

4.5 Cultural Resources4.5-1
4.5.1 Environmental Setting4.5-2
4.5.2 Impacts and Mitigation Measures4.5-18
4.5.3 References.....4.5-32

T A B L E S

Table 4.5-1 Archaeological Resources and Historic Features Recorded on Campus

Table 4.5-2 Main Campus Buildings or Features that will Reach 50 Years of Age by 2020

F I G U R E S

Figure 4.5-1 Archaeological Resource Survey Areas

Cultural Resources

This section presents an evaluation of the potential for development under the proposed 2005 LRDP to affect cultural resources present on the UC Santa Cruz campus. It also includes measures to be implemented in conjunction with future development to ensure the appropriate identification and protection and/or treatment of cultural resources identified during the course of future development.

Cultural resources include historic and prehistoric archaeological sites and features, historic structures and buildings, and paleontological resources (fossils and fossil localities). CEQA Guidelines (Appendix G) also include “unique geologic resources” under the category of cultural resources. Sites and features that hold traditional cultural significance to Native Americans or other cultural groups are also considered to be cultural resources. CEQA also considers impacts to human remains, including Native American burials found in the context of an archaeological site, under the category of cultural resources.

UC Santa Cruz has identified a number of cultural resources on the main campus. These include historic buildings and structures, historic features, and prehistoric and historic archaeological sites. In addition, the main campus includes geological formations that have been determined to be sensitive for the presence of paleontological resources, and limestone caves that are of particular scientific interest.

Public comments received in response to the Notice of Preparation included the following concerns with respect to cultural resources:

- Several locations on campus were identified as important for future protection because they have cultural or historical value to the campus community. These included Porter Meadow, the Campus Trailer Park, and Tree Nine.
- The Quarry Amphitheater and the Cowell Ranch Historic District were recommended for formal assessment and protection as historic sites or districts in order to afford them protection in campus planning.
- It was suggested that a prehistoric Native American archaeological site on the north campus is a sacred site, and it was recommended that it be recognized in the 2005 LRDP by a monument or cultural center. Potential development impacts to the site should be considered in the EIR.

The Cowell Ranch Historic District is discussed below. The Upper Quarry, in which the Quarry Amphitheater is located, has been recorded as part of a historic archaeological site, CA-SCR-183H. The amphitheater in the quarry, constructed by the University as part of the initial development of the campus in the 1960s, has not yet reached 50 years of age. It will be assessed as a potential historical resource should modifications be considered in the future. The Campus Trailer Park was constructed in 1985 and will not reach 50 years of age within the timeframe of the 2005 LRDP. Prehistoric sites CA-SCR-003 and -004, the Native American archaeological sites on the north campus, have been assessed as eligible for listing on the CRHR. The proposed 2005 LRDP does not include development in the vicinity of these sites, and no impacts to these sites are anticipated.

Porter Meadow is a natural landscape feature without significant associations to the historic period and, as such, would not be considered a cultural resource although it is valued on campus for its aesthetic qualities. Similarly, a living entity such as Tree Nine, generally would not be evaluated for CRHR eligibility. Tree Nine is located in an area designated Campus Natural Reserve in the proposed 2005 LRDP, and no effects to the tree would be anticipated from implementation of the 2005 LRDP.

4.5.1 Environmental Setting

4.5.1.1 Study Area

The study area for evaluation of impacts of campus development under the 2005 LRDP on cultural resources is the 2,020-acre main campus and the 2300 Delaware Avenue property. No ground-disturbing activities or new buildings are presently proposed for the 2300 Delaware Avenue property under the 2005 LRDP. For cumulative archaeological and historic resource impacts, the study area is the Santa Cruz west side.

The UC Santa Cruz main campus lies in the hills above Santa Cruz. The campus crosses three major ecological zones ranging upslope from south to north. The lower campus consists of open grasslands covering rolling hills that slope southward toward Monterey Bay. To the north of the grasslands, the central one-third of the campus (central campus) includes redwood- and oak-forested slopes and grassy meadows, dissected by stream gullies. The upper one-third of the campus (north and upper campus) consists of a mix of meadows, redwood/oak, and madrone forest areas, and includes a cluster of springs (Edwards et al. 1978). The campus is divided by two roughly north-south oriented drainage systems, the Moore Creek drainage on the west side and the Jordan Gulch drainage system on the eastern side of the campus. Cave Gulch runs along the western margin of the campus in some areas. Several smaller gullies run roughly eastward from the eastern margins of the campus into the Pogonip City Park.

There was substantial land-altering activity and development within the area of the campus during the latter half of the 19th century and early decades of the 20th century, including redwood logging, limestone quarries and kilns, and development related to cattle ranching. Since the mid-1960s, about 600 acres of the campus have been substantially altered by modern campus development.

The 2300 Delaware Avenue property consists of a nearly-level, approximately 18-acre parcel, situated on a marine terrace, about 0.4 mile inland from the Monterey Bay shore. Natural Bridges State Beach is adjacent to the south and Antonelli Pond to the west. The property is developed with three large buildings, constructed around 1980, and is surrounded by landscaping and paved parking.

4.5.1.2 Prehistoric Context

The earliest confirmed evidence of prehistoric occupation in the Santa Cruz region comes from an archaeological site located 4 miles northeast of the campus in the Santa Cruz Mountains near Scotts Valley. Cartier (1993) has postulated that this site may date to approximately 10,000 years before present (BP). While few sites have been identified from the Paleoindian through the Early Archaic (8000 to 5000 BP) in the Santa Cruz area, numerous sites have been dated to the Middle Archaic (5000 BP to 3000 BP)

and Late Archaic (3000 BP to 1000 A.D.). The Late Prehistoric Period (1000 to about 1600 A.D.) has been identified from at least one site near Santa Cruz (Fitzgerald and Ruby 1997; Hylkema 1991). Archaeological evidence indicates that native groups of the region participated in extensive trade networks. They successfully pursued a wide range of subsistence practices in hunting large and small terrestrial and marine animals, fishing and shell fishing, and plant foods gathering and processing, with technological expertise in bow making (after about 500 A.D.), basketry, and the use of boats. As throughout much of central California, acorns were an important plant food staple.

Archaeological testing at several sites on the UC Santa Cruz campus has resulted in recovery of two human burials and nearly 1,300 artifacts. Artifact types and radiocarbon dates suggest occupation of campus land from as early as 5,500 years before present (3550 B.C.) to 200 years before present (1750 A.D.).

The Monterey Bay area provided a wide range of resources that were important to Native Americans. In addition to the well-known plant and animal foods, important resources available locally included Monterey banded chert, which was used for the manufacture of chipped stone tools such as arrowheads. The bay was also an exceptional source of abalone (*Haliotis* sp.) and olive snail (*Olivella*) shells, raw material for the manufacture of shell ornaments and beads that were traded throughout California and much of the West, and were important wealth items that often were deposited in graves.

The Protohistoric Period (1602 to 1797 A.D.)—the time during which native cultures began to experience nonnative influences—is demarcated by the first contact with Europeans. Sebastian Vizcaino, a Spanish explorer, landed in the area of Monterey in 1602, and missions were established in the Santa Cruz region beginning in 1770. The Spanish referred to the indigenous population in this region as *Costaño* or "coast people"—historically they have become known as *Costanoan*. The Costanoans were composed of eight ethnically- and linguistically linked groups (Shipley 1978:84 and Levy 1978:485). Costanoans were historically recognized as having been part of the Utian linguistic family along with their neighbors to the north, the Miwoks (Shipley 1978:84). Levy (1978:485) suggests that in 1770, just before missionization, the Costanoan group was made up of approximately 50 politically autonomous nations and tribelets. The Santa Cruz area was occupied by a group known as the *Awawas* at this time.

Mission life, nonnative diseases and cultural disruption took a severe toll on the Costanoan population. One effect was that groups of mixed ethnicity congregated in a few native communities. In many cases, these individuals are identified in records (such as those of the Indian Land Claims Act) only as "Mission Indian;" thus, it is now often difficult or impossible to trace descendants from a specific locale. However, many descendants of the San Francisco Bay Region and Monterey Bay Region now identify themselves as Ohlone, and several groups are seeking federal recognition. There currently is no federally-recognized Ohlone group in the Santa Cruz area.

4.5.1.3 Historic Context

In 1769, the Portola expedition was the first nonnative exploration party to visit the area between the San Lorenzo River and Wilder Creek. A mission was established in Santa Cruz near the San Lorenzo River in 1791 as part of Spanish colonization efforts in Alta California. Campus lands likely were used by the

mission for grazing and/or agricultural fields during the Mission period (Rodrigues et al. 1992; Hoover et al. 1966; Edwards and Kimbro 1986). It is possible that lime for plaster and whitewash might have been produced locally at this time as well, since high quality limestone and wood for firing were locally available (Rodrigues et al. 1992; Piwarzyk 1994), but this has not been documented.

