4.7 CULTURAL AND PALEONTOLOGICAL RESOURCES

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INTRODUCTION

This section of the EIR describes cultural (prehistoric and historic) and paleontological resources known to be located on the project site. Prehistoric resources are those sites and artifacts associated with indigenous, non-Euroamerican population, generally prior to contact with people of European descent. Historical resources include structures, features, artifacts and sites that date from Euroamerican settlement of the region.

Paleontological resources are comprised of fossils and the geologic context in which they occur. Most fossil remains are the preserved hard parts of plants or animals, and include bones and/or teeth of once-living vertebrate animals, shells or body impressions of invertebrate animals, and impressions or carbonized or mineralized parts of plants (e.g. leaf impressions or "petrified wood"). Trace fossils include preserved footprints, trackways, and burrows of prehistoric animals and root marks created by plants. The geologic context in which fossils occur can provide important information regarding the age of the fossils and physical and biological features of the local ancient environment in which the represented plants and animals existed. Paleontologic resources are non-renewable (Society of Vertebrate Paleontology 1995). The extent to which development of the proposed project could remove, damage, or destroy existing historic, prehistoric, or paleontological resources is herein evaluated.

Cultural resources information in this section is based primarily on Peak & Associate's *Cultural Resources Report*[1] (see Appendix G of this Draft EIR), which draws on information in the *Rocklin General Plan*[2], *Rocklin General Plan EIR*[3], Peak & Associates' *Determination of Eligibility and Effect on Cultural Resources within the Clover Valley Lakes Project Area*[4] (this document contains confidential data on site locations and is on file with U.S. Army Corps of Engineers), and the draft *Historic Properties Management Plan*[5] (provided by the project applicant to the City of Rocklin). A complete list of the references cited in the text below is included as an attachment to Peak & Associates' *Cultural Resources Report* for the Clover Valley project.

Paelonteological resources information in this section is based primarily on Bruce Hanson's *Paleontological Resources Report*[6] (see Appendix H of this Draft EIR), which draws on geological information from the *Rocklin General Plan, Geologic Map of the Sacramento Quadrangle, California, 1:250,000*[7] (Wagner, Jennings, Bedrossian and Bortugno, 1981); *Preliminary geologic map of Cenozoic deposits of the Lincoln quadrangle, California*[8] (Helley, 1979); *Location of rock samples dated by radiometric methods, Sacramento Quadrangle, California*[9] (Bedrossian, T.L. & Saucedo, G.J., 1981, *in* Wagner, *et al.*, 1981); *Geotechnical Engineering Report – Clover Valley Lakes Roads*[10] (Wallace, Kuhl & Associates, Inc., 2001); and *Preliminary Geologic and*

Geotechnical Investigation Report – Proposed Clover Valley Lakes Village, Rocklin, California[11] (Kleinfelder, Inc., 1998). Known paleontological locality information relevant to rock units located on the site was derived from the University of California Museum of Paleontology (UCMP) locality records[12] (http://elib.cs.berkeley.edu/ucmp/loc.shtml). Information concerning fossil localities in the region of the project site was found in the Sierra College paleontological collection records. The geologic context in which fossil plants occur at known localities within the Mehrten Formation was provided by Dr. Howard Schorn, retired Curator of Paleobotany, University of California Museum of Paleontology[13].

Pertinent comments received in response to the Notice of Preparation (NOP) for the proposed project have been considered in this analysis.

ENVIRONMENTAL SETTING

Cultural Resources

Prehistoric Period Background

Because the prehistoric period resources located within the project site are situated near the interface between the foothills and mountains of the Sierra Nevada and floor of the Sacramento Valley, the applicability of use of either the Sierra Nevada or Central Valley cultural sequences is one of the important research issues. Because the material remains unearthed from these resources may relate more closely to either the Sierra Nevada highlands or Central Valley lowlands, the archeological background sections for each region are presented below.

Sierra Nevada Region

High Sierran archeology, in particular, can be compared to a framework. The broad cultural chronological outlines are known, but the interrelationships that must have existed between the various archaeological cultures are still relatively undefined. Interest in Sierran archeology has grown considerably since Heizer and Elsasser (1953) and Elsasser (1960) presented the first effective synthetic overview of prehistoric settlement of the region. The investigations of areas impacted by various water projects in the foothills have produced several regional cultural chronologies (Moratto 1972; Johnson 1967; Ritter 1970). Other management-based surveys, such as Bennyhoff's (1956) for Yosemite Valley, have produced regional cultural chronologies that are still generally accepted.

Some occupation of the east slopes occurred during the Anathermal period by representatives of the Western Pluvial Lake Tradition (Bedwell 1973). Elston et al. (1977) termed this Tahoe Reach Phase. Elston (1979:44) reports several Parman-type projectile points were found near Truckee. Lower down the western slopes of the Sierra, Crew (1980) reported a Parman point was found at Camp Nine during the excavation of CA-CAL-S347. Bedwell suggested the Western Pluvial Lake Tradition was essentially a lacustrine-based

Late Pleistocene and Anathermal occupation, but these finds indicate it was more broadly based.

The results of excavations by Peak & Associates, Inc. at CA-CAL-S342 on Clarks Flat and at sites in Alpine County near the headwaters of the North Fork Stanislaus River have provided documentation of the early occupation of the western slopes of the Sierra Nevada (Peak and Crew 1990; Peak and Neuenschwander 1991). The radiocarbon age determinations from both localities indicate that human occupation had been established by 10,000 Before Present (B.P.) by a distinct cultural entity that used Stemmed Series projectile points. At about 6,500 B.P., a broad-stemmed, concave-based projectile point was introduced that is markedly similar to the Pinto Series projectile points of the Mojave Desert. The forms from CA-CAL-S342 have been designated the Stanislaus Broad Stemmed type.

The culture of the next phase of this region is very poorly known. Elston (1971:92-93) assigned the designation "Spooner Complex" to a still unsubstantiated early occupation phase at the Spooner Lake Site (26DO38), located east of Lake Tahoe. This complex was tentatively characterized by the presence of Humboldt Concave Base and Pinto Series projectile points, along with metates, basalt cores and waste flakes. Radiometric determinations indicate that the site may have been occupied as early as 5000 B.C., was certainly in use by 3000 B.C., and was abandoned at about 1000 B.C.

Elston originally saw the Spooner Phase as a manifestation of a migration of groups out of the Great Basin during a local climatic period characterized by warmer and/or drier conditions, but he recently suggested the Spooner Phase was a local cultural phase, not migration-based (Elston et al. 1977). At Spooner Lake, this complex gives way to the Martis Complex, with no distinct break in occupation, a finding perhaps suggesting that succeeding populations, if not genetically related, at least exploited the same resource base.

The Martis Complex is characterized by a heavy emphasis on basalt as the raw material for tools, in contrast to other cultures in the surrounding regions that preferred obsidian. The projectile points are generally large and thick and display several different shapes. Elsasser (1960), in correlating information from 150 Martis sites on either side of the Sierra crest, organized the projectile points into a morphological typology, which has 10 types and several subtypes within these styles. Elston (1971) has objected to this typology as having little meaning in terms of chronology and cultural development and would recognize only three characteristically Martis types: Martis Triangular, Martis Stemmed Leaf, and Martis Corner Notched. Types that have a much wider distribution in space and time are Humboldt Concave Base and the Pinto Series (early Martis only), as well as Elko Eared, Elko Corner Notched and Sierra Stemmed Triangular. Along with the occurrence of atlatl weights ("boat stones") at several Martis sites, this finding indicates that the culture flourished prior to the introduction of the bow into this area and is supported by the dates obtained by Elsasser (1960:74) by cross-dating of various Martis artifacts from 1,500 B.C. to A.D. 600.

Elston *et al*. (1977) suggests that the Martis Complex was characterized by a fair degree of sedentariness, large villages, comparatively elaborate social structures, and role

specialization. Elston notes, as evidence, that the sites are larger than later occupations in the area, and the artifact density is usually higher than in the succeeding Kings Beach Complex. Other Martis sites demonstrate specialized manufacture centers (Singer and Ericson 1977; Elston and Davis 1972). The Martis Complex peoples were also hypothesized as being involved in exchange systems with the groups in the Valley, where bifacial stone tools from Sierra sources have been found in the archeological remains from contemporary archeological cultures (Jackson 1975). Elston (1979) believes the Martis Complex is characterized by large pit houses while the later Kings Beach is characterized by smaller, saucer-shaped structures. He notes that the larger structures disappear from the record around A.D. 500, which is the customary assumed end of the Martis Complex.

The Martis Complex, as presently defined, is a Sierran crest occupation. Its expression further down-slope to the west, while widely attested in the lower reaches of the Sierra (Ritter 1970; Moratto and Riley 1976), has not been firmly tested. In the high Sierran region, Elston et al. (1977:166) suggested a "land use and subsistence strategy of transhumance, which allowed the occupation of the same base camp and winter villages on a regular basis." Logically, the manifestations of the Martis Complex on the lower zones of the west slope can thus either be: 1) specialized procurement sites (deer hunting, for example); 2) a generalized base camp (groups residing in the area); and 3) nodes in an exchange system (trading stations). The archeological manifestations can be expected to vary.

As a cautionary note, Rondeau (1980:96-97) recently has called attention to the common practice of equating all basalt-based industries earlier than the late period with "Martis." He notes the increasingly available data suggests variation, which he seems to believe suggests the Martis Complex may be more than one archeological entity. He suggests that they, like the late occupants, utilized local materials and did not solely confine their production to basalt. Moreover, he believes the late period occupations used basalt much more frequently than generally believed.

The Kings Beach Complex, on the crest of the Sierra, appears about A.D. 1000 and continues to the Euro-American period. Elston et al. (1977; 1981:19) suggests that Early Kings Beach materials appeared around A.D. 500, with the Washoe Lake Kings Beach succeeding at about A.D. 1200. Results from the Truckee Reach sites suggest the Kings Beach Complex assemblages often occur at the same locations as the earlier Martis Complex sites. Elsasser (1960) considered the Kings Beach to be locationally exclusive from the earlier Martis Complex, but Elston's (Elston et al. 1977) investigations on the Truckee Reach indicate a thin occupation of Kings Beach often overlies Martis sites. The environmental requisites and economic decisions by which groups chose suitable camps were often similar, although the activities practiced may have been considerably different.

The Kings Beach Complex is characterized by small projectile points, made primarily of obsidian, suitable for use on arrows. The Desert Side Notched type is particularly characteristic, along with points of the Rose Springs and Eastgate Series. The sites are located primarily along small tributaries, rather than major watercourses. Even when sites occur on the shore of Lake Tahoe, or on the banks of major rivers, they are located where

tributary streams enter these waterways. The pestle with bedrock mortar, which appears in Late Martis, became the favored means of preparing foods, as opposed to the mano (a hand-held stone or roller for grinding corn or other grains on a metate) and metate (a stone block with a shallow concave surface, used with a mano for grinding corn or other grains) of the preceding period.

