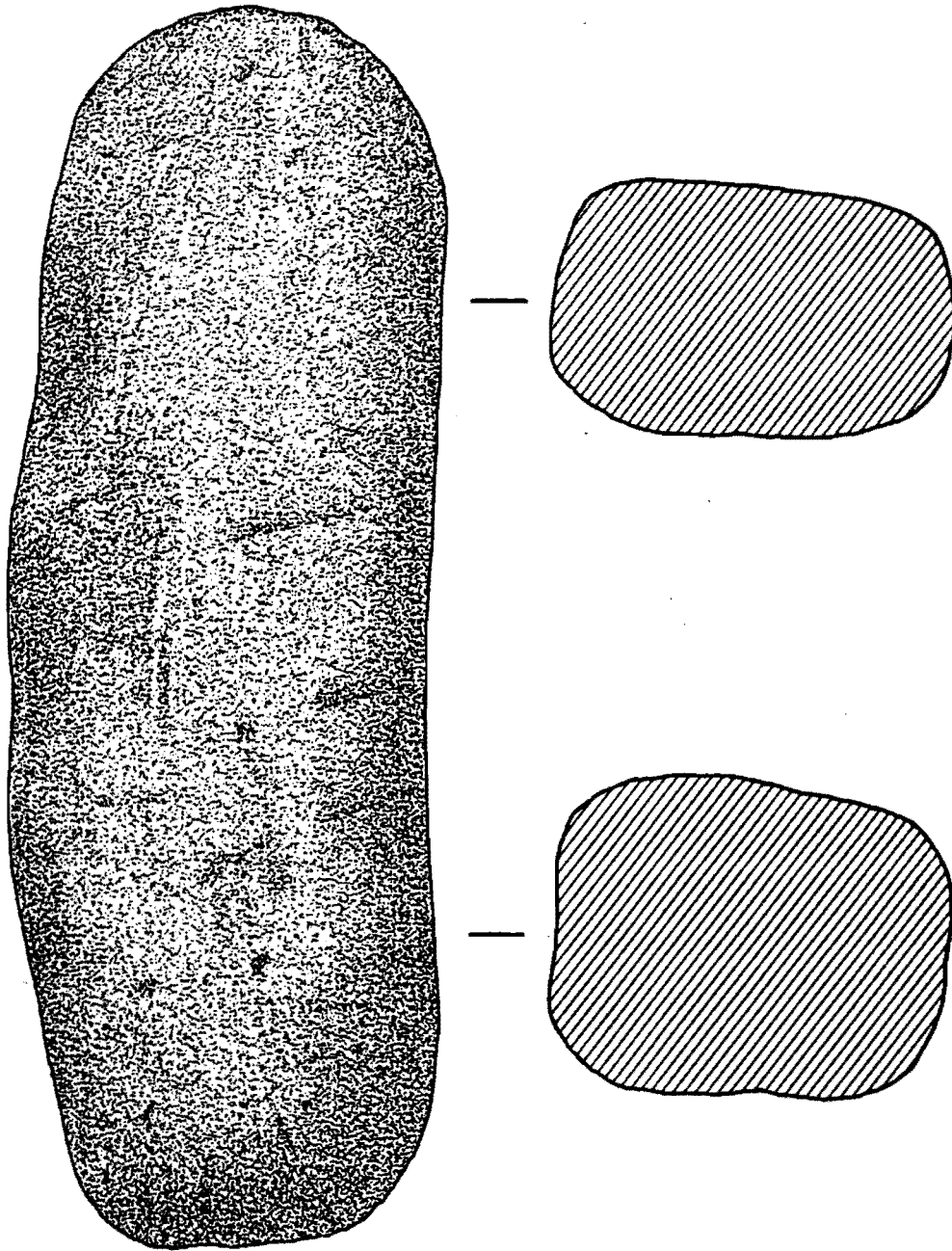
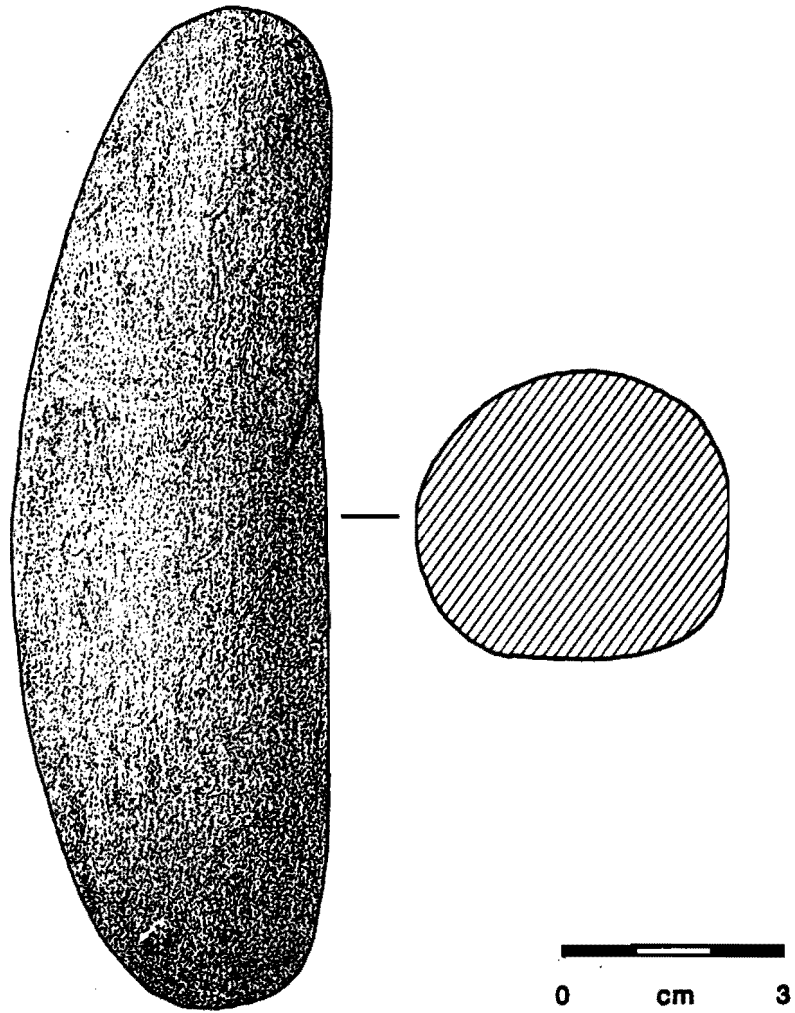