After Mexico won its independence from Spain in the 1820s, the Mexican government began systemized secularization of church lands. Starting in 1834, the mission properties were distributed among Spanish/Mexican immigrants and, rarely, Native American citizens. The lands that were to become the UC Santa Cruz campus made up portions of three Mexican-era land grants, Rancho de la Cañada del Rincon en el Rio San Lorenzo de Santa Cruz, Rancho Zayante, and Rancho Rufugio.

In 1848, Mexico lost the Mexican-American War (1846-48) to the United States, and California became a state shortly thereafter. When gold was discovered near Sacramento in the same year, thousands of gold-seekers from all over the world began a rush to California. This major influx of population resulted in a rapid increase in demand for goods and services, including house-building supplies. At this time, quicklime, a principal ingredient in mortar, plaster and stucco, shipped from the east around Cape Horn, was very expensive. In 1851, entrepreneurs Isaac Davis and Albion Jordan discovered that high-quality limestone was available in Santa Cruz, and they bought a 160-acre parcel on the future campus site, near High and Bay Streets, and constructed three lime kilns for the production of quicklime. The site provided all the necessary resources, including high-quality limestone, abundant redwood to fuel the kilns, and access to a port for shipping. Davis and Jordan produced 21,000 barrels of lime in 1855, one third of Santa Cruz County's production in that year (Rodrigues et al. 1992).

When Albion Jordan retired in 1863, Isaac Davis entered a partnership with Henry Cowell. The lime business flourished, and by 1865 the Cowell and Davis Lime Company was operating eight lime kilns, including the original kilns near the campus's main entrance, the Upper Quarry Kiln on the Upper Quarry rim, the Bridge Kiln near McLaughlin Drive, and the Elfland Kiln near College Ten. By 1880, the company had become one of the three largest lime companies in California (Rodrigues et al. 1992; Eselius 2003). The business included quarrying and lumbering operations, a wooden tramway for hauling limestone and lumber, a cooperage to manufacture barrels for shipping, a drayage operation to transport the barrels to the warehouse and wharf, and company schooners to transport the material to San Francisco for shipping. A ranch home, workmen's houses, a carriage house, and other facilities had also been established on the campus site, along with agricultural operations in support of the operations.

In 1888, when Davis died, Henry Cowell took control of the entire lime company operation and land holdings, renaming it Henry Cowell Company (later, the Henry Cowell Lime and Cement Company). When Henry Cowell died in 1903, his son, Ernest Cowell, took over management of the family business. Because much of the easily accessible redwood had been logged, and in response to improved quicklime production technology, Ernest introduced a new oil-burning lime kiln, which was constructed adjacent to the other kilns near the future campus entrance. However, the demand for quicklime had already begun to decline. The Santa Cruz Portland Cement Company, which opened in Davenport in 1905, began producing cement with superior building qualities. In 1906, the devastating San Francisco earthquake demonstrated that brick and mortar were not the best building materials for this region. The Cowell Ranch quicklime operations began a major decline, and the lime kiln complex near the campus entrance was shut

down during the early decades of the 20th century, although the Upper Quarry and other kilns on the campus site continued in operation until 1946. During the first decades of the 20th century, the agricultural operations on the lower ranch became more important, although quarrying continued sporadically for several decades (Rodrigues et al. 1992).

In 1951, plans were begun for the construction of a new campus within the University of California system, to be located within the south-central coastal region south of San Francisco. By 1961, The Board of Regents of the University of California system had chosen Santa Cruz as the location of the new campus. The campus was planned by architect John Carl Warnecke and landscape architect Thomas Church, based on the Oxford and Cambridge University model of small, independent liberal arts colleges (Garret 1967:67, Fischer 1968:12). The campus was conceived as a group of “scholarly villages,” with each village representing a different academic discipline. The colleges were designed to be semi-autonomous in function and distinct in architectural and academic style. Each college and its associated libraries, walkways and dormitories were all designed to appear and function as integral parts of the immediate natural landscape (Carter 1971:154). This design concept has been carried out in the plan and architecture of the colleges built to date.

4.5.1.4 Paleontological and Geological Context

The geologic setting of the Santa Cruz Mountain region, including the campus area, is detailed in Section 4.6.1, *Geology, Soils and Seismicity*, Volume I of this EIR. The locations of geologic formations referenced below are illustrated on Figure 4.6-4, *Site Geologic Map*, in that chapter.

Paleontological resources, with a few, rare exceptions, are found only in sedimentary deposits formations or deposits. In the project region, several major marine formation are known to contain fossils.

Paleontological Sensitivity

The Santa Cruz region provides a record of geologic and paleontologic history, that spans more than 120 million years, beginning in the late Cretaceous period¹. In the Santa Cruz region, fossil discoveries investigated since the early 1900s (Branner et al. 1909), have occurred almost exclusively in marine sediments. The marine rocks in this region of Santa Cruz County have yielded significant invertebrate and vertebrate fossils, including several taxa of marine mammals. Marine formations on the Santa Cruz campus include Santa Margarita sandstones, Santa Cruz mudstone, and Quaternary marine terrace deposits. The only other sedimentary formation on the campus (with the exception of recent alluvium and colluvium), are Quaternary non-marine terrace deposits and doline deposits. Each of these is described in more detail below.

The northern one-quarter of the campus, and an area west of Empire Grade Road in the central portion of the campus, are underlain by intrusive igneous rocks, which are mapped as granite and quartz diorite. These crystalline basement rocks do not contain fossils. However, patches of Santa Margarita sandstone,

¹ The geology of the region is mapped on the San Francisco Sheet of the Geologic Map of California (Jennings and Burnett 1961). In 1968, the geology of the northern Santa Cruz Mountains was synthesized in a report by Cummings, Touring and Brabb (1962). In 1981, Clark thoroughly reviewed the geology of the Central Santa Cruz Mountains and revised the mapping, stratigraphy, and paleontology of this region of the Coast Ranges.

a younger sedimentary marine deposit that may preserve fossils, are also present in the north central campus. The central and southern portions of the main campus are underlain by crystalline basement rock mapped as pre-Mesozoic marble and schist, with small remnants of younger (late Tertiary and Quaternary age) sedimentary rocks. Erosion of the marble and limestone underlying the central and lower campus has resulted in formation of karst topography, which includes sedimentary doline fill (alluvial fill deposited in sinkholes). Refer to Section 4.6, Volume I of this EIR, *Geology, Soils and Seismicity*, for further description.

There are three potentially fossil-bearing formations on the main campus: the Santa Margarita sandstones, doline fill deposits in area underlain by marble, and Quaternary marine or non-marine terrace deposits. Santa Margarita sandstones in the Santa Cruz region have yielded significant marine vertebrate fossils. Although no such finds have been made in Santa Margarita formation sandstones on campus, this may be because there has been no development in these areas. Santa Margarita sandstone formations on campus thus are considered to have high potential to include significant fossils. No fossil finds have been documented in doline fill deposits and Quaternary marine terrace sediments in the region, nor have any fossil finds been made on campus, despite extensive development in areas underlain by doline and Quaternary marine and on-marine terrace deposits. While these deposits may have some potential to yield fossils, the potential to encounter fossils in these formations on campus appears to be low. The immediate surface formations at the 2300 Delaware Avenue property area relatively recent emergent coastal terrace deposits, which generally are not paleontologically sensitive because of their recent age. Locally, these deposits are underlain by Santa Cruz mudstone, a Plio-Pleistocene marine deposit formation that has yielded marine vertebrate fossils, including sea mammals, fish, and birds, in the Santa Cruz region (UCMP 2005). This formation, which could be exposed by excavation at the site, is considered to have high paleontological sensitivity. Each of these formations is discussed in greater detail below.

Outcrops of the Santa Margarita formation, late Miocene age through early Pliocene age marine sediments, primarily sandstone, occur in small patches in the northern portion of the campus. The Santa Margarita formation evidences a range of marine environments. The lower strata often contain abraded vertebrate fossils of primarily Clarendonian age marine mammals (13 to 9 million years ago) with some terrestrial mammal remains, including horses and gomphotheres. Complete skeletons of large marine mammals such as sea cows, whales, and sea lion- and walrus-like pinnipeds have been recovered in some localities. These suggest a low energy depositional environment, such as a quiet lagoon. Deposits of the Santa Margarita formation in the central Santa Cruz Mountains have yielded invertebrate fossils that occur only in Pliocene age deposits (Clark 1981), which suggests a depositional history that spans Late Miocene through early Pliocene time (13 to 2 million years ago). Fossils of the Santa Margarita formation in the Santa Cruz region are reviewed and discussed in detail in numerous sources.² As noted above, this formation, thus, has high paleontological sensitivity.