In all archeological respects, it appears that the Late Kings Beach Complex can be identified with the Washoe inhabitants of the Tahoe Basin and surrounding areas at the onset of the Euro-American period. In this case cultural succession in this area is well understood.

The archeological entities elsewhere on the west slopes that are contemporary with the Kings Beach include (the Sweetwater, Bidwell, Oroville, and the proto-historic phases from the Oroville region, Ritter 1970; Markley 1978). Ritter (1970) accepted the Kings Beach Complex at the time, especially for the higher elevation (4000 feet), but the number of Gunther Barbed points found in later surveys (Crew, personal communication) indicates it may not be an appropriate term. How these archeological entities correspond to linguistic entities has been a debated topic for years, although the only really agreed upon correspondence was between Washoe and the Kings Beach Complex.

Ritter (1970) was careful to distinguish between archeological and ethnographic entities, but most interested researchers will agree that the late components of the prehistoric record correspond to the physical remains of the ethnographic people or peoples who resided in the region.

Moratto and Riley (1980) present a linguistic prehistory for California which is based upon Whistler's (1977) earlier model. Its relevance to the Sierra Nevada foothills revolves around two of its major hypotheses, *i.e.*, the extent of the Hokan territory within the Sierra Nevada prior to A.D. 500, and the movement of several of the Penutian-speaking groups in and around the Sierra.

Of particular relevance to the Sierra, the Western Pluvial Lake Tradition (or Parman) corresponds to the Hokan speakers (Moratto and Riley). Proto-Yanans may have visited the foothills from the valley on a sporadic basis after 7000 B.P. Moratto and Riley postulate that the ancestral Washoe entered the northern and central Sierra after 4000 B.C., and extended from Plumas down to Mono County. Moratto and Riley also hypothesize a Yokutsan expansion into the foothills from the valley by 2000 B.P., although the corresponding archeological entity is not defined. Ritter's (1970) Mesilla and Bennyhoff's (1956) Crane Flat appear to be the archeological entities. Moratto may not agree that his Chowchilla Phase is part of this Yokutsan expansion, but other archeologists would.

The ancestors of the Sierra Miwok diverged from the Plains Miwok about 2000 B.P., and began to move into and settle the foothills and mountains between the Calaveras and American rivers. After 200 B.P., the Miwok advanced quickly south, displacing the earlier Yokuts. Moratto and Riley (1980) view the archeological manifestations of this Miwokian expansion as the Mariposa Phase in Yosemite and the Madera in the southern foothills. The

entrance of the Maidu is not discussed by Moratto and Riley, nor are they fully discussed by Whistler.

Perhaps related to the above movement of the Penutian peoples into the area is Moratto's earlier (1972) postulation that the extensive settlement on the west slopes of the Sierra was not possible until the advent of an efficient acorn-processing technology. Certainly, elsewhere on the west slopes, the most extensive occupations begin after A.D. 500 and, in fact, most occur after A.D. 1200. As further elaboration or development of the above, Moratto et al. (1978) have postulated the presence of an arid interval between A.D. 500 and 1200, which precluded extensive settlement, and they cite widely-drawn palynological evidence to support their contention.

In complete contrast to the above studies, Matson's (1970) investigation at 4-PLA-101 indicates the only significant change between A.D. 1550 to within the last 100 years took place less than 500 years ago, when a lightly-wooded oak grassland changed to a pine-oak woodland, a change he attributed to differing practices of human fire control. Although this site is located at a higher elevation than the project site, certain research implications may still be applicable.

In summary, while the broad chronological framework may be accepted by most investigators, its details are still unclear and the archeological focus diffuse. The need for more investigations, structured by research designs with local and regional orientation, is paramount to further knowledge of the cultural phenomena that occurred on the west slopes of the Sierra.

Central Valley Region

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. A substantial accumulation of data has thus resulted. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-SAC-107), suggest two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage

of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. A lower percentage of burials with grave goods occurrs in the Cosumnes Culture, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and abundant use of green *Haliotis sp.* rather than red *Haliotis sp.* is evident. Other characteristic artifacts include perforated and canid teeth; asymmetrical and "fishtail" charmstones, usually unperforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

The burial pattern of the Hotchkiss Culture (Late Horizon) retains the use of the flexed mode, and wide spread evidence exists of cremation, lesser use of red ocher, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain generally the same. While not altogether clear, Schulz seemingly uses the term "Complex" to refer to the particular archeological entities (above called "Horizons") as defined in this region. Ragir's (1972) "Cultures" are the same as Schulz's "Complexes."

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

Other chronologies have been proposed, including Fredrickson (1973); because Fredrickson's is correlated with Bennyhoff's (1977) work, it does merit discussion. The particular archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which likely conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities that corresponds with Willey and Phillips' (1958) earlier "tradition," although it is tied more specifically to the archeological record in California.

Table 4.7-1
Periods and Dating

Fredrickson		Bennyhoff, Heizer and Schulz	
Emergent Period	A.D. 500 to 1800	Historic	post-A.D. 1850
Upper Archaic	1000 B.C. to A.D. 500	Phase 2, Late Horizon	A.D. 1500 to 1850
Middle Archaic	3000 to 1000 B.C.	Phase 1, Late Horizon	A.D. 500 to 1500
Paleo Indian	10,000 to 6000 B.C.	Middle Horizon	1000 B.C. to A.D. 500
Early Lithic	10,000 B.C. to ?	Early Horizon	3000 B.C. to 1000 B.C.

Sources:
Fredrickson 1973.
Bennyhoff and Heizer 1958; Schulz 1981.

The project is located in an interesting area for archeological research because it is between three areas with defined archeological sequences: the Oroville locality to the north, the Central Sierra area to the east and the Central Valley/Delta area to the west. These sequences include many similar artifact types and dates for major cultural changes, but significant differences also occur between them. An important goal of archeology is to determine how these differences relate to different cultural traditions, and how cultural adaptation results from differing environmental conditions or other natural or cultural influences. At present it is not clear which of these sequences best reflects the prehistory of the project vicinity or if a separate local sequence is necessary to adequately describe the area.

During the mid-1960s, two extensive research programs were undertaken by students from California State University, Sacramento. Both of these investigations concentrated on particular drainage systems located in western Placer County, relatively close to the proposed nature preserve. The first of these studies involved the Dry Creek drainage from the town of Roseville west to the edge of the American Basin near Rio Linda. During this investigation, 32 archeological sites were visited with collections made of all visible surface artifacts. Six of the larger sites were investigated through controlled archeological excavations. The purpose of this study, according to the author, was to, "provide a corpus of data against which new finds may be compared, and a sequence of materials in which additional evidence may be placed in context (Palumbo 1966:2)." Numerous examples of chipped and ground stone artifacts were recovered as were a tremendous number of temporally diagnostic shell beads that provided Palumbo with cross-comparisons to other well-dated archeological assemblages. Based on the recovery of this material, Palumbo concluded:

> The beads and ornaments recovered from the Dry Creek area are typically of the Central California Late Horizon period...Indications of any earlier occupation are limited to isolated artifacts such as "fishtail" charmstones and the bone spatulas from Site 31-63, or the "pseudo" harpoon from site 31-86. In fact, the greatest evidence for a Middle Horizon component is found only at Site 31-63, where the "fishtail" charmstone, the bone spatulas, and the frequency, in general, of bone artifacts, give the impression of a terminating Middle Horizon occupation [Palumbo 1966:186]

Two different types of sites were identified during this study: temporary campsites and village sites. The twenty-eight temporary campsites and four village sites both contained a similar assemblage of cultural material leading Palumbo to suggest that both were used contemporaneously. The four village sites were discovered in the upper (eastern) portion of the Dry Creek drainage and even the distribution of temporary campsites showed a lower frequency of occurrence near the western portion of the study area. This distribution of sites led Palumbo (1966:188) to conclude, "…if this pattern is representative, it suggests a westward movement into the valley periodically, possibly seasonally, with the major part of the time being spent in the lower foothills." The composition of artifacts discovered at the Dry Creek sites, primarily grinding implements with some chipped stone tools, led Palumbo (1966:188) to suggest, "If acorns and grass seeds were important items in the diet, as they were in the historic period, then the inhabitants were probably shifting about to move closer to the food sources. One of the assumptions here is that metates and mortars were both used during the same time period."

The second large scale investigation conducted during the middle 1960s was by Roger Robinson who focused on the Auburn Ravine area from near the City of Lincoln east to Ophir in western Placer County, California. When Robinson began a survey of a portion of Auburn Ravine, only one site was recorded in the project vicinity; CA-PLA-14, recorded by Elsasser in 1953. Robinson surveyed a narrow corridor between Gold Hill and Lincoln and recorded an additional 18 sites, but CA-PLA-14 remained the most productive of the group, returning more than 90 percent of the artifacts analyzed by Robinson (1967:31), including several types that did not occur elsewhere in his project area.

CA-PLA-14 displayed two spatially distinct zones, described by Robinson as the cemetery area and the midden area, although the soil in both areas was the same midden, described as "very dark and fine textured, rich in organic material." (Robinson 1967:101). Although the site had been severely disturbed by excavation and agricultural activities, Robinson was still able to discern some vertical stratigraphy. The late occupation was characterized by Desert Side Notched projectile points and clam shell disc beads. The earlier occupation included projectile points described as "Martis-like" and type 3a1 and 3b1 *Olivella* beads. The Martis Complex was originally defined as a high-Sierra culture (Heizer and Elsasser 1953), but work since that time has revealed that artifact types and whole cultural components that are Martis in character are found at much lower elevations on the west slope than the Martis Valley type sites.

Still earlier occupation was suggested by *Olivella* beads of an interesting type, Robinson's Type VII, which were primarily found at the base of a single excavation unit. This type was similar to types associated with the Middle Horizon in the traditional Central California Taxonomic System, but not quite identical to any of the previously defined types. Robinson suggested that this could represent a vestige of an earlier occupation, an earlier cultural trait held over into a later occupation or a local stylistic development (Robinson 1967:122).

Other general observations offered by Robinson (1967:95-96) include the presence of numerous bedrock outcrops near the site areas that had not been utilized for bedrock mortars. In his words, "As in the case of all of the sites recorded for this portion of the

Auburn ravine, a large percentage of the exposed bedrock appears ideally suited for bedrock mortars; but, for some reason, it has remained unused."