FIGURE 7B. FC 85/8/15-6 UNSHAPED PESTLE,
INDURATED SANDSTONE,
CA-ALA-424



**FIGURE 7C. FC 85/8/15-7 ELONGATE PESTLE
SANDSTONE
CA-ALA-424**

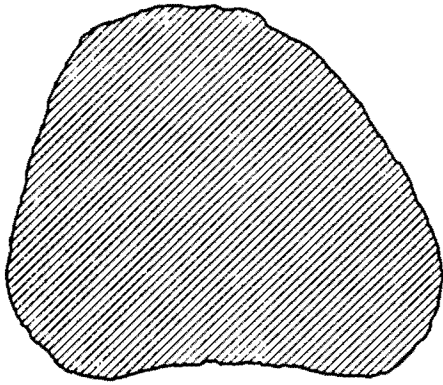
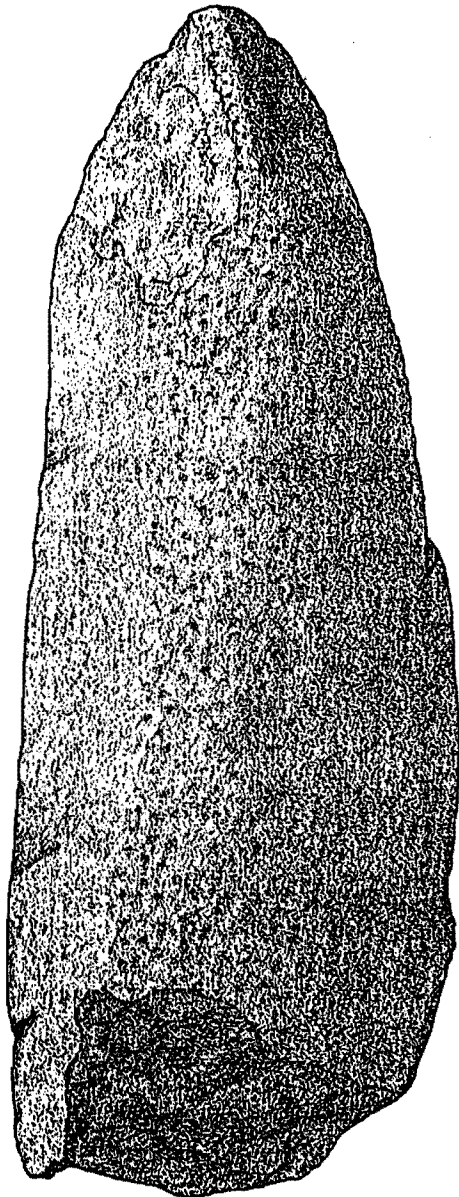
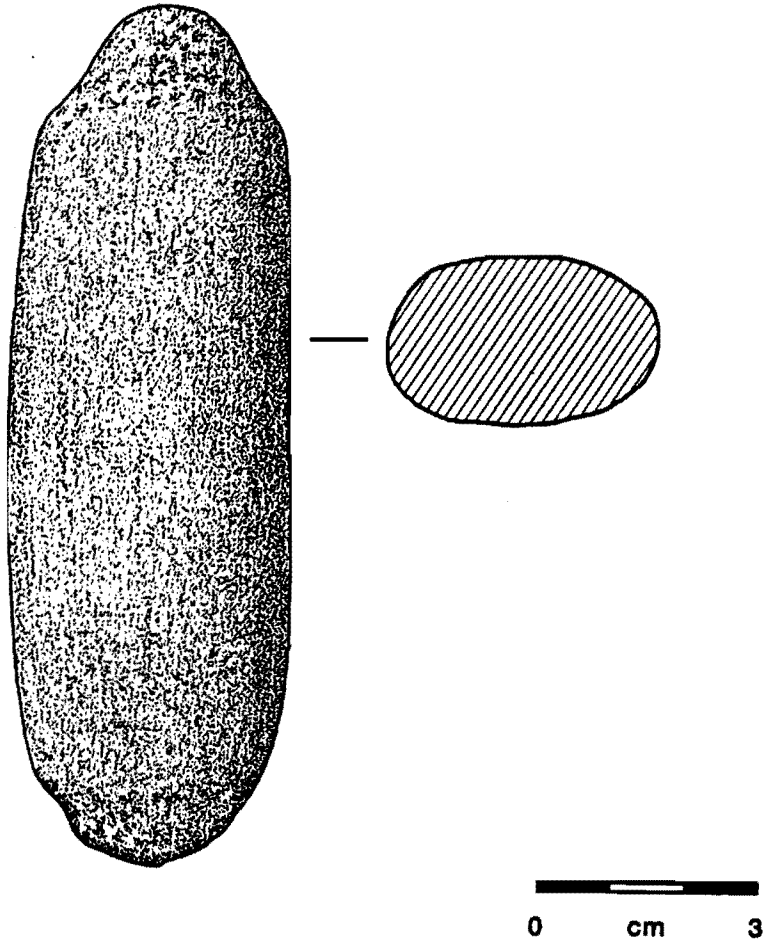


FIGURE 7D. FC 85/8/26-1 PESTLE BLANK,
INDURATED SANDSTONE,
CA-ALA-424





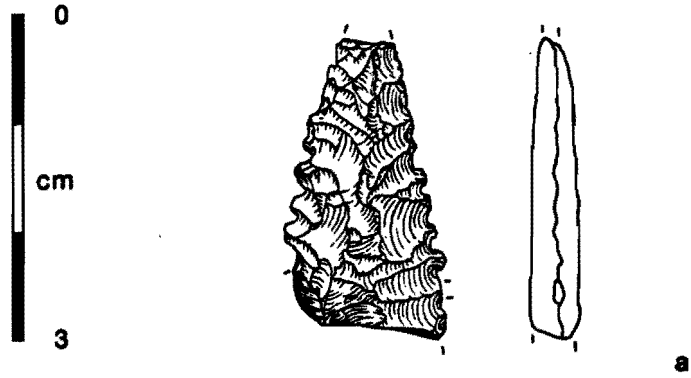
**FIGURE 7E. FC 85/8/19-1 CHARMSTONE,
SANDSTONE
CA-ALA-424**

approximate anatomical position strongly indicating an original primary interment. One Olivella shell bead (Type Alb) and midden debris (shell, faunal remains, baked clay and fire-cracked rock) were recovered with the bones. Laboratory cleaning of the recovered material led to the discovery of a single bone (phalange) of a neonate. Since this bone is the only evidence of an additional burial and since much of the burial was removed prior to disinterment, the presence of a multiple burial is doubtful. However, the neonate was included in the minimum number of individuals.