Quaternary marine terrace deposits, which are remnants of high marine terraces, have been mapped in the southeastern portion of the campus, where they overlie marble and schist. The marine terrace deposits are sediments deposited on wave-cut platforms, with a wedge of non-marine deposits backed against an

² Clark (1981), Kellogg (1927), Schenck (1936), Reinhart (1943), Reinhart (1959), Mitchell and Repenning (1963), Addicott (1966), Barnes (1971), Savage and Barnes (1972), Domning (1978), and Repenning and Tedford (1977).

ancient sea cliff. These consist of unconsolidated deposits of silt, sand, clay and gravel, around 900,000 years old. Although deposits of this kind may preserve fossils, the fact that no fossils have been revealed by the extensive development on the campus in areas underlain by this formation suggests that the paleontological potential of these formations on the campus is low,

Dolines—or sinkholes—are a characteristic feature of karst topography. In the Santa Cruz campus area, this topography developed during the Pleistocene and Holocene as the result of dissolution of marble, which is water soluble. The marble bedrock, which tends to be fractured in subsurface blocks, does not weather gradually down from the surface, but dissolves wherever acidic water touches it, which may be along the ground surface and also through the underground fracture system. Over hundreds of thousands to millions of years, this weathering creates highly irregular interconnected solution cavities, underground channels, or caverns. The collapse or subsidence of the surface soils and rock into these underlying solution cavities creates the dolines that are characteristic of karst topography. Dolines, once formed, act as surface drains and tend to collect sediment and decomposed rock.

Although there have been no such finds to date in the coastal California region, some of the best preserved late Pleistocene vertebrate fossils recovered in regions of high precipitation or dense vegetation elsewhere in California have been from caves developed in limestone and marble. Remains of animals trapped in or washed into a sinkhole or transported into an underground cavern by flowing water or as a result of collapse, may be mineralized and preserved. Although mineralized remains would not be expected to occur in recent near-surface fill deposits in dolines, fossil remains may occur in interstices and caverns in the karst material, or in the older levels of sinkhole deposits. Vertebrate or plant fossils present in doline fills on campus would be considered potentially scientifically significant because of the relative rarity of such finds. Dolines occur in numerous locations on the central and southern portions of the campus, and there has been extensive campus development in these areas. To date, no fossils have been revealed by campus excavations in these areas. This suggests that this setting is not paleontologically sensitive on campus, or that fossils in this setting are rare. In either case, the potential to encounter fossils in these formations on the campus appears to be low.

In summary, only limited areas within the main campus have any potential for yielding fossils, due to the paucity of sedimentary rocks within the campus boundaries. On the UC Santa Cruz main campus, exposures of the Santa Margarita formation, marine and nonmarine terrace deposits, and doline fill in the subsurface karst are potentially fossiliferous. The Santa Margarita sandstone formation and the Santa Cruz mudstone formation appear to have high potential for the presence of paleontological resources within the main campus and the 2300 Delaware project site, respectively. The Quaternary Marine and non-marine terrace deposits and the doline deposits on campus, while potentially fossiliferous, appear to have low potential to yield fossils based on results of campus development within these areas to date.

Figure 4.6-4 in Section 4.6, *Geology, Soils and Seismicity*, provides geological mapping of the campus site.

Unique Geologic Features

Santa Cruz County includes, in its Geographic Information System (GIS) database, significant hydrological, geological, and paleontological features “which stand out as rare or unique and representative in Santa Cruz County because of their scarcity, scientific or educational value, aesthetic

quality or cultural significance” (Santa Cruz County 2005). The County database identifies “a concentration of limestone caves worth protecting” in the Wilder Creek area. The existing Campus Natural Reserve includes limestone caves along Cave Gulch, including Empire Cave, on the western margin of the campus. These caves may qualify as unique geologic features because of their scientific value and because such caves are relative rare. Some of the caves, which possess unusual hydrological and lithologic features, also host several special status species. These are described in Section 4.4, *Biological Resources*.

4.5.1.5 Cultural Resources Addressed Under CEQA

CEQA requires that projects address impacts to significant archaeological and historic resources, which it terms “historical resources”; to unique archaeological, paleontological, and geologic resources; and to human remains, including native American remains in an archaeological context (Public Resources Code [PRC] §21083.2, 21084.1; CEQA Guidelines §15064.5 and Appendix G, V). However, not all cultural resources meet the CEQA criteria that define historical resources or unique archaeological resources. Determination of whether a project has a potential for significant cultural resources impacts is a two-step process. First, cultural resources inventories of the project area are conducted to determine whether any cultural resources are present. Second, the significance of each identified resource is assessed relative to significance criteria established by CEQA, as outlined below. Project impact assessment focuses on those resources that meet CEQA significance criteria.

The following sections delineate CEQA resource significance criteria, describe the cultural resource inventories undertaken on the UC Santa Cruz campus and the cultural resources identified, provide the results of significance assessment of cultural resources identified on campus, and identify the significant resources that potentially could be affected by development under the proposed 2005 LRDP. Potential impacts to these resources are considered in Section 4.5.2, of this EIR, *Impacts and Mitigation Measures*.

CEQA Resource Significance Criteria

Cultural resources considered under CEQA may be either historical resources, or unique archaeological, paleontological or geologic resources. Human remains are also treated as cultural resources. The Public Resources Code (PRC) and the CEQA Guidelines provide criteria for the assessment of the significance of cultural resources in order to determine whether they are historical resources or unique archaeological, paleontological, or geologic resources. Resources that do not meet the significance criteria are not given further consideration under CEQA. A definitive assessment of resource significance may require archaeological testing or detailed historical research, which has not been conducted for all resources identified as potentially meeting the criteria set forth in CEQA. In these circumstances, identified resources in most cases are assumed to be significant, and treated as such, until such time as they can be formally assessed. The exception to this practice is that isolate prehistoric and historic artifacts, and fragments of historic features disassociated from their historic context generally are considered not to be significant because, once recorded, their potential to provide additional information of value is slight.

Historical Resources. Under CEQA §15064.5(a)(3), an historical resource is defined as “any object, building, structure, site, area, place, record or manuscript which a lead agency determines to be

historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California.” A resource is usually considered for its historical significance after it reaches the age of 50 years. This threshold is not absolute; it was chosen as a reasonable span of time after which a professional evaluation of historical significance can be made. Because PRC §5024 mandates that State Agencies inventory all state-held buildings over 50 years of age, this standard is commonly used in determining which buildings should be assessed under CEQA.

Because PRC 5024.1 establishes the California Register of Historical Resources (CRHR), and defines an historical resource as a resource listed in, or determined to be eligible for listing in, the CRHR, included in a local register of historical resources, or deemed significant pursuant to CRHR criteria. All California properties already listed in the National Register of Historic Places (NRHP) and those formally determined to be eligible for the NRHP, as well as specific listings of State Historical Landmarks and State Points of Historical Interest are automatically included in the CRHR. Under PRC 5024.1, a resource may be listed in or determined eligible to the CRHR if it meets any of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Is associated with the lives of persons important in our past
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
- Has yielded, or may be likely to yield, information important in prehistory or history.

Archaeological deposits that have been extensively disturbed or redeposited, or historic features and buildings that have been substantially altered, or moved, often are considered to have lost the integrity of the historic period, and thus may not be eligible for listing in the CRHR.

Cultural resources that are not eligible for the CRHR generally are not considered further under CEQA, unless they qualify as unique resources (see below).

Unique Archaeological, Paleontological and Geologic Resources. The Public Resources Code also provides criteria that define “unique archaeological resource”. Under PRC § 21083.2(g), a unique archaeological resource is a resource for which it can be clearly demonstrated that—without merely adding to the current body of knowledge—there is a high probability that it:

- Contains information needed to answer important scientific questions and there is a demonstrable public interest in that information
- Is directly associated with a scientifically recognized important prehistoric event
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type

While CEQA Guidelines Appendix G refers to unique paleontological and geologic resources, CEQA does not define these terms. For the purposes of this EIR, the relevant provisions of the statute used to define a unique archaeological resource are employed. In addition, State law explicitly considers

vertebrate paleontological sites and fossil footprints and provides for their recordation (Archaeological, Paleontological and Historic Sites Statute at PRC 5097 *et seq.*).