A great deal of archeological study was conducted in the Auburn vicinity, related to the proposed Auburn Reservoir. Sites that have been excavated include a chert quarry and five midden sites, all reported during Phases II and III of the Auburn Reservoir Project (Ritter, ed. 1970a). The most informative of these is the Spring Garden Ravine site (CA-PLA-101), which contained three well-defined strata (Ritter 1970b). The lowest stratum (C) has been radiocarbon dated at about 1400 B.C., and contains an assemblage similar to the Martis Complex. The artifacts include large projectile points (mostly of basalt and slate), atlatl (dart-thrower) weights, numerous core tools, and several varieties of grinding implements. The next stratum (B) was less easily defined, and may have represented a transition between cultures (or at least cultural material) represented by the upper and lower strata. Some of this transitional appearance may be attributable to simple physical mixing of deposits, but the basic stratigraphic integrity of the site is indicated by consistency of the two radiocarbon dates from stratum B (A.D. 1039 ±80 and 976 ±90). The upper stratum at Spring Garden Ravine contains small projectile points (arrowheads), hopper mortars, and other artifacts comparable to recent archeological collections elsewhere in the northern foothills. Stratum A is, therefore, probably a manifestation of the ancestral Nisenan, the Indian group inhabiting the area at the time of Euro-American contact.

CA-PLA-329, the Tofanelli Ranch Site, is located north of Auburn and west of the Auburn Ravine project area, but still essentially within the foothill zone. The site was first excavated by Dondero (1980) and later by Peak & Associates, Inc. (Oglesby 1990). Distinct similarities exist between this site and CA-PLA-14, including an extensive midden with horizontal stratigraphy, in particular, a distinct cemetery area. In the case of CA-PLA-329 this is a later cemetery – protohistoric to early historic – characterized by beads of European manufacture, a high burned bone and ash content, and dark colored soil.

Both excavations at CA-PLA-329 were directed toward establishing the significance of the site and defining boundaries so that the site could be protected during development in the area. As a result, the volume of excavation was quite small in both cases and the recovery of artifacts, other than debitage, was relatively scanty. Dondero (1980:12-17) recovered only late prehistoric projectile points, but Oglesby (1990:26-28) reported that Martis Corner Notched and Martis Triangular (per Elston et al. 1977) and Elko Series points were more common than later types, probably an example of horizontal stratigraphy because the four units excavated in 1990 were concentrated in a single locus within the site area.

Both reports on excavations at CA-PLA-329 included analysis of the lithic debitage that was common at the site. In both cases, the analysis indicated that locally available materials were by far the most common. Obsidian formed less than three percent of the debitage and little evidence existed of on-site manufacture of obsidian tools. Some primary reduction of local materials occurred, but the main activity was reducing bifacial tools to projectile points and other tools.

Excavations by Chavez (1982) at sites on Linda Creek and Strap Ravine corroborated the findings of earlier work that indicated that the strong Central Valley association during the prehistoric period might not extend to earlier periods. In the Linda Creek area, only site CA-PLA-210 produced artifacts from excavation units. Evidence of two components at the site was discovered, although they were not distinctly separated by stratigraphy. The more recent component, characterized by Desert Side Notched points and emphasis on the use of chert and other silicates, probably dates to Phase II of the Late Horizon – about A.D. 1500 to the time of European contact. The older component is represented by one Gunther Barbed-like projectile point and an emphasis on basalt as well as silicates. This component probably dates to Phase I of the Late Horizon, about A.D. 500 to 1500.

The Strap Ravine sites appear to have been occupied earlier than the Linda Creek sites, and, although times of occupation overlapped, they were probably abandoned earlier as well. The excavations at CA-PLA-38 recovered enough obsidian flakes to permit sourcing by X-ray fluorescence and dating by obsidian hydration. This dating technique indicated occupation of the site from about 500 B.C. to A.D. 500. Chavez, on the basis of projectile point types recovered from the site, suggests that occupation continued later than this, through Phase I and possibly into Phase II (Chavez 1982:51).

Artifacts that suggest occupation earlier than A.D. 500, into the transitional period between the Middle and Late Horizons, include a Type C3 *Olivella* shell bead and two slate projectile points bearing distinct morphological similarities to Martis Complex styles. The slate points, both recovered from CA-PLA-87, resemble a Type 4c point as defined at CA-NEV-15 (Elsasser 1960) and a Martis Contracting Stem (Elston et al. 1977) according to Chavez (1982:47). Point types suggesting Phase I occupation were also recovered from Strap Ravine sites.

Chavez (1982), dealing with a limited artifact collection, did not go so far as to suggest occupation of the area by a population bearing the Martis Culture. He noted the position of the project vicinity between three areas of differing cultural sequences (as mentioned above) and suggested that the wide variety of artifact types indicated that the area "...could have served as a culture contact and exchange 'hub'..." (Chavez 1982:52). A test excavation performed by Peak & Associates (1988) on a very small midden site, CA-PLA-176, on the Linda Creek watershed, also recovered a slate point similar in style to those associated with the Martis Culture.

The presence of Martis-like (Middle Archaic) artifacts was also noted at site CA-PLA-633 (Locus C) and CA-PLA-636 (Davy 1989) located in the Stanford Oaks Project area, several miles to the south of the current project area. Of the 27 projectile points recovered during the excavation of the sites within the Stanford Oaks Project area, six (22 percent) weighed more than two grams, and "...may or may not have been atlatl...dart points" (Davy 1989:163).

Features consisting of ash deposits and/or ash deposits with significant amounts of charcoal were discovered by Davy in nine different units at five sites or site loci. Three of these features were dated through radiometric analysis and provided dates of 46 ±48 B.P. (A.D.

1904), 491 ±74 B.P. (A.D. 1459), and 543 ±47 B.P. (A.D. 1407). The later two dates of A.D. 1407 and 1459 probably accurately reflect the age of these features and period of site occupation. The presence of clamshell disc beads and Desert Side Notched Series projectile points at these sites is consistent with these radiometric dates.

Other "Martis-like" projectile points were discovered at sites in the Rocklin area tested by Peak & Associates, Inc. Testing at CA-PLA-674, -675 and -676 produced projectile points of the Martis Corner Notched, Cottonwood Triangular and Gunther Barbed types (Gerry and Oglesby 1991:37). The same types were recovered from CA-PLA-668 and -671, with the addition of a still older type, the Stanislaus Broad Stemmed (Oglesby 1991:33-34). The latter type was defined from work at Clarks Flat in Stanislaus County and is considered diagnostic of the period from about 6000 B.P. to (tentatively) 4000 B.P. (Peak and Crew 1990:229-231).

Ethnographic Background

The project area lies in the territory attributed to the Nisenan, a branch of the Maidu group of the Penutian language family. Groups belonging to this language family dominated the Central Valley, San Francisco Bay areas, and western Sierra Nevada foothills before Euro-American settlement. The Nisenan controlled the drainages of the Yuba, Bear, and American rivers, along with the lower portion of the Feather River. The Indians of this whole region referred to themselves as Nisenan, meaning "people," in contrast to the surrounding tribes, in spite of close linguistic and cultural similarities. For this reason, they are usually named by this term rather than the more generic "Southern Maidu." The local main village was of more importance to the people than the tribal designation, and groups identified themselves by the name of the central village.

The northern boundary of the Nisenan has not been clearly established due to similarity in language and culture to neighboring groups. Their eastern boundary was the crest of the Sierra Nevada. Probably a few miles south to the confluence of the American and Sacramento rivers on the valley floor was their southern boundary. Their western boundary extended from this point upstream to the mouth of the Feather River.

At the time of the gold rush, the Auburn/Newcastle/Lincoln/Rocklin area was occupied by the Nisenan Indians, identified by the language they spoke. Several general treatments of the Nisenan culture have occurred by Beals, 1933; Kroeber 1929, 1953; Littlejohn 1928; and Wilson and Towne 1978, Wilson 1982. Several more specific articles on various aspects of their culture have been reported in the bibliography and elsewhere. The following text by Norman Wilson, where not cited, is derived from Wilson and Towne 1978 and Wilson 1982.

The Nisenan peoples occupied the drainages of the Yuba, Bear, and the American Rivers from the Sacramento River on the west to the summit of the Sierra in the east. The Foothill and Hill Nisenan peoples were distinctive from the Valley Nisenan and were loosely organized into triblets or districts with large central villages, surrounded by smaller villages. These are often referred to as winter villages by older Indians. These central villages and

their leaders seemed to have had power or control over the surrounding smaller villages and camps and specific surrounding territory (Beals 1933; Littlejohn 1928; Wilson and Towne 1978). These districts were oriented to the natural resources and the landforms. In the foothills and mountains the major drainages became formal or informal boundaries with the land in between forming the district. Thus, the Placerville District is between the Cosumnes River and the Middle Fork of the American River, the Auburn District between the Middle Fork of the American River and the Bear River and the Nevada City District between the Bear River and the Yuba River. Other villages and headmen in these districts also held significant power, although at the present time it is not clear where most of these were.

In the valley major villages controlled land and local groups of Indians. Different than the hills, the land between drainages became the separation between districts, with the controlling villages situated along the major rivers. *Pujuni* at the mouth of the American River is a good example. A separation of the Valley Nisenan and the Foothill Nisenan also likely occurred near the edge of the valley where the foothills start. The valley peoples were more oriented to the Sacramento, American, Yuba, Feather and the Bear rivers on the valley floor. Their large villages with their complex and rich culture are usually found along these watercourses. They are believed to have occupied both sides of the rivers and to have used the river courses for communication and major resource exploitation. Smaller stream courses were often occupied with permanent villages and seasonal campsites. The villages were not large and some may reflect a budding-off of valley peoples as populations expanded in late times.

All the Nisenan depended on activities attuned to the seasonal ripening of plant foods and the seasonal movements and migration of the animals and the runs of fish. With the flooding of the valley in the winter and spring a great number of animals such as elk, antelope and bears moved to the natural levees along the rivers and up into the lower foothills. Along the foothill margins they joined the resident and migratory deer herds. Huge flocks of waterfowl visited the flooded areas between the rivers and the foothills, coveys of quail gathered in the fall, and pigeons were common in the fall and spring. Steelhead and salmon ran up most of the major streams including Secret Ravine and Auburn Ravine in the fall, winter and spring. The hunting of these plentiful resources was part of the foothill lifeway. The same bounty was available to the river-oriented valley peoples on the valley floor and along the natural levees of the rivers. Little competition for resources likely existed at this time except in lean years. Both the valley and foothill peoples lived at the edges of rich ecotones: the rivers and the valley floor; and the valley floor and the foothills.

The valley floors between the rivers were not permanently occupied and became seasonal resource bases. In many places the areas between the rivers were shallow overflow basins that flooded in the winter and spring, creating great tule forests, ponds and swampy areas; in some areas oxbow lakes and other permanent ponds occurred. These wetlands were hard to cross until summer and became a major resource base for the valley groups. Often, access was made possible by the burning of the tule. These areas were rich with plant and animal resources including herds of deer, elk and grizzly bears, and were exploited by the surrounding Indian people.