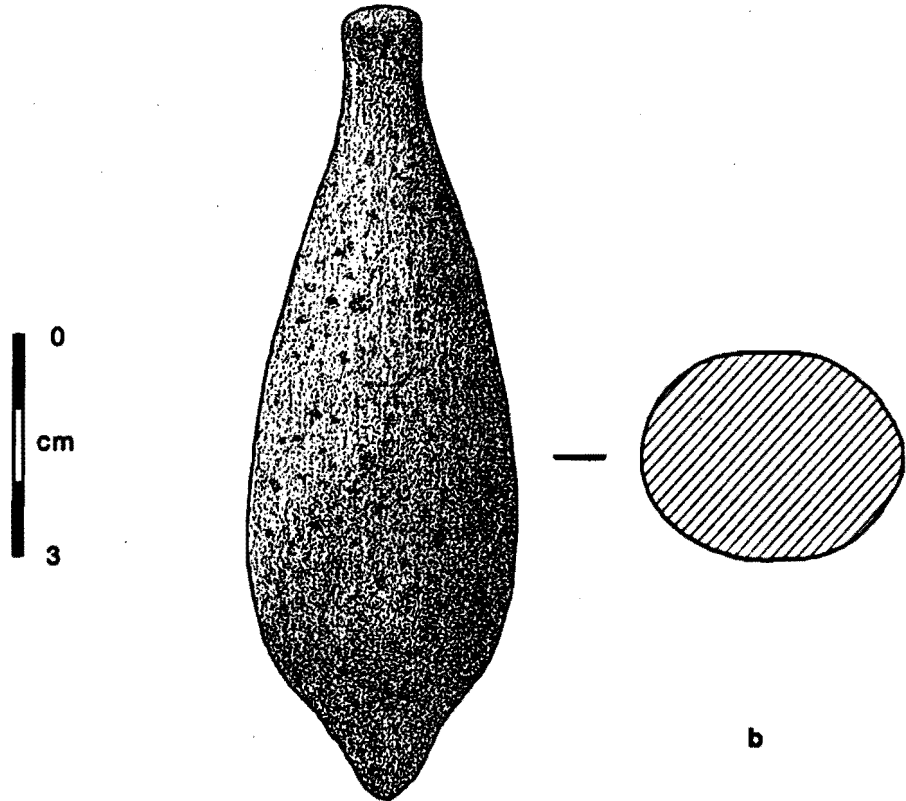
The single spire-lopped Olivella bead recovered with Burial 1 (Type Alb; see Bennyhoff and Hughes 1986) is not sufficient for dating the burial as this type is generally found in Early, Middle and Late Horizon contexts in central California.

Burial 6 was the best preserved and yielded the most important temporal indicators. The burial, of a male, 35-40 years old, tall (5'6"), and of moderate build, was in a pit, flexed at the hip and knees and lying mostly on the right side. The head was to the NNE with the body tending SSW and facing W. The left arm was flexed up to the shoulder and the right upper arm was extended down the side. The latter may have been flexed at the elbow, but the forearm was not found. The right forearm seems to have been destroyed by rodents and root intrusions. A complete non-perforated, piled plummet granite charmstone (Type IIB1c) was found behind the right knee [Fig. 8b]. Numerous complete Olivella shell beads (Types Ala,b, M1a, M2a) along with many fragments were recovered as well. Red ochre was tentatively observed in the burial pit.