It may not be possible to ascertain without extensive excavation whether significant fossils are present within a geologic formation at a specific project location. Therefore, paleontological resource significance assessment generally is not conducted in advance of construction. It is assumed that significant fossils may be present on campus in geologic formations or rock units that have yielded significant fossils elsewhere in the region.

Human Remains and Sacred Sites. Also considered under CEQA guidelines for cultural resources assessments are human remains, including those interred outside of a formal cemetery. These may include historic period burials or graveyards, and Native American burials, which most often are encountered within or near archaeological deposits. PRC 5098.98 sets forth procedures for the protection and treatment of Native American burials. California State Health and Safety Code 7050.5 includes requirements that apply upon the discovery of human remains, including Native American remains in an archaeological context, and provides for local Native American participation in decisions regarding treatment and reinterment of Native American remains and grave-associated artifacts.

PRC 5097.9 prohibits the severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property.

4.5.1.6 Cultural Resources Identification Efforts

Archaeological and Historical Resources Inventories

The first archaeological sites identified on the UC Santa Cruz campus were recorded in 1956; however, the first formal archaeological survey of the campus was not conducted until 1974. Between 1975 and 2004, at least 48 cultural resources surveys were conducted on the campus. These surveys covered much of the lower portion of the campus, scattered areas in the central campus, and one area in the north campus, at various intensities. In 2005, a consultant conducted a mixed-strategy cultural resources survey of the entire campus (Pacific Legacy 2005b). The objectives of the survey were to provide screening-level data on the archaeological and historical resource base for the entire campus; assess current conditions and update the records of these previously recorded sites; formally record resources previously identified but not recorded; and provide integrity and significance assessments of known resources to the extent permitted by surface inspection. This work included intensive archaeological survey (inspection of the ground in systematic pedestrian transects) of about 50 percent of the main campus overall, and non-intensive survey (inspection of all openings, trails and other exposed ground surfaces) of an additional approximately 20 percent of the main campus. The majority of intensive survey has been on lower one-third of the campus. In the central campus, the survey work focused around areas in which previously known sites and historic features had been recorded, and areas where development is anticipated under the 2005 LRDP. About 40 percent of the north campus area was surveyed, with emphasis on known site vicinities, open areas, and areas around seeps and springs. Throughout the campus, much of the area that has not been intensively surveyed lies within steep drainages, is heavily forested or vegetated in brush or

other vegetation too dense to allow passage or ground visibility, or has already been heavily developed. Figure 4.5-1 delineates survey coverage of the main campus.

In addition to the archaeological survey, a complete inventory of potentially historic buildings on campus was conducted by a consulting architectural historian (ARG 2005a). The date or approximate date of construction of each building was determined, and each building more than 50 years of age was photographed and documented on State Park recordation forms. A historic context statements was prepared as a basis for evaluation of the Cowell Ranch Historic District and related features.

An archaeological survey of the 2300 Delaware Avenue property was conducted in 2005 (Morgan 2005). Approximately 90 percent of this property is covered by buildings, paving or landscaping, so the natural ground surface could be inspected only along an unpaved trail at the western margin of the property. The buildings at 2300 Delaware Avenue, because of their recent construction date (approximately 1980), were not recorded or evaluated as historic structures.

Paleontological Resource Identification Efforts

A record and archive search of the paleontological collections of the Los Angeles County Museum of Natural History (LACM) and the University of California, Berkeley, Museum of Paleontology (UCMP) was undertaken to determine whether any fossils have been previously reported or recovered from the campus or in close proximity to it. All known literature pertaining to the paleontology and stratigraphy of this region was examined to determine whether fossils have been documented from this site or its vicinity. Through literature review, the formations in the region that have yielded significant fossils were identified.

No field surveys were undertaken to identify paleontological resources on the campus. However, geologic mapping of the campus (Figure 4.6-1) was consulted, to determine whether the geologic formation and rock units determined to be fossiliferous (that is, fossil-bearing) in the region are present on the campus.

4.5.1.7 Identified Cultural Resources

Archaeological Sites, Historic Features and Historic Buildings

The locations of archaeological sites are kept confidential to protect the sites from illicit collection or excavation. National and state regulations prohibit the dissemination of documents related to the specific location of archaeological resources; these documents are not within the purview of the Freedom of Information Act. This EIR therefore does not provide specific locational information for the sites described below.

Cultural resources survey and recordation on the campus has spanned a period of over 50 years, and standards and methods of archaeological documentation have evolved during this time. Furthermore, a large number of researchers have been involved in documentation and description of the resources. The result is that a variety of systems of description and classification have been applied to cultural resources on campus. The most recent survey, which reexamined previously recorded resources and documented new discoveries, recorded three classes of archaeological resources: historic and prehistoric archaeological sites, historic features, and historic and prehistoric isolates. In many cases, these classes

overlap. In some cases, a resource previously recorded as an archaeological site would now be considered a historic isolate. In other cases, an isolate or group of isolates rises to the level of an archaeological site because of the historic context of the campus. Because many of these resources had been recorded previously, with records filed at the regional Historical Resources Information File System, it was considered inadvisable to revise previous classifications.

In the current classification, prehistoric or historic artifacts found singly in small numbers (fewer than three items in an approximately 50-foot radius) and historic features without definitive cultural or chronological associations are recorded as *Isolates*. Historic fencelines and road segments were considered to be historic isolates in the current study. A *Historic Feature* is usually more substantial than an isolate, and may include datable elements and provide functional information; however, there is some overlap between these two classifications. *Archaeological sites* include archaeological deposits (artifacts and buried cultural features in soil built up over time at a locus of human activity); substantial historic features, such as lime kilns; or groups of geographically clustered historic buildings and features, such as quarries, kilns, railway alignments, foundations or trash pits. Many of the historic structures or groups of structures on the campus have been recorded in the past as historic archaeological sites, although, in most cases, no archaeological deposit has been recorded.

Table 4.5-1, below, identifies and describes archaeological, historic features, and historic buildings, and structures that have been recorded on campus. It also indicates the status of each resource with respect to CRHR eligibility, and the land use category under the 2005 LRDP in which the resource is located.

With respect to the site designations listed in the table, note that archaeological sites are assigned a uniform number by the California Historical Resources Information System (CHRIS), with the prefix CA-SCR- (for California, Santa Cruz County) followed by a unique trinomial. As indicated in Table 4.5-1, previously recorded resources have been assigned CHRIS trinomials. Newly recorded resources have been given temporary numbers, in the format CA-SCR-UCSC-###. The suffix “H” after a temporary resource number indicates a resource of the historic period. Official CHRIS numbers will be assigned to these resources when the records are filed at the CHRIS Northwest Information Center, the State’s formal repository of cultural resources records for Santa Cruz County.

**Table 4.5-1
Archaeological Resources and Historic Features Recorded on Campus**

Resource Number	Site or Feature Type	Description/ Current Integrity	CRHR Status	LRDP Land-Use
CA-SCR-003 (formerly SCR-42A)	Prehistoric midden deposit	Shell midden, lithics shell beads, fire-cracked rock. Road along north edge. Some historic disturbance. Integrity fair to good.	Tested in 1969. Appears to be eligible.	CRL
CA-SCR-004 (formerly SCR-42B)	Prehistoric midden deposit	Lithic scatters, two human burials recovered. Road runs through south edge. Some historic disturbance. Integrity fair to good.	Tested in 1969. Appears to be eligible.	CRL
CA-SCR-094	Prehistoric deposit, possibly surficial	Sparse lithic scatter. Appear substantially disturbed by historic quarry and modern housing. Integrity may have been diminished by housing construction.	Tested in 1979. Appears to be eligible.	EH