Major north-south Indian trails occurred along the margin of the foothills that were usable year-round as well as other trails east and west along the natural levees of the stream courses. Smaller streams and oxbow lakes on the valley floor were sometimes occupied with permanent villages but in most cases were used as seasonal camping sites. The hunting of game, gathering of seeds, tule roots, acorns and other plant products and fishing on the valley floor and watercourses provided the major food resource needs for these valley peoples. Social and religious ties in the valley were stronger to the north and west along the rivers than to the east. Trading, territory disputes and resource competition were common activities between the valley peoples and the foothill peoples. The foothill peoples did not trust and often had disagreement and conflict with the valley peoples.

While the Hill Nisenan to the east in the foothills carried on trade with the valley peoples and shared some of the cultural traits, they lacked the complexity or richness of the Valley Nisenan. They had a different resource base to work with which required greater mobility and a more intense use of the available resources (Matson 1970). They developed a local culture that was more oriented to the gathering, storage and year round use of the acorn, continual foraging of resources by everyone in the village group, specialized hunting strategies and availability of different plants to gather and process (Erskian and Ritter 1972). They depended on activities attuned to the seasonal ripening of plant foods and the seasonal migrations and increased populations of animals and insects. The foothill resource quest of foraging for food, or the immediate use of resources, as much as gathering, for future needs, meant they had to be much more mobile in their use of the land and its resources. Population densities and the large number of campsites reflect the more limited ability to acquire and utilize the fewer available resources: they had to work harder for less.

This continual movement annually of small groups east up slopes in the spring, summer and fall and the return to the west in the winter and early spring meant that they did not have the time or ability to accumulate elaborate wealth or develop complicated social organizations as did Valley Nisenan. The valley people were living in permanent large villages with rich local food resources, specialization, elaborate religious and social activities, trade and idea sharing with neighboring groups. The valley peoples were well supplied from the river environment. Tule roots and oak groves, birds and fish along the rivers were important and they could also take advantage of seasonal gathering trips outward from their villages to the valley floor for additional resources. They had the ability to accumulate surplus resources for trade, and population expansion.

The continual movement further meant the foothill people did not have large year-round villages. Major villages in the foothills or mountains that can compare with the valley permanent village sites or population densities are unknown. However, hundreds of small campsites and villages were scattered across the foothills and mountains with certain localities as the centers for these hill peoples. Areas in the resource range were not over two days travel from the winter village or camp did not exist and much surplus food was carried back to the home village during the year for winter use. Older people commonly stayed at the home village year round, and sometimes very young children were also left behind.

These centers or winter villages provided both a home base for the storage of foods and the opportunity for social intercourse during the part of the year when the foraging and gathering of plants was limited and the weather required the shelter of more substantial winter houses.

These winter villages and camps were larger and are often represented today by their size and depth of midden. Often a semi-subterranean excavated dance house, a permanent water source, and a cemetery at or near these sites existed. The foothill people often left these winter villages and went down slope to the valley edge to take advantage of the fish runs, waterfowl, and herds of large game. The fact that no place in their territory is more than one or two days away from the winter village meant that there was some winter movement to the valley floor or up into the mountains by small groups of hunters, families or those who wanted to visit or trade. Winter ceremonies were well attended by the local peoples. For the Auburn/Newcastle group a trip to the valley floor or any other area or village in their district was not longer than one day or 10 miles.

The hill people were more socially organized around the extended family than the village and would often camp in informal family groups around the central village. Because they did some foraging and extensive fishing and hunting in the winter, they needed to have some access to a resource base at all times. However, due to the ability to store acorns and other dried foods and take advantage of the winter concentrations of game, birds and fish they could pull together in closer living areas in the wintertime. Some evidence exists that these winter villages were moved at times if the local resources were to badly depleted. Over a long period of time, a center village may have been abandoned and moved and then reoccupied at a later time. Many place names refer to these old or unoccupied sites.

At the centers the need existed to build and maintain more substantial houses for winter living. Larger family houses, a dance house and acorn granaries were part of these winter quarters. The availability of firewood may also have been a factor for a preference for living up in the oak woodlands of the foothills. Winter was the time of ceremonies, social gatherings and marriages. Shamans had contests, children were trained, and trade items, tools, baskets and equipment were made and repaired.

Trails were permanent and well used. Winter villages of the Foothill Nisenan were often between the 1,000 and 2,000-foot level and usually on flats or ridge tops with a southern exposure. The people probably liked to be above the fog and in the sun in the wintertime. The top of the winter fog cover over the Sacramento Valley rarely goes above the 1,000-foot level. The Auburn/Newcastle area was one of these central areas where the peoples gathered in the winter. What is not clear is how many of the families moved to the center villages in the winter. Because the distances were short to almost any area in the triblet territory, many small groups likely settled in good campsites along the foothill fringe. These people would come to the major ceremonies at the center villages and go home afterwards.

With the Auburn group, considerable visiting and trade occurred with the peoples of the south side of the Middle Fork of the American River who looked to the local villages of the Pilot Hill area and the Coloma area for their leadership. The same activities occurred to the

north with the Bear River villages above the valley floor. These people traded and visited with the Indians of the Forest Hill Ridge and used this ridge route to cross the Sierra to trade with the Washoe. Some intermarriage took place with the Washoe, and Foothill Nisenan preferred the Washoe seed beater baskets. They seemed to be quite friendly and cooperative with these adjoining groups of hill people. One battle at the forks of the American River is recorded between the Pilot Hill groups and the Auburn group. Fishing for eels and salmon on the creeks and the upper American River was also done in the prehistoric period. Indian peoples from this area traveled as far as Salmon Falls on the south fork of the American River to gather eels in the nineteenth century.

The Auburn center's influence extends up the Forest Hill Ridge to the east, north to the Bear River, south to the Middle Fork of the American River and down Secret Ravine (*Hoyok sayo*) and the Auburn Ravine (*Wishmin sayo*) to near Lincoln. In this area, several smaller villages and extended family groups remained independent but came together in the Auburn area for Big Times, ceremonies and dances.

In the nineteenth century, the Auburn headman, Captain Tom, and Auburn triblet center villages (*Wen ne a, Molma, Hu'ul and Bisian*) were very influential with these foothill groups. Most informants indicate that in historic times the Lincoln salt spring (*Ba mu ma*) was under the control of the Auburn group; as were the villages at Rocklin (*Ba ka cha*), Loomis (*Odayan*), *Opule* near Horseshoe Bar; *Piu hu and Kotomyan* near Newcastle, and *Pit chi cu* near Roseville. When the hill peoples moved west in the late winter, or early spring, the possibility always existed of trouble with the valley peoples who would be out on the valley edge and the lower foothills for early spring resources.

In the mid-nineteenth century, Captain Tom would tell the people when to go to the west towards Lincoln, and he would announce the rabbit drive and the collection of salt. Quite often the westward movement would be the joining of several groups. Auburn, Colfax and Newcastle people would go down to the edge of the valley and camp together or close to each other for mutual protection and would also join together for large rabbit drives, fishing and the gathering of early spring plant foods (Wilson n.d.). In the spring the grizzly bears were a constant threat especially at fishing sites along the streams and rivers.

Villages at Newcastle would join with the Auburn villages for trips to the valley to hunt rabbits. Stories exist of villages and families combining their rabbit nets to make barriers several hundred yards long for use in the lower foothills and the valley floor for major rabbit drives (Hudson 1982; Littlejohn 1928; Wilson 1982). One net at Auburn was so big that it took two horses to move it down to the valley. On these spring trips, they would also get their salt from the springs near Lincoln, and carry on trade with valley groups (Beals 1933; Wilson 1972).

Both Auburn and Newcastle had dance houses, and some ceremonies could not be held outside the dance house (*kum*). Other smaller villages in the region also had dance houses but they were quite small and were used for local ceremonies and by the village men as a sweathouse or clubhouse. Often visitors would be put up in the dance house (Beals 1933).

Two kinds of family houses were made. One was a more permanent winter house (*hu*) with a strong frame and covered with brush, mud or cedar or pine bark. The *hu* was partially excavated with an inside hearth and in some cases a portable mortar set into the ground. Sleeping was done around the edges on mats and skins, with benches or shelves to hold equipment and foods (Beals 1933, Wilson n.d.). The *hu* was often up to 15 feet in diameter and provided shelter for several persons. These are often associated with the dance house (*kum*), sweat houses, and acorn granaries, and were part of the permanent villages.

The other was a house used when away from the main village and was made quite quickly of a frame covered with brush, boughs and tules. This house was also excavated slightly with the removed earth piled on the outside at the base to block the wind, but it often did not have a hearth and was used for sleeping and storage only. These camp shelters would be taken down when the group moved on so that animals would not live in them. When these houses were rebuilt, they were cleaned out and fresh earth was used for the floor. Hearths were usually outside at these temporary houses and often there was a common firepit for several families associated with the temporary shelters. For a quick shelter in the summer, a low circular brush wall was built in a sheltered or shaded location. Sometimes an old housepit was used for this purpose (Wilson n.d.).

The cemetery sites were usually associated with the permanent villages but could be in a separate location nearby. Villages would be moved occasionally, but the cemetery site traditionally remained in the same location.

Sometimes large flats away from the village were traditional gathering places for Big Times, "crys" or second burnings, trade and major ceremonies. This site was often used when peoples were invited from outside the local group's area. This meeting place could be near a shrine or major landmark. The sizes of crowds, mistrust of strangers, availability of campsites, firewood and water and a central location also influenced where this might be. Several hundred persons could attend one of these gatherings.

At the contact time a loose consortium of extended families and small villages looked to the large Auburn area village and its chiefs as the center of their social-political life. The headman (Captain Tom) at the Auburn village (*Wen ne a*) had considerable power over the people from Rocklin to Colfax and up the northern and western side of the Middle and North Forks of the American River. He probably also had power to the north to the Bear River from the Colfax area to where the river joins the valley floor, although this connection is not clear. The Auburn influence also may be the result of both the epidemic of 1833 and a major shift in the Indian populations after the gold rush, which could have developed a concentration of Indian political power associated with the white population centers and the availability of areas that Indians could occupy without persecution. Indians were an important labor source in the early gold rush. The Nisenan headman very often contracted with the miners to provide labor from his village. After 1850, however, the Indians were not welcome at the mines and severe treatment of visibly "wild" Indians occurred.

After the initial rush, the disrupted Indians were able to find areas to maintain some of their traditional ways. Some ranchers, such as Joel Parker Whitney, the developer of the English

Colony and Spring Valley Ranch where the Project is located, allowed local Indians to return to the ranches.

The relationship of the Roseville and Lincoln districts is not understood. Large village sites with extensive middens are recorded in the Lincoln area along or near the Auburn Ravine and the Roseville area along Secret Ravine and Dry Creek. These large village occupations of the lower Auburn Ravine and Secret Ravine indicates that at some time more intensive permanent occupation of the lower edges of the foothills where they meet the valley occurred as recently as the 1833 epidemic.