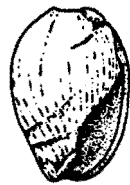
The dating of Burial 6 is helped by the 248 Class M Olivella beads [Fig. 9b-d] associated with the burial (244 M1a, 1 M1b, 3 M2a). M1a beads are a marker type for the Phase 1 Late Horizon although they first appear with Square Saddles (F3) in the Middle/Late Horizon Transition (Bennyhoff and Hughes 1986:47-50). They are characteristic of the Early Phase 1 and last appear in Middle Phase 1 with Pendant Rectangles (M2) (i.e., A.D. 700 - A.D. 1300; B1 scheme). Pure or nearly pure lots of M1a beads are characteristic of the Crocker Phase (A.D. 900 - A.D. 1100 A.D.) (Bennyhoff, personal communication 1986). M1b beads are a marker type for the Early and Middle Phase 1, Late Horizon. The co-occurrence of M1 and M2 is diagnostic of the Middle Phase 1, Late Horizon, while the appearance of M2 alone marks the Late Phase 1. These beads rarely persist into the Early Phase 2 Late Horizon. In addition, the Type II charmstone recovered from Burial 6 is also thought to be most similar with specimens from the Crocker Facies (Early Phase I, Late Horizon, A.D. 900 - A.D. 1100). Based on typological criteria alone, the best dating for Burial 6 is the Crocker Phase, A.D. 900 - A.D. 1100 (Bard and Busby



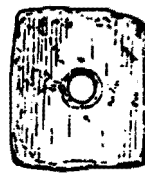
**FIGURE 8A. FC 85/4/29-2 SERRATED EDGED PROJECTILE POINT
 OBSIDIAN
 CA-ALA-424**



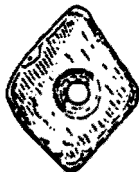
**FIGURE 8B. FC 85/4/29-1 PILED PLUMMET CHARMSTONE
 GRANITE
 CA-ALA-424**



a



b



c



d

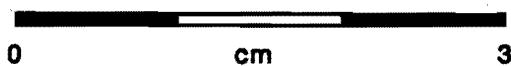


FIGURE 9A. FC 85/4/29-3 OLIVELLA SPIRE LOPPED BEAD
TYPE A1B
CA-ALA-424, BURIAL 6

FIGURE 9B. FC 85/4/29-4 OLIVELLA RECTANGULAR BEAD
TYPE M1A
CA-ALA-424, BURIAL 6

FIGURE 9C. FC 85/4/29-4 OLIVELLA RHOMBOID BEAD
TYPE M1B
CA-ALA-424, BURIAL 6

FIGURE 9D. FC 85/4/29-4 OLIVELLA RECTANGULAR BEAD
TYPE M2A
CA-ALA-424, BURIAL 6

1986:Table 1).

Suggesting CA-Ala-424 site occupation based only on the typological association of the grave goods from one burial is tenuous. However, charcoal from the matrix surrounding Burial 6 was used to secure a radiocarbon date. In addition, 2 obsidian artifact fragments, a projectile point and a biface, were submitted to MOHLAB for chemical source determination and hydration dating.

The projectile point fragment recovered from the Burial 6 matrix is not believed to be a grave offering and it is reasonable to assume that Burial 6 also must post-date the age of the fragment. The obsidian serrated edge projectile point fragment is too fragmentary for proper classification although similar points are common during the Late Horizon in central California [Fig. 8a]. An examination by Dr. Bennyhoff suggests that a Phase 1 Late Horizon date is reasonable for the artifact (Bennyhoff, personal communication 1986).

The point fragment is of Napa Glass Mountain source obsidian and dates to A.D. 847 ± 107 years (2.24 ± 0.10 microns). The biface fragment is also of Napa source obsidian with a date of A.D. 835 ± 49 years (2.26 ± 0.05 microns). The point and the unassociated biface yield almost identical dates suggesting that the matrix surrounding Burial 6 and artifacts are temporally congruent.