**Table 4.5-1
Archaeological Resources and Historic Features Recorded on Campus**

Resource Number	Site or Feature Type	Description/ Current Integrity	CRHR Status	LRDP Land-Use
CA-SCR-142	Prehistoric deposit, possibly surficial	Sparse lithic scatter. Roads cut through site on east and west. East side possibly buried; west side fair to good condition. Additional testing may be required to define east boundary. Integrity fair to good.	Tested in 1979. Appears to be eligible.	PL/ CRL
CA-SCR-143	Prehistoric deposit, possibly surficial	Sparse to moderately dense lithic scatter. Ranch road cuts through west edge, some cattle grazing damage. Integrity fair to good.	Presumed eligible.	PL
CA-SCR-160	Prehistoric midden deposit	Midden, hearth features, dance house pit, lithics, shell artifacts, shell and bone. C14 dates 490 to 760 before present. Two footpaths across site and possible vandal's pit noted. Site otherwise intact. Integrity good to excellent.	Tested 1988, 1989. Appears to be eligible.	PL
CA-SCR-180	Prehistoric deposit, possibly surficial	Sparse lithic scatter, observable in dirt road cut. Integrity fair to good.	Presumed eligible.	SRS
CA-SCR-181	Prehistoric deposit	Dense lithic scatter. Undisturbed. Integrity excellent.	Presumed eligible.	SRS
CA-SCR-182H	Historic railway and limestone quarry feature complex	Railway features including portions of bed, some in situ ties, 2 pieces of rail, associated rock causeway or bridge foundation. Rail line continues to CA-SCR-198H. Quarry features include Lower Quarry, Jordan Gulch Main Stem Pocket Quarry, Upper Quarry, several old quarry access road segments. Integrity highly variable: Railway bed section in Quad 114 (Cowell Ranch District) intact; section in Quad 75 intact; section in Quad 68 washed out by erosion; above ground sewer pipe supports on intact RR bed north of Lower Quarry (Quad 82). Lower Quarry has modular housing and roads. Pocket quarry intact. Upper Quarry, west end, undisturbed; amphitheater in east end.	Previously assessed as eligible; some segments do not contribute to site eligibility.	PL/ SRS
CA-SCR-183H	Historic railway, limestone quarry and kiln complex	Railway represented by a bed segment: ties previously recorded are no longer present. Quarry features include earthen dam around sinkhole, Bridge Quarry, two pocket quarries on Jordan Gulch Middle Fork. tailing dump, and road. Kiln features include Upper Quarry Kiln, Bridge Kiln. Rail bed is fairly intact. Integrity of quarry features fair to good. Upper Quarry kiln is in poor condition. Bridge kiln is in good condition.	Presumed eligible.	PL
CA-SCR-184H	Historic dugout structure	Wood superstructure above two-room dugout. Vandalism and degradation noted since 1978. Wood superstructure present but degraded in 2005. Integrity poor to fair.	Presumed eligible.	PL
CA-SCR-185H	Historic: structure foundation?	Rectangular alignment of broken limestone and terraced area next to old road cut. Minor degradation from mowing in area. Integrity fair.	Presumed eligible.	PE
CA-SCR-186H	Historic fenceline and cattle troughs	Ranch features presumed associated with Cowell Ranch. Integrity good.	Possibly eligible in association with related ranch features.	CNR

**Table 4.5-1
Archaeological Resources and Historic Features Recorded on Campus**

Resource Number	Site or Feature Type	Description/ Current Integrity	CRHR Status	LRDP Land-Use
CA-SCR-198H	Cowell Ranch Historic District	Extensive complex of historic residential, ranch building, railroad features, lime pocket quarries, processing structures and features associated with Cowell ranching and quicklime manufacture operations between about 1868 and 1946. CA-SCR-182H railway bed is an extension of the rail line from this site. Associated historic archaeological deposits likely present within the district have not been separately recorded. 1992 cultural landscape report identified 27 potential archaeological features within the district as well as the standing architectural structures Integrity highly variable: contributing elements (those that retain integrity) include railway bed and trestle, powder house, blacksmith shop, hay barn, lime kilns, cooperage, five worker's cabins, cookhouse, horse barn, granary, paymaster's house, entry gate, and the ranch house.	Appears eligible. Formal evaluation and nomination to NRHP/CRHR underway.	CS
CA-SCR-227H	Historic agricultural field	Historic field identified from 1931 aerial photo. No archaeological evidence. Integrity fair; crossed by paved road.	Does not appear eligible; information potential captured by recordation.	PL
CA-SCR-262H	Historic residence site	Board scatter and trash pit representing ruins of a residence. Integrity poor to fair due to illicit excavation.	Presumed eligible, if any integrity remains.	CRL
CA-SCR-UCSC-001H	Historic reservoir complex	City of Santa Cruz Arboretum Reservoir, Arboretum Water Tower, East Dam, West Dam, Arboretum Dam, and spillway, built in 1890. Integrity good, although features are overgrown and there have been alterations, including dirt access roads across tops of East and West Dam, modification to spillway.	Presumed eligible.	SRS
CA-SCR-UCSC-002H	Historic trash dump	Empire Grade Road trash dump, ca. 1900-1940. Integrity appears good.	Presumed eligible.	CRL
CA-SCR-UCSC-004H	Elf Land Kiln	Brick and limestone kiln for firing limestone, built as early as 1850s; associated dirt haul road.	Presumed eligible.	PL

LRDP Land-Use Categories:

- CNR = Campus Natural Reserve
- CRL = Campus Resource Land
- CS = Campus Support
- EH = Employee Housing
- PE = Physical Education and Recreation
- PL = Protected Landscape
- SRS = Site Research and Support

In addition to the sites listed above, Pacific Legacy (2005) recorded or noted 18 historic features or isolates that did not appear to have sufficient potential to provide information to warrant recordation as archaeological sites. Historic features in this class include fence lines and roads, stock troughs, a concrete foundation with no associated structure or features, and a minimal scatter of early 20th century artifacts, all of indeterminate date and little evidence of cultural or functional affiliation. While some of these

features likely are associated with the historically significant Cowell Ranch district, they have little potential to provide additional significant information about the ranch or its operations beyond that captured by their recordation. These features, thus, are considered not eligible for listing on the CRHR. Three prehistoric isolates, each consisting of one to three fragments of chipped stone tool manufacturing debris, were also recorded. These artifacts, without associated cultural deposits or other material to provide prehistoric functional or chronological context, have little potential to yield information important to prehistory and, thus, are considered not eligible for listing on the CRHR. However, isolate artifacts are mapped on the campus's confidential cultural resources maps for future management purposes, since the presence of isolates suggests that additional unidentified materials may be present and could be encountered during development.

Prehistoric Archaeological Sites. Eight prehistoric archaeological sites and three prehistoric isolates (sites consisting of three or fewer artifacts), have been identified on the UC Santa Cruz main campus. No resources have been identified on the 2300 Delaware Avenue property. Although five of the eight prehistoric sites were subject to test excavations in the 1960s and 1970s, none has been formally evaluated with respect to CRHR criteria. Two of the sites include occupational deposits, and burials were recovered from a third. These three sites clearly have potential to yield important information and are eligible to be listed on the CRHR.

The remaining five sites are recorded as lithic scatters (scattered chipped stone tool manufacture debris). In general, the boundaries of these sites are not well defined, it has been difficult to accurately relate these sites in subsequent surveys, and it is unclear whether the deposits have subsurface components. However, these sites are presumed to be eligible to the CRHR, for purposes of management and preservation, until their significance can be documented through archaeological testing. The three occurrences of isolate prehistoric artifacts are assumed not eligible to be listed on the CRHR because they have the potential to provide only minimal data. However, because the presence of isolate artifacts sometimes signals an undiscovered archaeological deposit, these finds have been mapped on the campus confidential cultural resources data base map.

Human Remains. No historic period burials or cemeteries are known or have been encountered on the campus. Two burials were recovered from CA-SCR-004 in the 1960s. These burials are presently curated in the archives of the UC Santa Cruz Anthropology department. The University has consulted with local Ohlone groups and will continue to consult regarding respectful treatment and potential future reinterment of the remains to the appropriate recognized group.

Historic Archaeological Sites and Features. Eleven historic archaeological sites and 18 historic isolates have been identified on the UC Santa Cruz main campus. No sites or isolates have been identified on the 2300 Delaware Avenue property. The historic sites on the main campus include the Cowell Ranch site (CA-SCR-198H), an extensive complex of 19th and 20th century buildings, structures, and features; and several other related archaeological sites that include railroad, mining and lime kiln features related to lime production at Cowell Ranch foundation, 1868 and 1946. A consultant to the Campus is presently preparing a National Register of Historic Places (NRHP) nomination for the Cowell Ranch Historic District, which is clearly eligible for listing on the CRHR. Preliminary findings (Architectural Resources Group [ARG] 2005) indicate that, while the integrity of many of the buildings and features has been

diminished by deterioration, physical damage through development, or adaptive reuse, and while some of the features of the district thus no longer contribute to its significance, the district and many of its features retain their historic significance. The campus and a consultant are in the process of completing the draft NRHP evaluation and developing a specific historic district management plan for the district, with the objective of ensuring that its historic character continues to be maintained.