The introduction of malaria to central California *circa* 1831 occurred as a result of expeditions of several fur brigades of the Hudson's Bay Company with infected individuals. The introduction of the disease led to the tremendous epidemic of 1833 that decimated the Indian population of the region. An estimated three-quarters of the total Indian population of the region died from the disease in that year.

Part of the Nisenan lore cites that the Roseville peoples were killed during the 1833 plague. The Nisenan are therefore not well represented in the ethnographic record. The Auburn group may have replaced the Roseville center and perhaps the Lincoln villages after the 1833 epidemic. These large villages may also have been more oriented to the west and the Valley peoples at one time.

Historic Background

The project area also lies in the territory controlled by the Nisenan at the time of contact. The project area also may span the dividing line between two of the subgroups of the Nisenan: the Valley Nisenan and the Hill Nisenan. The Valley people lived in large villages along major drainages, but seasonally ventured out to exploit the vegetal food sources available at certain times of the year. After the time of contact, the Lincoln area was controlled by Captain John, a major chief based at Auburn who controlled the chiefs of several other smaller tribelet groupings of Hill Nisenan (Little John 1928).

The same Captain John who was known to be a major leader may be the same Indian man who led his people onto the lands of Joel Parker Whitney. Much of the project area is a portion of the vast Spring Valley Ranch of over 20,000 acres accumulated and held by the Whitney family, from the late 1850s until 1949. Most of the land in the project served as seasonal range for cattle and sheep, with some of the flatter lands used for growing hay (Miller 1969).

The rancher or farmer with a land holding of 160 or 320 acres in the region, might be living on the edge, just eking out an existence. The Native Americans would have been seen as economic competition, and access to their former lands would have been denied. The vast acreage held by Whitney, coupled with the tremendous wealth he accumulated, apparently allowed Whitney to readily accept the Native American use of his land.

Whitney describes in a 1906 reminiscence the Native American use of Spring Valley Ranch for the collection of clover and acorns, major communal grasshopper drives, as well as the traditional use of a mineral spring for medicinal purposes by the band of Indians led by Captain John. A number of bands had been allowed to use the lands of Spring Valley Ranch over the years, but eventually the number of groups dwindled to just the group led by Captain John. Captain John returned annually to the ranch, and would greet Whitney at his home. Whitney considered Captain John to be a friend, and spent time with the man during his visits. At their initial meeting upon the group's return, Whitney would give the Indians meat, bread and canned goods, with parcels of clothing and hats. The band evidently stayed for some time, as Whitney reported that Captain John would come weekly during the stay for a personal interview, during which time he would give Whitney a dollar in exchange for powder and balls to kill wild cats. The visits continued until Captain John died, about 1890. Whitney apparently had a great feeling and sympathy toward the Native American people, and he belonged to the Northern California Indian Association, who bought land for various Indian groups (Miller 1969:189-193).

In 1839 John Sutter became the first permanent Euro-American settler in the Sacramento Valley. Other white settlers arrived in the 1840s, but the population overall remained scattered, with the Central Valley sparsely settled. For the 15 years from the 1833 epidemic up to the gold rush, few written records exist, but malaria remained well established in both the Sacramento and San Joaquin valleys, afflicting both the remnant native populations and the early settlers (Gray and Fontaine 1951).

After the discovery of gold in 1848 and the subsequent influx of thousands to California, one of the earliest military posts was established to protect the settlers, Camp Far West on the Bear River in 1849. The post was abandoned in 1852 because, "In common with the whole Sacramento Valley, this post is very sickly from June till October" (Gray and Fontaine 1951:25). The site of the post is about 15 miles north-northwest of the proposed nature preserve, at an elevation of about 150 feet. The illness, apparently malaria, led to the relocation of the troops to a new post at the northern end of the Sacramento Valley, Fort Reading, abandoned similarly in 1856 due to malaria.

Malaria was epidemic in the mining camps of the Sierra foothill region, and remained endemic, with frequent sharp local outbreaks throughout the Central Valley until about 1880. The Sacramento Valley had a higher intensity of cases than did the San Joaquin (Gray and Fontaine 1951).

The Third Biennial Report of the State Board of Health published in 1875 referenced an undated article from *The Placer Press* [published 1855 to 1858] that reported, "Almost everybody living west of Gold Hill is either down with fever, or chills and fever, or more or less affected by the miasmatic poison generated and floating around in that locale" (Gray and Fontaine 1951:27). Gold Hill lies several miles northeast of the proposed nature preserve at an elevation of 400 feet.

Two important papers on malaria in Placer County were prepared in the 1940s by Harry E. Butler of Penryn. Mr. Butler, born about 1870, spent most of his life in the Penryn area working as a fruit grower. He recalled visiting some of the shaft mines in the region in the 1880s, where he observed miners laying in rows at the bunkhouses, stricken with malaria. A heavy turnover in the labor force occurred in part due to the prevalence of malaria, and the mines shut down before 1890. The granite quarries of the region, worked primarily in the 1875 to 1895 period, reported a large number of men laid off alternating days with chills.

The commercial fruit industry expanded rapidly in western Placer County in the late 1870s and early 1880s. Chinese laborers were reportedly used because they seemed to endure the malaria, while the white laborers could not or would not. In 1894, Japanese laborers began to move into the region, eventually providing virtually all of the fruit orchard labor for the region.

J. Parker Whitney initiated the development of an agricultural area named "English Colony" at Loomis in 1889 to the east of the project area, with 2,000 to 3,000 acres subdivided for colonists from England. Whitney and others tried to establish an English countryside in the Placer County foothills between Loomis and Newcastle, building fine homes and establishing a country club. Malaria, combined with the financial depression of 1893 to 1897, ruined the colony. The wealth of many of the colonists might have weathered the depression, but they could not withstand the disease. After the demise of the colony, the orchards became full bearing and very profitable, worked by Asian labor forces.

In 1909, several men in California joined forces to resolve the malaria problem through an attack on the disease vector, the mosquito. Harry Butler had discussed the malaria problem with a minister of one of the churches in Penryn, Frederick Morgan. After confirming the vector theory with a Sacramento physician, Morgan wrote to College of Agriculture of the University of California; subsequently Professor William Herms undertook a planning study for control operations in 1910. The campaign conducted at Penryn in 1910 was only the third malaria control campaign in the United States, but it was the first selective attack upon the vector species focusing specifically on the *Anopheles* mosquito. The 1910 campaign proved to be a success, with a 45 percent reduction in malaria that year. Follow-up work the following year resulted in the elimination of the disease in the Penryn area.

The development of the English Colony and nearby regions as a fruit-growing region was facilitated by the installation of the Central Pacific Railroad line linking Sacramento and Newcastle in 1864, and the final completion of this line into a transcontinental system. The nearby community of Loomis, for example, was named in honor of Jim Loomis, a local railroad agent and saloonkeeper, in 1884. The area had previously been known as Pino, but confusion with the larger community of Reno forced the name change (Gudde 1969:182).

The project area is now a portion of the City of Rocklin. The importance of granite quarrying in the region is attested by the place names of Rocklin and Penryn. Rocklin was applied to a railroad stop on the Central Pacific line with the name derived from the Celtic word *lin* meaning spring or pool. Penryn was established in 1864 by Griffith Griffith who had begun the quarrying of granite in the area. Penryn was originally spelled Penrhyn, after

Griffith's hometown in Wales, but the "h" was dropped by the railroad when they built a station there (Gudde 1969:242, 271). The Griffith Quarry employed as many as 250 individuals at one time and continued in operation until 1918 (Kyle 1990:263).

On-Site Cultural Resources

From previous studies, nine prehistoric period sites are reported within the property. Additional surveys by Peak & Associates revealed the presence of an additional 25 sites, for a total of 34 prehistoric period resources and one historic period site within the project. Each of the sites is identified in Table 4.7-2. The prehistoric sites were reviewed as the Clover Valley Lakes archeological district, with the Corps of Engineers submitting this determination for review to the Office of Historic Preservation. On October 3, 2002, the State Historic Preservation Officer concurred that the sites form a district eligible for the National Register of Historic Places.

Table 4.7-2
Clover Valley Cultural Resources

Prehistoric Period

Resource	BRM	Midden	CDs	Human Remains	Projectile Points	Ground Stone	Lithic Tools	Obsidian Debitage
CVL-2	X	X	X	X	X	X	X	X
CVL-3	X	X			X	X	X	X
CVL-4	X	X			X	X	X	X
CVL-5	X	X			X	X	X	X
CVL-6A	X					X		
CVL-6B	X							
CVL-7	X	X			X	X	X	X
CVL-8	X	X			X	X	X	X
CVL-9	X	X		X	X	X	X	X
PA-98-100		X	X	X	X	X	X	X
PA-98-101	X	X			X	X	X	X
PA-98-102	X							
PA-98-103	X	X						
PA-98-104	X							
PA-98-105	X							X
PA-98-106	X	X		X	X	X	X	X
PA-98-108	X							
PA-98-109			X		X	X		X
PA-98-110	X					X		
PA-98-111	X							
PA-98-112			X					
PA-98-113	X							
PA-98-114	X							
PA-98-115	X				X	X	X	X
PA-98-116			X			X	X	X
PA-98-117	X							
PA-98-118	X		X					

Table 4.7-2
Clover Valley Cultural Resources

Prehistoric Period								
Resource	**BRM**	**Midden**	**CDs**	**Human Remains**	**Projectile Points**	**Ground Stone**	**Lithic Tools**	**Obsidian Debitage**
PA-98-119					X	X	X	X
PA-98-120	X					X		
PA-98-121		X	X		X	X	X	X
PA-98-122	X		X					
PA-98-123	X							
PA-98-124	X				X	X	X	X
Historic Period								
Resource	**Structural Remains**	**Standing Structures**	**Artifacts**	**Human Remains**	**Associated Features**	**Ownership Data**	**Temporal Material**	
PA-98-107	X							

Paleontological Resources

Geologic units now present within and near the Clover Valley project area document local events which occurred during three brief periods of the geologic history of the region. See Figure 4.7-1, Paleontologically Sensitive Areas Map.

Rocklin pluton (granodiorite)

The oldest unit, the granitic rocks (granodiorite) of the Rocklin Pluton, formed about 128 million years ago (Bedrossian and Saucedo, 1981) as magma from deep within the earth forced its way into the earth's crust, where it cooled and solidified. Rocks which formerly capped this granodiorite, or were subsequently deposited at the surface, were later removed through the combined effects of uplift of the Sierras and erosion.