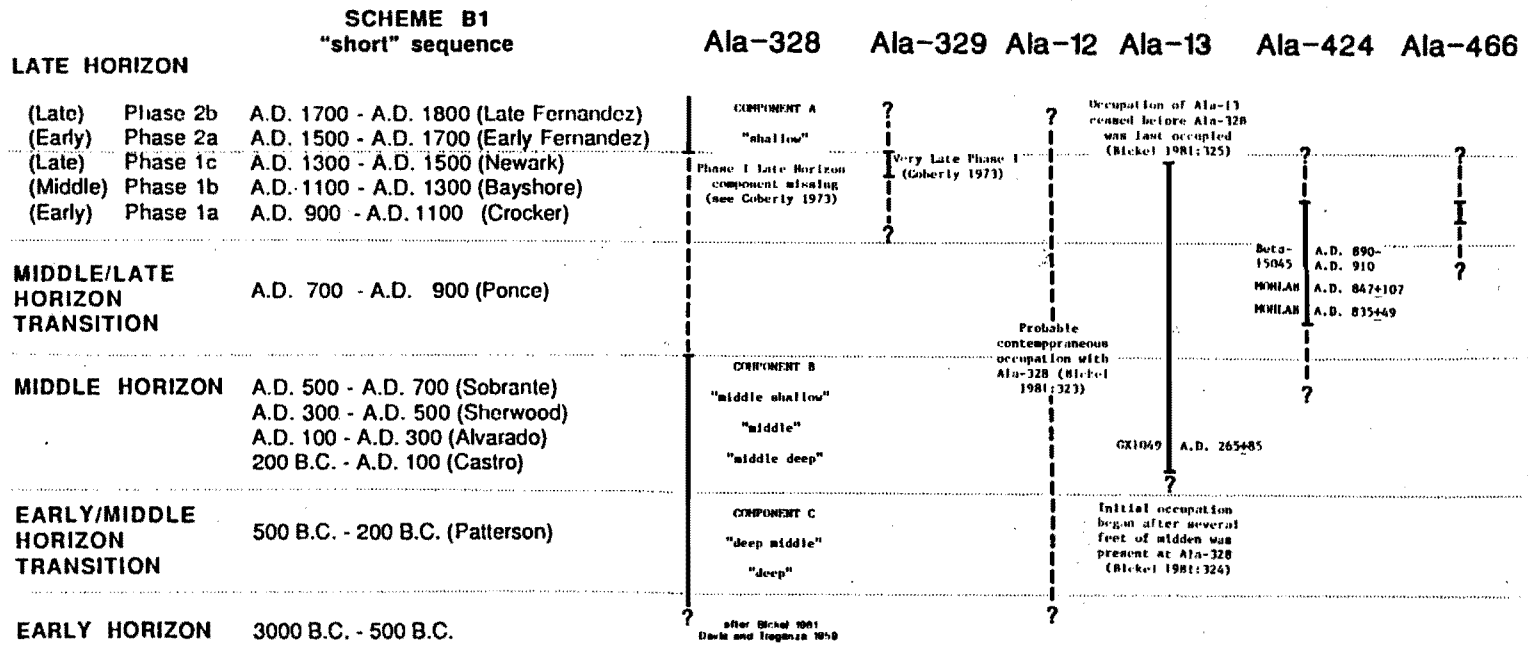
More importantly, the hydration date for the point fragment and the radiocarbon date obtained from the charcoal matrix are complementary [Fig. 10]. The charcoal yielded a corrected date of 1050 ± 80 years B.P. [Beta-15045] (A.D. 890 - A.D. 910) (see Ralph, Michael, and Han 1973:Table 1). The two dates suggest that Burial 6 was intrusive into a slightly earlier deposit and therefore must post-date the matrix date. That is, the deposits date around A.D. 847 (obsidian point) to A.D. 890 - A.D. 910 (radiocarbon date). The burial, based on typological criteria, dates from A.D. 900 - A.D. 1100 (Crocker Facies).

The chronological data suggest that the occupation of CA-Ala-424 may have started as early as the Middle/Late Horizon Transition (ca. A.D. 700 - A.D. 900, Ponce Facies) and continued through Early Phase Ia of the Late Horizon (ca. A.D. 900 - A.D. 1100, Crocker Facies) [Fig. 10].

CONCLUSIONS

The partial role and function of CA-Ala-424 can be suggested based on the recovered artifacts. The chipped stone tools are consistent with those expected in an assemblage utilized by a hunting and gathering population.

Figure 10. Correlation of Sites, Components, and the Central California Taxonomic System



The lithic debitage may infer the presence of lithic manufacturing or maintenance activities while the presence of obsidian, a non-local raw material from the Napa Glass Mountain source, suggests trade or interaction with other groups. The presence of ground stone artifacts infers the use of local vegetal food resources. Although no mortar fragments were found, the pestles suggest the relative importance of mortar/pestle implements in the exploitation of economic resources. A bifacial mano also may infer the milling of hard seeds by the site occupants.

Ground stone artifact manufacture may have occurred at the site based on the recovery of both a pestle blank and a charmstone blank. Both artifacts were in the process of manufacture when discarded.