Most of the other historic sites documented on the campus also are presumed to be eligible to the CRHR for their potential to yield historic data, and for their association with important historic events—the economic development of Santa Cruz County, and particularly of its quicklime industry. Several of the recorded sites may predate the Cowell Ranch period, and may offer contrasting and comparative data on residence and economy in Santa Cruz prior to the lime industry boom. One previously recorded site, SCR-227H, does not appear to be eligible to be listed on the CRHR. The site, an historic agricultural field recorded because it appears on a 1931 aerial photo, does not appear, today, to retain any elements that suggest an historic character, or that have the potential to provide any additional historic information, beyond the location already recorded.

Buildings Older than 50 Years of Age by 2020. Architectural Resources Group (ARG), an historic architectural resources consulting firm, was contracted to identify, record and evaluate potential historic architectural properties that are currently more than 50 years old, as well as those that may reach 50 years by 2020 (i.e., during the term of the 2005 LRDP).

As described above, the oldest buildings on the main campus were part of Cowell Ranch and date from the 1850s through the 1940s. Some of these have been adapted for reuse and are currently occupied by the campus. As noted, above, ARG has documented and is in the process of preparing a nomination to the NRHP of the Cowell Ranch Historic District (ARG 2005, in draft). UC Santa Cruz has recognized the historic significance of the Cowell Ranch buildings since the initial development of the campus, and the 1988 LRDP designated the Cowell Ranch as an “historic area.” The proposed 2005 LRDP also designates the district as an historic overlay. As noted above ARG and the Campus are currently in the process of preparing a management plan for the district.

In addition to the Cowell Ranch features, a number of buildings or features on the campus will reach 50 years of age within the term of the 2005 LRDP (see Table 4.5-3). Because they currently are less than 50 years of age, these buildings are not being evaluated as potential historical resources at this time. Each of these buildings will be evaluated as a potential historical resource, should a future project be proposed that could affect the building or its immediate setting, as it reaches 50 years of age. The buildings at 2300 Delaware Avenue will not reach 50 years of age within the term of the 2005 LRDP.

**Table 4.5-2
Main Campus Buildings or Features that will Reach
50 Years of Age by 2020**

Campus Building	Date of Construction
Arboretum: Geodesic domes	ca. 1960s
Central Heating Plant	1966
Communications Building	1968

**Table 4.5-2
Main Campus Buildings or Features that will Reach
50 Years of Age by 2020**

Campus Building	Date of Construction
Cowell Student Health Center	1970
Crown College	1967/1968
East Field House	1965
Hahn Art Studio Building	1968
Hahn Student Services Building	1965
Merrill College	1968-1969;1970-1971
Natural Sciences 2 Building/Natural Sciences Annex	1969
Porter College	1969; 1970
Quarry Amphitheater	ca. 1965
Stevenson College	1966; 1967/1968
Thimann Labs and Lecture Hall	1965
University House	1967

Results of Paleontological Inventory. As described above, paleontological record searches revealed that no known paleontological resources have been documented on the UC Santa Cruz main campus or the 2300 Delaware Avenue property. The closest known fossil vertebrate localities, reported from the collections of LACM, occur in Santa Margarita formation deposits less than 2 miles east of the campus boundaries and just east of Highway 17. Locality reports filed at LACM indicate that four areas of the formation in this vicinity have yielded fossil sea-cow specimens (Domning 1978). Less than 2 miles to the southwest of the property, Clark (1981) has also identified a megafossil locality in the Santa Margarita formation. The next closest vertebrate localities in the Santa Margarita formation are located approximately 4 miles to the northeast of UC Santa Cruz in the vicinity of Felton, in the Bean Creek area. These localities have yielded some of the best-preserved vertebrate fossils recovered from the Santa Margarita formation in this region and include significant marine and terrestrial vertebrates of late Miocene age. The University of California Museum of Paleontology at Berkeley (UCMP) reports numerous fossil localities in the Santa Cruz area, including vertebrate fossil localities within 2 miles or less of the main campus and of the 2300 Delaware Avenue site, in the Santa Margarita and the Santa Cruz mudstone formations. Based on the results of this research, the Santa Margarita and Santa Cruz mudstone formations on campus are considered to have high paleontological sensitivity; that is, they have high potential to yield significant fossils that may meet the criteria for unique paleontological resources.

Research on doline fill and limestone caves, reported in Section 4.5.1.4, *Paleontological and Geological Context*, above, indicates that significant vertebrate fossil finds have been made in these settings, although no such finds have occurred in the central coast region to date. Despite extensive development in doline deposits on the campus, no fossils have been encountered. Therefore, while it is assumed that dolines do have some potential to contain significant fossils, it appears that the potential to encounter fossils in these deposits on the campus is low. Similarly, while Quaternary marine and non-marine terrace deposits are suitable for the preservation of fossils, there have been no finds in this setting, either in the region or on

the campus, despite extensive regional development on this widespread formation and moderate levels of development in areas underlain by this formation on campus. Therefore, the potential for fossils to occur in Quaternary marine and non-marine terrace deposits on campus appears to be low

4.5.2 Impacts and Mitigation Measures

This section of the EIR assesses the potential for development under the proposed 2005 LRDP to result in impacts upon significant cultural resources; i.e. historical resources and unique archaeological, paleontological and geological resources; or to disturb human remains.

4.5.2.1 Standards of Significance

A project may have significant impacts upon historical resources or unique archaeological, paleontological or geologic resources if it would:

- Cause a substantial adverse change in the significance of a unique archaeological resources or an archaeological resource eligible for listing on the CRHR
- Cause a substantial adverse change in the significance of an historical resource
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

CEQA §21084.1 provides that a project that may cause a substantial adverse change in the significance of an historical resource may have a significant effect upon the environment. CEQA Guidelines §15064.5(b) defines a substantial adverse change as “physical demolition, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired”. The significance of an historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of the resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR as determined by a lead agency for purposes of CEQA.

The same section further provides that project impacts due to maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of buildings and structures that qualify as historical resources are generally mitigated to a less-than-significant level if the work is conducted in a manner consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (Weeks and Grimmer 1995). In some cases, however, documentation will not mitigate the effects of demolishing a historical resource to a less-than-significant level (CEQA Guidelines §15126.4(b)(2).

CEQA Guidelines §21083.2 state that if the lead agency determines that the project may have an effect on unique archaeological resources, the environmental impact report shall address the issue of those resources. The section further states that, if can be demonstrated that the project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to preserve the resources in place or leave them undisturbed, including such measures as avoidance through project design, or

capping with soil. Data recovery archaeological excavation is also cited as appropriate mitigation under certain conditions.

PRC §30244 states that where development would adversely impact an archaeological or paleontological resource as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required. This section would apply to any future project with the potential to affect significant cultural resources on those parts of the UC Santa Cruz campus that are within the Coastal Zone.

CEQA Guidelines §15126.4(b) states that public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature, and stipulates that preservation in place is the preferred mitigation, through such measures as planned avoidance, incorporation within open space, or covering with soil. The section further states that when data recovery through excavation is the only feasible mitigation, this work shall be directed by a data recovery plan that provides for adequate recovery of the scientifically consequential information from and about the historical resource. Results of studies are to be filed with the Californian historical Resources Information Center (CHRIS). Human remains encountered during excavation shall be treated in accordance with the provisions of Section 7050.5 of the Health and Safety Code.

4.5.2.2 Analytical Method

Resources identified in Table 4.5-1 as eligible or potentially eligible to be listed on the CRHR were considered as historical resources—that is—significant cultural resources—for purposes of assessing the potential effects upon cultural resources of the development proposed under the 2005 LRDP. For purposes of this analysis, until definitive study determines that a resource lacks integrity or otherwise does not meet the criteria that define an historical resource or a unique archaeological resource, the resources so identified in Table 4.5-1 are assumed to be eligible for listing on the CRHR, and impacts to these resources are considered to be potentially significant.

In general, it is assumed that any development under the proposed LRDP has the potential to affect significant cultural resources. The specific resources that might be affected depend on the nature and location of development. The potential for significant impacts is generally considered to be low for those resources located in areas not designated for development, such as protected landscape. Any ground disturbing development has the potential to result in impacts to unidentified or buried cultural resources.

Potential Impacts to Archaeological Resources. Impacts to archaeological resources may occur as the result of any ground disturbing work, or through increases in traffic, erosion or other project-related activity over and around a surficial archaeological site. Because archaeological resources often are buried, or cannot be fully defined or assessed on the basis of surface manifestations, substantial ground-disturbing work may have the potential to uncover previously unidentified resources, including archaeological deposits and human remains, even in areas where surveys have previously been conducted. The mitigation measures developed to address impacts to unique archaeological resources and historical resources of an archaeological nature address potential impacts both to identified archaeological resources, and to archaeological resources that might be discovered during construction.