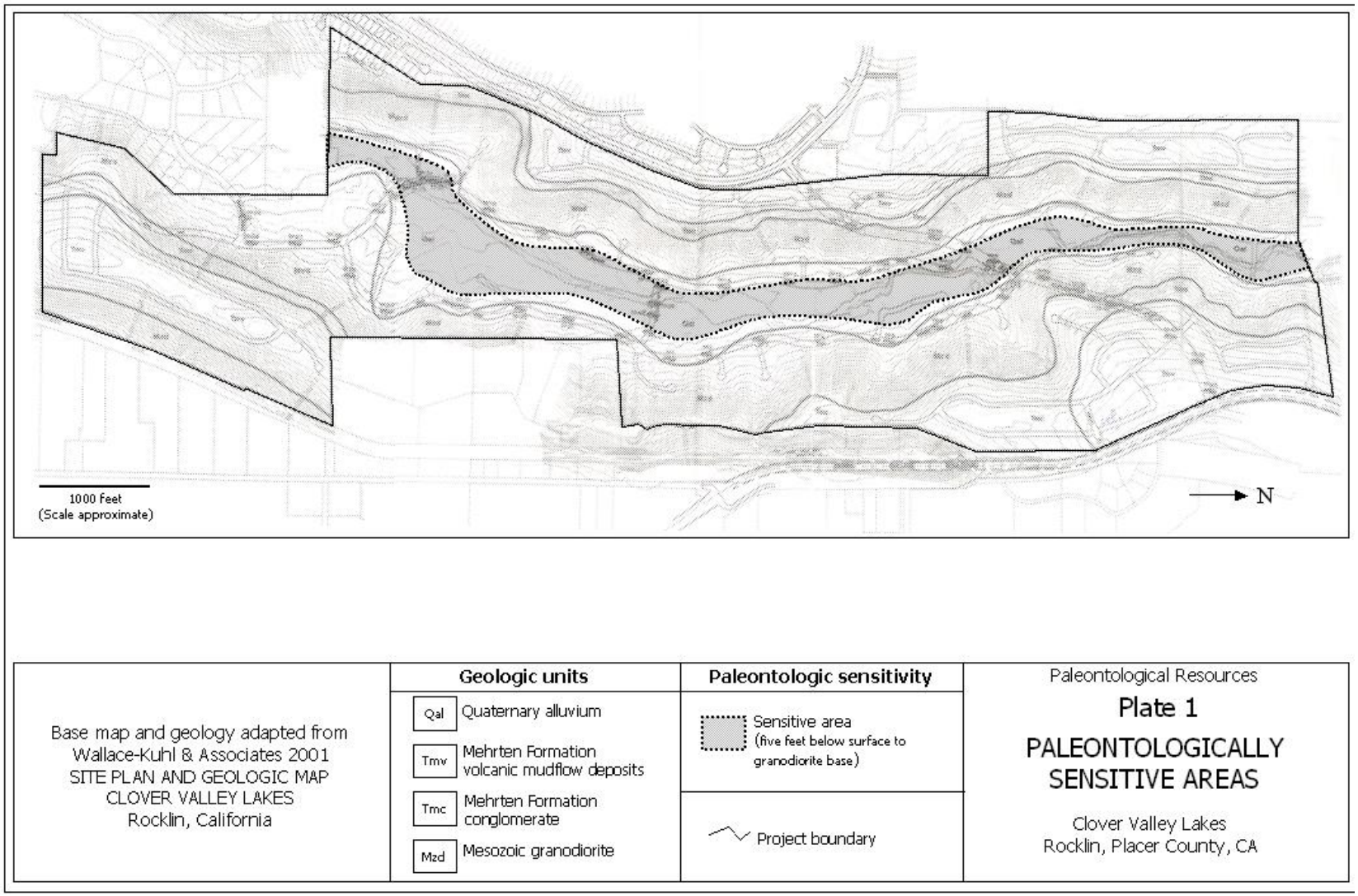
Mehrten Formation

Approximately 5 to 10 million years ago, during the late Miocene Epoch, volcanic activity in the Sierras generated large volumes of tuffs (volcanic ash and coarse debris) and mudflows which again buried the granodiorite. The sequence of volcanic sedimentary rocks formed by deposition of these tuffs and mudflows are now termed the Mehrten Formation. In their *Geotechnical Engineering Report* (2001), Wallace, Kuhl & Associates, Inc. recognized two subdivisions of the Mehrten Formation within the project site: a lower rounded-cobble conglomerate and an upper mudflow breccia (angular rock fragments with sand-silt matrix). Though later deposition of non-volcanic rocks in turn may have buried the Mehrten Formation locally, renewed erosion in the Pleistocene Epoch (about 1.8 million to 10,000 years ago) removed these younger deposits and carved drainages, including Clover Valley, through the Mehrten Formation and into the underlying granodiorite, though remnants of the Mehrten remain on the upper valley flanks and ridge tops within the project area.

Pleistocene deposits

As sea levels fluctuated during the glacial cycles of the Pleistocene Epoch ("ice age", about 1.8 million to 10,000 years B.P.), the ancestral Sacramento River rose and fell in response, creating a series of channel and floodplain deposits which now form subtle terraces on the valley floor. The oldest of these, termed the Turlock Lake Formation, extended eastward to the Rocklin area, including Clover Valley, where it is now restricted to the floors of small tributary valleys (Wagner, et al., 1981). The Turlock Lake Formation occupies a valley less than one mile west of the project site, and appears in Rocklin in the lower part of the Clover Valley itself, less than two miles downstream from the project site. Although geologic maps do not indicate the presence of the Turlock Lake Formation within the Clover Valley project site, remnants of this unit may exist within the site, below the cover of recent deposits.

Figure 4.7-1
Paleontologically Sensitive Areas Map



Recent deposits

Probably in response to the last rise in sea level near the end of the Pleistocene, stream-lain sediments (alluvium) accumulated to depths locally exceeding 14 feet in the lower parts of Clover Valley within the project area to form its relatively level modern floor. Near the lateral margins of the valley floor and lapping onto the adjacent slopes, sand, gravel, and coarser clasts derived from the valley slopes accumulated directly (with little or no stream transport) to form wedge-shaped deposits termed colluvium.

REGULATORY CONTEXT

Federal and State Regulations

Cultural Resources

Federal, state, and local governments have developed laws and regulations designed to protect significant cultural resources that could be affected by actions that they undertake or regulate. The National Environmental Policy Act (NEPA), the National History Preservation Act of 1966 (NHPA), the Antiquities Act, and the California Environmental Quality Act (CEQA) are the principal federal and state laws governing preservation of historic and archaeological resources of national, regional, state, and local significance.

Federal Regulations

Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementation regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites that are determined eligible for listing on the National Register of Historic Places. The criteria for determining National Register eligibility are found in 36 CFR Part 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provision for Native American consultation and participation in the Section 106 review process. Although federal agencies must follow federal regulations, most projects of private developers and landowners do not require this level of compliance. Federal regulations only apply in the private sector if a project requires a federal permit or if it uses federal money.

Under NHPA, the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, material, handiwork, feeling, and association. Additionally, the National Register of Historic Places requires consideration of significance of any structure over 45 years old.

State Regulations

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA requires lead agencies to carefully consider the potential effects of a project on historical resources. An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources,* 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

California Historic Register

The State Historic Preservation Office (SHPO) also maintains the California State Register of Historic Resources (CRHR). Properties that are listed on the National Register of Historic Properties (NRHP) are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys.

Senate Bill (SB) 18/922

Senate Bill 18, signed into law by Governor Schwarzenegger in September 2004, requires cities and counties to notify and consult with California Native American Tribes about proposed adoption of, or changes to, general plans and specific plans for the purpose of protecting Traditional Tribal Cultural Places ("cultural places"). Interim tribal consultation guidelines were published by OPR on March 1, 2005. The proposed project falls under the SB 18 requirements as defined by OPR, and the City of Rocklin will therefore be required to contact the Native American Heritage Commission and request consultation. SB 922 provides additional guidance to the agencies.

Paleontological Resources

Paleontological resources on federal lands are protected under various laws relating to the protection of public properties; these laws are enforced through the issuance of permits by the appropriate agencies. However, paleontological resources existing on private property

within California are generally unprotected under federal law. Additionally, under the California Public Resources Code, State law protects paleontological resources only on public lands.

General Plan Policies

The following General Plan policies, laws, and regulations are applicable to the cultural and paleontological resources of the proposed project:

Open Space, Conservation, and Recreation Goals and Policies:

Policy 1	To encourage the protection of natural resource areas, scenic areas, hilltops, open space areas, and parks from encroachment or destruction by incompatible development through the use of conservation easements, buffers, set-backs or other measures. Developments shall be required to provide usable yard areas outside of conservation easements or established natural resource buffers.
Policy 3	To encourage the protection of historically significant and geologically unique areas and encourage their preservation.
Policy 16	To encourage developments to incorporate resources such as creeks, steep hillsides, and quarries in private, but restricted, ownership.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Archaeological Resources

The proposed project would be considered to have a significant effect on archaeological if the project had the potential to do the following:

- Cause a substantial adverse change in the significance of an archaeological resource or disturb any human remains. According to Section 15064.5 of the CEQA *Guidelines*, all human remains are significant. Pursuant to Section 15064.5 of the CEQA *Guidelines,* archaeological resources not otherwise determined to be historical resources may be significant if they are unique. A non-unique archaeological resource means an archaeological artifact, object, or site that does not meet the above criteria. Non-unique archaeological resources do not receive further consideration under CEQA. Pursuant to Public Resources Code (PRC) Section 21083.2, a unique archaeological resource is defined as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, a high probability exists that it meets one of the following criteria:

    a. Contains information needed to answer important scientific questions and a demonstrable public interest exists in that information;

b. Has a special and particular quality, such as being the oldest of its type or the best available example of its type;
c. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Historic Resources

Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California may be considered an historical resource. Generally, the resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Public Resources Code SS5024.1, Title 14 CCR, Section 4852), including if the project would do the following:

- Eliminate important examples of major periods of California history or pre-history, according to Section 15065 of the CEQA *Guidelines*. In addition, pursuant to Section 15064.5 of the CEQA *Guidelines*, an historical resource (including both built environment and prehistoric archaeological resources) shall be considered by the lead agency to be historically significant if it is listed on the California Register of Historical Resources (CRHR) or has been determined to be eligible for listing by the State Historical Resources Commission. An historical resource may also be considered significant if the lead agency determines, based on substantial evidence, that the resource meets the criteria for inclusion in the CRHR. Any resource that is listed on or considered eligible for inclusion on the National Register of Historic Places is automatically considered eligible for the CRHR. The National Register of Historic Places requires consideration of significance of any structure over 45 years old.

Under the National Historic Preservation Act (NHPA), the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, handiwork, feeling and association and:

- That are associated with events that have made a significant contribution to the broad patterns of our history;
- That are associated with the lives of persons significant in our past;
- That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- That have yielded or may be likely to yield, information important in prehistory or history.

Paleontological Resources

The proposed project would be considered to have a significant effect on paleontological resources if it were to cause a substantial adverse change to one or more scientifically significant fossil or their geologic settings on the project site, as determined by a qualified paleontologist.