In summary, the limited artifact inventory suggests a gathering and hunting economy. Lithic manufacture, of both chipped and ground stone artifacts, seems to have been relatively important.

The dating of the site, using time-sensitive shell beads, a charmstone, and radiocarbon and obsidian hydration dates, suggests an initial occupation during the Middle/Late Horizon Transition (ca. A.D. 700 - A.D. 900) continuing through Early Phase 1a Late Horizon (A.D. 900 - A.D. 1100).

Recapitulation

The data from CA-Ala-424 and other sites in the southern San Francisco Bay area may help to explain the absence of a Phase I Late Horizon occupation at the Patterson Mound (CA-Ala-328). The information from CA-Ala-424 and from nearby sites to the southeast, especially CA-Ala-453, (see Jones et al. 1987) suggests that there was no regional hiatus in occupation during this time period. For example, CA-Ala-453 is a single component site apparently occupied during the late Middle Horizon time period - ca. A.D. 500 - A.D. 700. The assemblage and time markers are consistent with a Sobrante Facies placement and the site appears to be contemporaneous with the last Middle Period occupation at the Patterson Mound (Dietz, personal communication 1987) [located beyond area illustrated in Fig. 4]. At CA-Ala-466, Bard et al. (1987:36) identified artifacts which can be dated to both Middle and Late Horizon time periods.

Why the Patterson Mound (CA-Ala-328) was not occupied or only lightly occupied during the Phase I Late Horizon is not known. The preliminary excavation data from other sites (such as CA-Ala-424, 453, and 466) in the vicinity of CA-Ala-328 suggests that occupation appears to have been more dispersed during the Middle/Late Horizon Transition Period and into Phase I of the Late Horizon. During the

very late Phase I times, the Ryan Mound (CA-Ala-329) witnessed its fluorit of occupation. During Phase II times, the "shallow" or Component A layer reflects occupation of short duration or, alternatively, a less intensive occupation at the Patterson Mound.

In addition to diachronic changes in occupation/settlement, CA-Ala-424 appears to support, even "validate", the B1 short sequence as formulated by Bennyhoff and Hughes (1983). As new site data becomes available, it is apparent that the B1 short sequence advocated by Bennyhoff and his colleagues will be a useful chronological tool for the southern San Francisco Bay area. At CA-Ala-424, the two obsidian hydration dates complement a radiocarbon date providing strong evidence for occupation starting in the Ponce Phase (A.D. 700 - A.D. 900). In turn, these data validate the placement of the M type bead series by Bennyhoff. Burial 6, intrusive into these deposits, is clearly a Crocker component in terms of associated artifacts (A.D. 900 - A.D. 1100).

It is significant that the short sequence works at CA-Ala-424. This confirmation is important insofar as future research in the area can more comfortably rely on the short sequence and the typological hallmarks of each phase or facies to trace the changing patterns of land use during the Middle and Late Periods. The discovery of additional single component sites in the East Bay - particularly single component sites attributable to the Crocker, Bayshore or Newark facies - will help in understanding why there appears to be a "missing component" at the Patterson Mound and by analogy to other regional site complexes.

ACKNOWLEDGEMENTS

A special note of thanks is due to Rebecca L. Anastasio, Stuart A. Guedon and Melody E. Tannam for the various maps and illustrations. Dr. Donna M. Garaventa is thanked for her many suggestions and review of the various drafts.

REFERENCES CITED

Baker, S.

- 1983 Archaeological Investigations at the Ardenwood Regional Preserve, Patterson Ranch, Alameda County, California. MS on file, S-5943, California Archaeological Site Inventory, Rohnert Park.

Banks, P.

- 1977a Site Record Form for CA-Ala-330. Form on file, California Archaeological Site Inventory, Rohnert Park.
- 1977b Site Record Form for CA-Ala-392. Form on file, California Archaeological Site Inventory, Rohnert Park.
- 1983 Subsurface Archaeological Investigations at Ca-Ala-13, Line K, Alameda County, California. MS on file, S-6085, California Archaeological Site Inventory, Rohnert Park.
- 1984 Site Record Form for CA-Ala-446. Form on file, California Archaeological Site Inventory, Rohnert Park.