Potential Impacts to Historic Structures and Features. With respect to other historic period features of the built environment, such as buildings, bridges, railroad features, and kilns, demolition or physical alteration of historic character-defining elements of properties eligible for listing on the CRHR may constitute significant impacts. In cases where the property retains integrity of setting and the setting of the resource contributes to its significance, significant impacts may also occur if the setting of a historic structure or feature is altered by the introduction of incompatible elements.

Potential Impacts to Unique Paleontological Resources. For paleontological resources, because the abundance and diversity of fossils varies widely from place to place, even within fossiliferous formations, the actual potential for a project to result in impacts to fossils is difficult to determine, even when fossiliferous formations are known to be present at the project site. It may not be possible to ascertain without extensive excavation whether significant fossils are present at a specific project location within a sensitive formation. This analysis assumes that if the rock units in the geologic formations that may be disturbed by a project have a high potential to contain fossil materials, as described and analyzed in Section 4.5.1.4, *Paleontological and Geological Context*, and following sections, the project has a potential to result in impacts to unique paleontological resources. Formations that have not previously yielded fossils in the region or on campus, despite substantial development on these formations, are considered to have low paleontological sensitivity until such time as fossils are encountered in these formations.

Potential Impacts to Unique Geologic Resources. Limestone caves in the Cave Gulch/Wilder Creek area are the only unique geological resources identified on campus. Because these features are rare, because they of high scientific interest geologically and potentially paleontologically, and because of the unique biome they house, impacts to limestone caves on campus that would alter the immediate setting or internal environment of the caves would be considered to be significant impacts to unique geologic resources as cultural resources.

4.5.2.3 2005 LRDP Impacts and Mitigation Measures

LRDP Impact CULT-1: Implementation of the 2005 LRDP could damage or destroy an archaeological resource as the result of grading, excavation, ground disturbance or other project development.

Significance: Potentially significant

LRDP Mitigation CULT-1A: As early as possible in the project planning process, the Campus shall define the project's area of potential effects for archaeological resources. The Campus shall determine the potential for the project to result in cultural resource impacts, based on the extent of ground disturbance and site modifications anticipated for the proposed project. The Campus shall also review confidential resource records to determine whether complete intensive archaeological survey has been performed on the site and whether any previously recorded cultural resources are present.

LRDP Mitigation CULT-1B: Where native soils will be disturbed, the Campus shall provide and shall require contractor crews to attend an informal training session prior to the start of earth moving, regarding how to recognize archaeological sites and artifacts. In addition, campus employees whose work routinely involves disturbing the soil shall be informed how to recognize evidence of potential archaeological sites and artifacts. Prior to disturbing the soil, contractors shall be notified that they are required to watch for potential archaeological sites and artifacts and to notify the Campus if any are found. In the event of a find, the Campus shall implement LRDP Mitigation CULT-1G, below.

LRDP Mitigation CULT-1C For project sites that have not been subject to prior complete intensive archaeological survey, the Campus shall ensure that a complete intensive surface survey is conducted by a qualified archaeologist during project planning and design and prior to soil disturbing activities. If an archaeological deposit is discovered, the archaeologist will prepare a site record and file it with the California Historical Resource Information System. In the event of a find within the area of potential effects, the Campus shall consult with a qualified archaeologist to design and conduct an archaeological subsurface investigation and/or a construction monitoring plan of the project site to ascertain the extent of the deposit relative to the project's area of potential effects, to ensure that impacts to potential buried resources are avoided.

LRDP Mitigation CULT-1D: If it is determined that the resource extends into the project's area of potential effects, the Campus shall ensure that the resource is evaluated by a qualified archaeologist, who will determine whether it qualifies as a historical resource or a unique archaeological resource under the criteria of CEQA Guidelines §15064.5. This evaluation may require additional research, including subsurface testing. If the resource does not qualify, or if no resource is present within the project area of potential effects, this will be reported in the environmental document and no further mitigation will be required unless there is a discovery during construction.

LRDP Mitigation CULT-1E: If a resource within the project's area of potential effects is determined to qualify as an historical resource or a unique archaeological resource (as defined by CEQA), the Campus shall consult with the qualified archaeologist to consider means of avoiding or reducing ground disturbance within the site boundaries, including minor modifications of building footprint, landscape modification, the placement of protective fill, or other means that will permit avoidance or substantial preservation in place of the resource.

LRDP Mitigation CULT-1F: If avoidance or substantial preservation in place is not possible for an archaeological site that has been determined to meet CEQA significance criteria, the Campus shall retain a qualified archaeologist who, in consultation with the Campus, shall prepare a research design, and plan and conduct archaeological data recovery and monitoring that will capture those categories of data for which the site is significant, prior to or during development of the site. The Campus shall also ensure that appropriate technical analyses are performed, and a full written report prepared and filed with the California Historical Resources Information System, and also shall provide for the permanent curation of recovered materials.

LRDP Mitigation CULT-1G: If an archaeological resource is discovered during construction (whether or not an archaeologist is present), all soil disturbing work within 100 feet of the find shall cease. The Campus shall contact a qualified archaeologist to provide and implement a plan for survey, subsurface investigation as needed to define the deposit, and assessment of the remainder of the site within the project area to determine whether the resource is significant and would be affected by the project. LRDP Mitigation CULT-1F shall also be implemented.

LRDP Mitigation CULT 1H: If, in the opinion of the qualified archaeologist and in light of the data available, the significance of the site is such that data recovery cannot capture the values that qualify the site for inclusion on the California Register of Historical Resources, the Campus shall reconsider project plans in light of the high value of the resource, and implement more substantial modifications to the proposed project that would allow the site to be preserved intact, such as project redesign, placement of fill, or project relocation or abandonment. If no such measures are feasible, the Campus shall implement LRDP Mitigation CULT-3A.

Residual Significance: Less than significant

Any future campus project that would disturb site soils or surface features has the potential to result in impacts to archaeological resources of the prehistoric or historic period. If the resource is significant under CEQA, impacts would be significant if the project results in a substantial adverse change in the significance of the resource. Substantial adverse changes to archaeological deposits and features may result from ground disturbance or from increased traffic, erosion, vibrations or other activities that could affect the physical integrity of archaeological deposits or features.

As shown in Table 4.5-1, seven identified archaeological sites that may meet CRHR eligibility criteria have been identified in areas of the campus that may be subject to development under the proposed 2005 LRDP. These include CA-SCR-004, a previously disturbed lithic scatter located in an area designated for employee housing; CA-SCR-180 and -181 (lithic scatters); CA-SCR-UCSC-001 (the Arboretum Reservoir complex); a portion of CA-SCR-182H (an historic railway and quarry complex), a part of which is in areas designated for Site Research and Support; CA-SCR-185H, located in an area designated for Physical Education development; and CA-SCR-198H (the Cowell Ranch Historic District and associated archaeological features), in an area designated for Campus Support. The latter also lies within (and, in fact, defines), the Cowell Ranch Historic District overlay. Other identified resources also could be adversely affected by development to the extent that ground disturbance is required for infrastructure modifications or other necessary ground-disturbing activity within areas otherwise not designated for development. The campus is in the process of developing a management plan for the Cowell Ranch Historic District, which will include design and development guidelines for the protection of the historical resource. In addition, the potential for visual impacts to the historic district is addressed in *Aesthetics*, Section 4.1 of this EIR.

While the implementation of the proposed 2005 LRDP could cause a substantial adverse change in the significance of an archaeological deposit or feature, the impact would be significant only for those resources that meet CRHR eligibility criteria or are defined as “unique” under CEQA. The measures described above would ensure identification of any significant archaeological resources present in the area that would be affected by each project. Where a site does not extend into the project Area of Potential Effects (APE), or where it can be preserved through avoidance or other measures, no impact would occur, or the impact would be less than significant. Data recovery and other measures described above would ensure the preservation of the significant information represented by the site. With the implementation of these identification, evaluation and protection measures, the impact would be less than significant.

LRDP Impact CULT-2: Implementation of the proposed 2005 LRDP could cause a substantial adverse change in the significance of a historic building or structure as the result of alteration of the building or of the site, or other project development.

Significance: Potentially significant

LRDP Mitigation CULT-2A: For projects within Cowell Ranch Historic District overlay, the Campus shall implement LRDP Mitigations AES-4A and AES-4B.

LRDP Mitigation CULT-2B: As early as possible in the project planning process, the Campus shall define the project's area of potential effect for historic structures. The Campus shall determine the potential for the project to result in impacts to or alteration of historic structures, based on the extent of site and building modifications anticipated for the proposed project.