Methods of Analysis

Cultural Resources

Prefield Research

A records search was conducted at the North Central Information Center of the California Archaeological Inventory (now known as the California Historical Resources Information System) at California State University, Sacramento. Two surveys had been previously conducted within the project site (Claytor 1980; Foothill Archaeological Services 1990). Nine cultural resources were identified within or adjacent to the project area, according to the results of the two previous investigations.

Field Methods

The 1998/1999 field survey consisted initially of a brief cursory examination of the project site and identified three previously unidentified resources, designated PA-98-100, -101, and -102. Based on the results of this inspection, a complete pedestrian survey of the valley and adjoining foothill area was authorized. A team of Peak & Associates personnel inspected additional portions of the project area between November 2 and 7, 1998 by means of transects with spacing that did not exceed 15 meters in width. Twenty-two additional cultural resources were identified (PA-98-103 through PA-98-124).

Shovel test pit excavations were conducted at the nine previously identified and 25 newly identified resources. Test excavations were conducted at 19 of the resources.

Consultations

After completing additional surveys of the Clover Valley project area, the numerous prehistoric sites present were determined to require boundary definition and test excavations in order to conclude significance. In 1999, Peak & Associates undertook test excavations at a number of the sites.

Very early on in the excavations, Peak & Associates encountered Native American remains on July 23, 1999. Following the State law, Melinda Peak called the Placer County Coroner and the Native American Heritage Commission (NAHC). The NAHC appointed Sam Starkey, representing the United Auburn Indian Community of the Auburn Rancheria ("Tribe"), as the Most Likely Descendant (MLD) for the project.

During the 1999 test, Marvin Marine, a California Indian of Maiduan descent, was present during the entire excavation process. He served as the Assistant Field Director for the archeological studies and also as representative of the Tribe, at the request of Sam Starkey and Rose Enos. After completion of the fieldwork, based on the field results and the measures suggested by Mr. Starkey, work began on the management plan for the project.

In summer and fall of 2005, Tribe Representatives began meetings with Clover Valley Partners regarding specific measures to reduce substantive project effects and to increase protection for cultural resources. The Tribe has been involved in the drafting of the Historical Properties Management Plan. These discussions are ongoing.

Paleontological Resources

Data Assembly

Information relevant to the assessment of paleontological sensitivity was assembled and organized within a framework of the geology of the target site and geologically comparable areas in the surrounding region. Following identification of the geologic units (usually "formations" or their subunits) within the subject area, an investigation of the published technical literature addressing the geology and paleontology of comparable units nearby was undertaken, along with consultations with experts knowledgeable of the geology and /or paleontology of the affected geologic units, and searches of unpublished locality records at museums and other institutions which hold research collections of fossils. (A common statewide repository of paleontological locality data such as exists for archeological sites does not exist for paleontological sites). The existence (or absence) of known fossil localities in the same geologic units as those in the target area, supplemented by site-specific details of local geology from geotechnical reports and paleontologically-directed field surveys, provides the basis for assessment of paleontological sensitivity of subareas within the target site.

Information which has contributed to assessment of the probability of occurence and significance of fossils within the Clover Valley project area was assembled from five categories of sources: 1) published geologic and paleontologic literature, including geologic maps, 2) museum records of known published and unpublished vertebrate and plant fossil localities in the region, 3) two project-specific geotechnical reports, 4) consultation with an expert in a relevant field of paleontology and 5) a one-day field survey of selected rock units on the site. Specific sources and references for items 1 through 4 are listed in the introduction to this chapter.

Field Survey

C. Bruce Hanson, Paleontologic Resource Specialist, conducted a one-day field survey of the accessible and potentially fossiliferous geologic units within the project area on January 5, 2006, during which data was assembled on the characteristics of the rock units on the site relevant to likelihood of fossil preservation.

Assumptions: Significance, Potential, Sensitivity

Significance

Different categories of fossils vary widely in their relative abundance and distribution, and not all are generally regarded as significant. Because of their rarity, vertebrate fossils, whether preserved remains or trackways, are classed as significant by virtually all state and federal agencies and professional groups that have addressed the question (California Public Resources Code Section 5097.5, US Bureau of Land Management, 1969; Society of Vertebrate Paleontology, 1995). Fossil plants are similarly uncommon, and the Bureau of Land Management considers "noteworthy occurrences of … plant fossils" to be significant as well.

Fossils regarded as scientifically important often have been arbitrarily restricted to those dating to periods of time prior to the end of the Pleistocene, about 10,000 years ago, when a substantial percentage of the North American large-mammal fauna became extinct. However, younger prehistoric fossils may contribute to a refined understanding of the subsequent ecological adjustments that followed this major event.

The actual significance of an individual fossil cannot usually be fully assessed until it is collected, freed of surrounding rock matrix in the laboratory, and compared with other fossils in collections, perhaps at many museums. The significance of fossils not yet found is necessarily even more elusive. However, for practical purposes of *a priori* assessment, fossils falling in the above categories must be assumed significant until proven otherwise.

Potential

A separate issue is the potential of a given area or body of sediment to include fossils. While it is rarely possible to predict the location of buried fossils, information that can contribute to assessment of this potential includes:

1) Basic rock type. Of the three major categories of rocks (igneous, sedimentary, and metamorphic), only sedimentary rocks commonly carry a potential to include fossils. Some surface-deposited igneous rocks and low-grade metamorphic rocks may include fossils under rare circumstances, but intrusive igneous rocks (those formed at depth through cooling and crystallization of molten magma) have never been found to include fossils.

2) Direct observation of fossils exposed at the site. The utility of this method depends on the extent of unobscured bedrock or native sediment deposits exposed at outcrops or man-made excavations existing at the site at the time of the field survey. Even if fossils are abundant in the bedrock, soil and/or vegetation cover often obscures evidence of their presence. Failure to observe fossils during a surface survey does not assure that fossils will not be found in the subsurface.

3) Existence of known fossil localities or documented absence of fossils nearby and in the same geologic unit (e.g. "Formation" or one of its

subunits). Sedimentary geologic formations are typically defined on the basis of details of the composition and arrangement of their component rock and mineral particles. Individual formations are approximately constrained within a specific geologic range of time throughout their extent. As some of the environmental factors which influence the defining features also influence the favorability to fossil preservation, the abundance and types of fossils tend to exhibit some consistency throughout a given formation. However, some formations exhibit a broad range of compositional features and fossil content, and assessments of potential must then be made for each definable subunit.

4) Details of the nature of sedimentary deposits (such as size of included particles or clasts, color, and bedding type) in the area of interest compared with those of similar deposits known elsewhere to favor or disfavor inclusion of fossils. Information about these details is derived from published geologic information including geologic maps, site-specific geotechnical data, and paleontological field surveys. Interpretation of sediment details and known geologic history of the sedimentary body of interest in terms of the ancient environments in which they were deposited leads to an assessment of the favorability of those environments for the preservation of fossils.

Sensitivity

The sensitivity of a given area or body of sediment with respect to paleontological resources is a function of both the potential for the existence of fossils and the predicted significance (as defined above) of any fossils which may be found there. Sensitivity is a measure of the likelihood that scientifically important information will be lost or diminished as a result of project activities, hence relates most directly to project impacts.

Project-Specific Impacts and Mitigation Measures

4.7I-1 Impacts to known cultural resources as a result of construction activities.

Although project site design has been revised a number of times to avoid and protect resources, not all of the resources can be avoided through project design. A program of mitigation has been designed to satisfy the federal requirements for this undertaking in the Historic Properties Management Plan (HPMP) that require approval by the U.S. Army Corps of Engineers and the State Office of Historic Preservation. Due to the sensitive nature of the information contained in the HPMP, the HPMP is not available for public review. Implementation measures for the cultural resources sites include installation of temporary construction fencing to avoid short-term impacts, as well as the use of monitors during construction to ensure that sites are not damaged or disturbed during construction. However, for some cultural sites, data recovery excavations may not occur prior to the initiation of construction; therefore, the proposed project would result in a ***potentially significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce project impacts to a *less-than-significant* level.

4.7MM-1(a) Prior to issuance of a grading permit, the applicant shall hire a qualified archaeologist to the satisfaction of the Community Development Department, and cultural resource sensitivity training shall be provided to all construction personnel by the qualified archaeologist. Qualified monitors shall be utilized as determined by the Community Development Department throughout all earth-moving activities at the project site.

4.7MM-1(b) Prior to issuance of a grading permit for the proposed project, the Community Development Director shall ensure that the applicant/developer, in consultation with a qualified archeologist, constructs orange construction fencing which fully encloses the cultural resources sites in order to prevent vehicular and pedestrian access during construction. Placement of the fencing shall be determined by a qualified archaeologist. The fencing shall remain in place until any or all of the following conditions have been satisfied: construction near the site is complete, permanent fencing is installed, or data recovery has been completed. Sites requiring this fencing are identified in the Historic Properties Management Plan.

4.7MM-1(c) Eight sites shall require data recovery excavations within portions of the sites, as detailed in the Historic Properties Management Plan. Data recovery excavations involving a percentage of the proposed impact area shall be undertaken at each of the sites to be impacted. Preliminary results from the testing shall be prepared for review by the Corps of Engineers. Construction shall not begin until the Corps accepts the preliminary report in writing.

4.7I-2 Impacts to potential paleontological resources as a result of construction activities.

Impacts to paleontological resources are discussed in relation to their geologic units below.

Rocklin pluton (granodiorite)

This intrusive igneous rock appears along both sides of Clover Valley, and is either exposed or thinly covered with vegetation and/or modern soils on the steeper slopes between the relatively level valley floor and the shoulders of the upper valley walls (Wagner, et al., 1981; Wallace, Kuhl & Associates,

Inc., 2001; Kleinfelder, 1998). Due to the very high temperatures and depth associated with the origin of this rock type, the possibility that it includes fossils does not exist. With no potential, this unit is not paleontologically sensitive.

Mehrten Formation

This sedimentary geologic formation presently caps the ridge tops and plateaus flanking both sides of Clover Valley (Wagner, *et al*., 1981; Wallace, Kuhl & Associates, Inc., 2001; Kleinfelder, 1998), reaching thicknesses of more than 120 feet at the higher hills within the project area.

While the Mehrten Formation consists entirely of rock fragments and small clasts that were produced by now-extinct Sierra volcanoes, details of clast size and modes of transport and deposition vary widely within the formation. Paleontological potential varies accordingly. Extensively exposed along the western flank of the Sierras and extending far up many mountain valleys, the Mehrten Formation has yielded both fossil plants (UCMP records; D. Hilton, 2000) and vertebrates (H.M. Wagner, 1981). Both have been found only in relatively fine-grained sedimentary deposits. Dr. Howard Schorn (personal communication, 2006) indicates that the known fossil plant localities in the Mehrten Formation all occur in thinly bedded deposits formed in ancient lakes and ponds. Within Placer County, known fossil plant localities exist high in the Sierras to the east (Bowens Claim, UCMP locality PA 989; H. Schorn, personal communication, 2006) and at localities in the Rocklin-Roseville area (Sierra College paleontological collection record). H.M. Wagner (1981) documents the geologic context of many vertebrate fossil localities about 75 miles southeast of Clover Valley: all occur within sandstone or siltstone units, sometimes with occasional gravel-sized particles, deposited in stream channels, natural levees, and floodplains.