Bard, J.C. and S.L. Brock with R. Anastasio, C. Busby, D. Garaventa, S. Guedon, M. Tannam and J. Thomas

- 1986 Archaeological Monitoring and Burial Report, Ardenwood Technology Park, City of Fremont, County of Alameda, California. MS on file, California Archaeological Site Inventory, Rohnert Park.

Bard, J.C. and C.I. Busby

- 1986 The Central California Prehistoric Culture Sequence: A Preliminary Review of Implications for Santa Clara Valley Prehistory. Coyote Press Archives of California Prehistory 7:82-86, Salinas.

Bard, J.C., R.J. Dezzani, D.M. Garaventa, M.J. Rothwell, M.E. Tannam and C.I. Busby

- 1987 Archaeological Data Recovery Program at Olympia 1/ CA-Ala-466, Fremont, California. MS on file, California Archaeological Inventory, Rohnert Park.

Bennyhoff, J.A.

- 1986 The Emeryville Site (Ala-309), Viewed 93 Years Later. In Symposium: A New Look at Some Old Sites edited by G.S. Breschini and T. Haversat, pp. 65-74. Coyote Press Archives of California Prehistory 6, Salinas.

Bennyhoff, J.A., and R.E. Hughes

1983 Shell Bead and Ornament Exchange Networks Between California and the Great Basin. In The Archaeology of Monitor Valley, 2: Gatecliff Shelter edited by D.H. Thomas, pp. 290-296. Anthropological Papers of the American Museum of Natural History 59(1).

1986 [In Preparation] Chapter JJ. Synopsis of Shell Bead and Ornament Typologies for California and the Great Basin. In Gatecliff Shelter, Monitor Valley, Nevada [summary volume] edited by D.H. Thomas. Anthropological Papers of the American Museum of Natural History.

Bickel, Polly McW.

1976 Toward a Prehistory of the San Francisco Bay Area: The Archaeology of Sites Ala-328, Ala-329 and Ala-12. Unpublished Ph.D., Harvard University. University Microfilms, Ann Arbor.

1981 San Francisco Bay Archaeology: Sites Ala-328, Ala-13, Ala-12. Contributions of the University California Archaeological Research Facility 43, Berkeley.

Breece W.H.

1981 Site Record Form for CA-Ala-424. Form on file, California Archaeological Site Inventory, Rohnert Park.

Clark, Matthew R.

1984 Archaeological Reconnaissance of the Impact Zone of Water Distribution Improvements and Areal Additions to Coyote Hills Regional Park, Alameda County, California. MS on file, S-6590, California Archaeological Site Inventory, Rohnert Park.

Coberly, M.B.

1973 The Archaeology of the Ryan Mound, Site Ala-329, A Central California Coastal Village Site. University of Northern Colorado, Museum of Anthropology, Occasional Publications in Anthropology Series 4.

Davis, J.T., and A.E. Treganza

1959 The Patterson Mound: A Comparative Analysis of the Archaeology of Site Ala-328. University of California Archaeological Survey Reports 47:1-92.

- Guedon, S.A., R.L. Anastasio, J.C. Bard and D.M. Garaventa
1984 Cultural Resources Assessment: Ardenwood Technology
Park, City of Fremont, County of Alameda, California. MS
file, S-7030. California Archaeological Site Inventory,
Rohnert Park.
- Heizer, R.F.
1949 The Archaeology of Central California. I: The Early
Horizon. University of California Anthropological Records
12.
- Jones, T., P. Johnson and S.A. Dietz
1987 CA-Ala-453: Preliminary Observations on a Possible
Meganos Aspect Site in Southern Alameda County. Paper
presented at the 21st Annual Meeting of the Society for
California Archaeology, Fresno.
- Kroeber, A.L.
1925 Handbook of the Indians of California. Bureau of
American Ethnology Bulletin 78. Government Printing
Office, Washington, D.C.
- Levy, R.
1978 Costanoan. In California, edited by R.F. Heizer,
pp. 485-497. Handbook of North American Indians, Vol. 8,
William G. Sturtevant, general editor, Smithsonian
Institution, Washington, D.C.
- Ralph, E.K., H.N. Michael and M.C. Han
1973 Radiocarbon Dates and Reality. MASCA Newsletter 9(1).
- Thompson and West
1878 Official Historical Atlas Map of Alameda County,
California. Reprinted. Valley Publishers, Fresno.
Originally published 1878, Thompson and West, Oakland.