Wallace, Kuhl & Associates, Inc. (2001) recognized two subunits of this formation within the project area: a lower conglomerate ("rounded gravel and cobbles in a partially cemented matrix of sand and silt") and an upper mudflow breccia ("angular volcanic rock in a well cemented matrix of sand and silt") which caps the hills adjacent to Clover Valley. The field survey conducted by Bruce Hanson on January 5, 2006 confirmed the general characteristics and extent of these subunits as mapped by Wallace, Kuhl & Associates, Inc. (2001), and furthermore revealed that both subunits include very large boulders of andesite, some of which exceed six feet in maximum diameter. The lower conglomerate appears to have been deposited during very high-energy floods or possibly as drier runout deposits in advance of the main pulse of the subsequent mudflow. The upper breccia unit may have been deposited as a single, very massive and high-energy mudflow; the deposit presents no apparent bedding or observed interruption of the upward-coarsening mixture of silt, sand, pebbles, cobbles, and boulders whose maximum diameters increase from about one foot

near the base to six feet in the highest exposures. An upward increase in size of the largest clasts is often observed in volcanic mudflow deposits.

The presence of very large boulders in both of the Mehrten Formation subunits within the project area would almost certainly preclude preservation of either plant or animal fossils: the milling action during high-energy transport preceding deposition would have reduced virtually any pre-existing plant or animal remains to unidentifiable fragments. These deposits fall at the opposite end of the depositional energy spectrum from those portions of the Mehrten Formation which are known to include fossils.

With virtually no paleontological potential, the Mehrten Formation within the project area is not paleontologically sensitive.

Quaternary (Pleistocene and Holocene) deposits

Although the early Pleistocene Turlock Lake Formation has been mapped in the lower reaches of Clover Valley within two miles of the Clover Valley Lakes project area (Helley, 1979; Wagner, *et al*., 1981), it has not been identified within the portion of the valley included in which the project site is located. The possibility remains, however, that remnants of the Turlock Lake or possibly younger Pleistocene deposits could exist at depth between the present valley floor and the underlying granodiorite. Fluvial (stream-deposited) sediments, predominantly sand and silt, along Clover Valley Creek within the project area reach depths of at least 14 feet (Kleinfelder, 1998), and the deeper of these may be of Pleistocene or early Holocene (Recent) age (less than about 10,000 years). These deeper deposits were not accessible for direct examination during the January 5, 2006 field survey, as the test pits excavated during the earlier geotechnical surveys had been backfilled, and recent rains left Clover Creek at a high level.

Fluvial sands and silts typically favor preservation of vertebrate remains as floods and shifting channels can rapidly bury remains, protecting them from scavengers and weathering. The Turlock Lake and younger fluvial Pleistocene formations elsewhere in the southern Sacramento Valley have yielded numerous vertebrate fossil localities (UCMP records; Hilton *et al*, 2000) despite limitations of access due to vegetation, deep soils, and agriculture.

The available evidence suggests that conditions favorable to the preservation of scientifically important vertebrate fossils exist in the deeper portions of the Quaternary stream valley deposits. These portions are bounded below by the highest occurrences of the granodiorite (Rocklin pluton), including its altered upper part. The upper boundary of the sensitive zone cannot be determined with certainty on the basis of currently available evidence: Sediments deeper than approximately five feet below the existing natural sediment surface may thus include significant paleontological resources.

Conclusion

Most of the area considered for development of the Clover Valley Lakes project is immediately underlain by rocks which have little or no potential for inclusion of significant paleontological resources and are therefore not paleontologically sensitive. These rock units are the granodiorite of the Rocklin Pluton and both the conglomerate and volcanic mudflow subunits of the Mehrten Formation. In combination, these non-sensitive units underlie all of the project area except portions of the valley floor and floodplain. The project will have no impact on paleontological resources in these areas.

However, sensitive sedimentary deposits carrying a potential to yield significant vertebrate fossils do exist at depth below the valley floor. Project-related excavations deeper than five feet below the valley floor could cause ***potentially significant*** impacts to paleontological resources.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce project impacts to a *less-than-significant* impact.

4.7MM-2(a) *Prior to issuance of a grading permit, the project applicant shall hire a qualified paleontologist to the satisfaction of the Community Development Department, and heavy equipment operators shall be briefed by the project paleontologist to gain awareness of visual identification techniques in order to identify potential paleontological resources.*

4.7MM-2(b) *Should final development plans require any excavation in excess of five feet below the pre-existing surface within the area identified as Quaternary alluvium (Qal) in the project geotechnical report maps (Wallace-Kuhl, 2001, plate 3; or Kleinfelder, 1998, plate 2), a qualified project paleontologist shall monitor any such excavation and collect and document any potentially significant fossils encountered during the excavation activity. Monitoring shall be terminated at each excavation site if the monitor determines that the remainder of the excavation will not affect any paleontologically sensitive sediments or rocks.*

4.7MM-2(c) *If any paleontological resources are discovered during construction activities, all work shall be halted in the vicinity of the find and the project paleontologist shall be consulted, and the Community Development Director shall be notified. Upon determining the significance of the resource, the consulting paleontologist, in coordination with the City, shall determine the appropriate actions to be taken, which may include excavation. A*

note requiring compliance with this measure shall be indicated on construction drawings and in construction contracts for the review and approval of the Engineering Division prior to issuance of a grading permit.

4.7I-3 Increases in vandalism and artifact collecting as a result of additional residences in the immediate vicinity of valuable cultural resources.

The proposed project includes a Small Lot Tentative Subdivision Map to divide the into 558 single-family residential lots, one 5-acre commercial site, a 5.3-acre park, and approximately 366 acres of open space. Recent California Department of Finance estimates suggest that the number of persons per household in Rocklin is approximately 2.6. The project would therefore introduce approximately 1,451 new residents as well as an unknown number of non-resident visitors into the Clover Valley project area. The project could thus result in increases in vandalism and artifact collecting as a result of the additional residences in the immediate vicinity of valuable cultural resources. Therefore, the proposed project would result in ***potentially significant*** impacts to cultural resources.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce impacts to a *less-than-significant* level.

4.7MM-3(a) Prior to issuance of a grading permit, sites identified in the Historic Properties Management Plan or Open Space Management Plan to be preserved in whole or part shall be permanently preserved with permanent fencing, designed to minimize access to sites. The fencing shall extend to permanent barriers such as the blackberries along the creek, or otherwise be designed to prevent vehicular and limit foot access.

4.7MM-3(b) Annual monitoring by an archeologist shall occur in compliance with the Open Space Management Plan. Additional reviews of the sites will occur through checks by the Open Space manager throughout the year.

4.7I-4 Inadvertent discovery of unknown prehistoric or historic cultural resources, or the discovery of human remains, due to construction activity.

A number of culturally significant cultural sites have been discovered on the project site and have been recorded. However, the potential exists that other artifacts and cultural resource sites which have not yet been discovered exist on the project site or at the off-site sewer location. In addition, the potential exists that unknown human remains exist on the project site or at the off-site sewer location. Ground-related construction activities could result in the uncovering

of either undiscovered cultural resources or unknown human remains. Therefore, the proposed project could result in a ***potentially significant*** impact.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.77MM-1(a) would reduce the magnitude of this impact. Implementation of the following mitigation measures, specified within the Historic Properties Management Plan, would reduce project impacts to a *less-than-significant* level.

4-7MM-4(a) If during construction of the proposed project or the off-site sewer line extension, the project applicant, any successor in interest, or any agents or contractors of the applicant or successor discovers a cultural resource that could qualify as either an historical resource or a unique archaeological resource, work shall immediately stop within 100 feet of the find, and both the City of Rocklin and an appropriate Native American representative shall be immediately notified. Work within the area surrounding the find (i.e., an area created by a 100-foot radius emanating from the location of the find) shall remain suspended while a qualified archaeologist, retained at the applicant's expense, conducts an onsite evaluation, develops an opinion as to whether the resource qualifies as either an historical resource or a unique archaeological resource, and makes recommendations regarding the possible implementation of avoidance measures or other appropriate mitigation measures. Based on such recommendations, as well as any input obtain from the Indian Community within 72 hours (excluding weekends and State and federal holidays) or its receipt of notice regarding the find, the City shall determine what mitigation is appropriate. At a minimum, any Native American artifacts shall be respectfully treated and offered to the Indian Community for permanent storage or donation, at the Indian Community's discretion, and any Native American sites, such as grinding rocks, shall be respectfully treated and preserved intact. In considering whether to impose any more stringent mitigation measures, the City shall consider the potential cost to the applicant and any implications that additional mitigation may have for project design and feasibility. Where a discovered cultural resource is neither a Native American artifact, a Native American site, an historical resource, nor a unique archaeological resource, the City shall not require any additional mitigation, consistent with the policies set forth in Public Resources Code sections 21083.2 and 21084.1.

4-7MM-4(b) Should human remains be found on the project site or at the off-site sewer line extension site, then the Coroner's office shall be

immediately contacted and all work halted until final disposition is made by the Coroner. Should the remains be determined to be of Native American descent, then the Native American Heritage Commission shall be consulted to determine the appropriate disposition of such remains.

Cumulative Impacts

The cumulative context for cultural resources is the portion of Clover Valley Creek in the project area, due to the degree of development surrounding the site of other segments of the Creek.

4.7I-5 Regional loss of cultural and paleontological resources in Placer County due to cumulative development in the Clover Valley Creek watershed in conjunction with development of the proposed project.

Cultural and paleontological resources are unique and non-renewable resources, and development activities continue to damage and destroy both prehistoric and historic sites and features, in many cases, before the information inherent in them can be reviewed, recorded, and interpreted.

However, the Rocklin General Plan EIR did not find cumulative impacts to cultural and paleontological resources as significant, and project impacts to cultural resources are mitigated to a less-than-significant level with implementation of the mitigation identified in this chapter. Therefore, the incremental loss of cultural and paleontological resources resulting from the proposed project would be considered a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

Endnotes

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[2] City of Rocklin General Plan, 1991.
[3] City of Rocklin General Plan EIR, 1991.
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[5] *Historic Properties Management Plan for Cultural Resources Within the Clover Valley Project Area,* December 2005.
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10 Wallace, Kuhl & Associates, Inc. Geotechnical Engineering Report – Clover Valley Lakes Roads, 2001.

11 Kleinfelder, Inc. *Preliminary Geologic and Geotechnical Investigation Report – Proposed Clover Valley Lakes Village, Rocklin, California*, 1998.

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[13] Schorn, Howard, Ph.D. Personal communication with Bruce Hanson, January 4 and 6, 2006.