LRDP Mitigation CULT-2C: Before altering or otherwise affecting a building or structure 50 years old or older that has not been evaluated previously, the Campus shall retain a qualified architectural historian to record it at professional standards, and assess its significance under CEQA Guidelines Section 15064.5. The evaluation process shall include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the University system, the campus, and the region. For historic buildings, structures or features that do not meet the CEQA criteria for historical resource, no further mitigation is required and the impact is less than significant.

LRDP Mitigation CULT-2D: For a building or structure that qualifies for listing on the CRHR, the Campus shall consult with the architectural historian to consider measures that would enable the project to avoid direct or indirect impacts to the building or structure. These could include preserving a building on the margin of the project site, using it "as is," or other measures that would not alter the building.

LRDP Mitigation CULT-2E: If the project cannot avoid modifications to a significant building or structure, the Campus shall ensure that documentation and treatment shall be carried out by a qualified architectural historian, as described below:

- If the building or structure can be preserved on site, but remodeling, renovation or other alterations are required, this work shall be conducted in compliance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings" (Weeks and Grimmer 1995).
- If a significant historic building or structure is proposed for major alteration or renovation, or to be moved and/or demolished, the campus shall ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation shall include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey (HABS) or Historic American Engineering Record (HAER), including accurate scaled

mapping, architectural descriptions, and scaled architectural plans, if available. A copy of the record shall be deposited in the McHenry Library Special Collections, and with the California Historical Resources Information System. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site specific and comparative archival research, and oral history collection as appropriate.

- If preservation and reuse at the site are not feasible, the historical building shall be documented as described in item (ii) and, when physically and financially feasible, be moved and preserved or reused.

LRDP Mitigation CULT-2F: If, in the opinion of the qualified architectural historian, the nature and significance of the building is such that its demolition or destruction cannot be fully mitigated through documentation, the campus shall reconsider project plans in light of the high value of the resource, and implement more substantial modifications to the proposed project that would allow the structure to be preserved intact. These could include project redesign, relocation or abandonment. If no such measures are feasible, the Campus shall implement LRDP Mitigation CULT-3B.

Residual Significance: Less than significant

The 2005 LRDP acknowledges the historic importance of the Cowell Ranch Historic District by assigning an historic overlay to the area. No projects other than interpretive centers and visitor facilities are proposed for the District under the LRDP. Because the historic significance of the District could be adversely affected if the new facilities were not constructed in a manner appropriate for the District, the Campus would implement LRDP Mitigation AES-4A to ensure that proposed projects are aesthetically consistent with the District. In addition, the Campus would implement LRDP Mitigation AES-4B to ensure that all new development is set back at least 200 feet from the District boundary so that the District's setting is not adversely affected. With the incorporation of these mitigation measures, the impacts on the District would be less than significant.

Although most campus buildings older than 50 years of age have been documented and evaluated, several additional buildings will be 50 years old before the end of the planning horizon of the proposed 2005 LRDP in 2020. In compliance with LRDP Mitigation CULT-2B, the Campus will evaluate project locations during initial planning to determine whether a structure over 50 years of age is present and may be affected by the project. If there is a potential for adverse effects, LRDP Mitigations CULT-2C through -2F would also be implemented. For features of the built environment that are found to be historical resources under CEQA, these mitigation would reduce the impacts of development under the proposed 2005 LRDP to a less-than-significant level.

LRDP Impact CULT-3: Implementation of the 2005 LRDP could cause a substantial adverse change in the significance of a historical resource or unique archaeological resource, as defined in CEQA Guidelines 15064.5, and the values that contribute to the significance of the resource cannot be preserved through documentation and data recovery.

Significance: Significant

LRDP Mitigation CULT-3A If a significant archaeological resource cannot be preserved intact, before the property is damaged or destroyed, the Campus shall ensure that the resource is appropriately documented by implementing a program of research-directed data recovery, consistent with LRDP Mitigation CULT-1F.

LRDP Mitigation CULT-3B: If a significant historic resource or unique archaeological resource cannot be preserved intact, before the property is damaged or destroyed the Campus shall ensure that the important information represented by the resource is preserved, by implementing a program of documentation as described in LRDP Mitigation CULT-2D.

Residual Significance: Significant and unavoidable

For unique archaeological resources and resources that are eligible for listing on the CRHR, the preferred mitigation under CEQA is preservation in place of as much of the resource as possible, where feasible, through project modification or protective measures. In most cases, archaeological data recovery can mitigate those impacts that cannot be avoided to a less-than-significant level. However, there may, in rare cases, be site that are highly significant, for which data recovery cannot fully preserve the values represented by the site.

For historic features of the built environment, impacts in most cases can be reduced to less-than significant levels by appropriate treatment and documentation. However, CEQA Guidelines §15126.4(b)(2) note that in some circumstances, documentation of an historical resource will not mitigate the effects of demolition of that resource to a less-than-significant level.

The program of mitigation described above will ensure that the Campus avoids impacts to cultural resources when feasible. While development under the 2005 LRDP could result in impacts to archaeological resources, implementation of LRDP Mitigations CULT-1A through -1H and LRDP Mitigations CULT-2A through -2F in most cases would reduce these impacts to a less-than-significant level. However, for specific projects there may be occasions when a historical resource or unique archaeological resource cannot be substantially preserved in place. In rare cases, data recovery and documentation may not provide sufficient mitigation for an exceptionally significant resource.

For example, an archaeological site might be exceptionally significant because of the types of information it represents, or because it has the potential to provide information that would be highly valuable to future research, or it has strong cultural associations with a highly significant event or person. Similarly, an historic building could derive exceptional significance because of its associations with a significant event

or person not represented elsewhere, or because of exceptional architectural merit or construction. Some values of this kind are not fully preserved through documentation or data recovery.

Although the Campus would prefer to preserve a highly significant resource where possible, there may be cases in which avoidance or preservation of such a resource is not feasible. For example, preservation of a resource could completely preclude development of a critical project; or it might be necessary to excavate a highly significant archaeological site because the site soil was contaminated. In such a case, impacts to the resource could not be avoided. If a highly exceptional historical resource cannot be preserved in place, and if the historic values it represents cannot be fully captured through documentation and data recovery, impacts to the resource cannot be fully mitigated. Although LRDP Mitigations CULT-3A and -3B would reduce the impact to the extent possible, the impact nonetheless would be significant and unavoidable.

LRDP Impact CULT-4: Implementation of the proposed 2005 LRDP could disturb human remains, including those interred outside of formal cemeteries.

Significance: Potentially significant

LRDP Mitigation CULT-4A: The Campus shall implement LRDP Mitigations CULT-1A through CULT-1H to minimize the potential for disturbance or destruction of human remains in an archaeological context and to preserve them in place, if feasible.

LRDP Mitigation CULT-4B: The Campus shall provide a representative of the local Native American community an opportunity to monitor any excavation (including archaeological excavation) within the boundaries of a known Native American archaeological site.

LRDP Mitigation CULT-4C: In the event of a discovery on campus of human bone, suspected human bone, or a burial, the Campus shall ensure that all excavation in the vicinity halts immediately and the area of the find is protected until a qualified archaeologist determines whether the bone is human. If the qualified archaeologist determines the bone is human, or if a qualified archaeologist is not present, the Campus will notify the Santa Cruz County Coroner of the find and protect the find without further disturbance until the Coroner has made a finding relative to PRC 5097 procedures. If it is determined that the find is of Native American origin, the Campus will comply with the provisions of PRC § 5097.98 regarding identification and involvement of the Native American Most Likely Descendant (MLD).

LRDP Mitigation CULT-4D: If human remains cannot be left in place, the Campus shall ensure that the qualified archaeologist and the MLD are provided an opportunity to confer on archaeological treatment of human remains, and that appropriate studies, as identified through this consultation, are carried out. The Campus shall provide results of all such studies to the local Native American community, and shall provide an opportunity for

local Native American involvement in any interpretative reporting. As required by the provisions of the California Native American Graves Protection and Repatriation Act (NAGPRA), the Campus shall ensure that human remains and associated artifacts recovered from campus projects on state lands are repatriated to the appropriate local tribal group if requested, provided that the appropriate group can be identified through California NAGPRA procedures.

Residual Significance: Less than significant

Human remains have been found on the campus in the context of one prehistoric archaeological deposit. No historic burials or formal cemeteries have been identified on campus. Development that includes excavation and grading has the potential to uncover, displace, and destroy human remains. Avoidance of disturbance of archaeological sites may reduce the potential for such impacts. The implementation of LRDP Mitigation CULT-4A through -4D will ensure that human remains in archaeological and isolated contexts will be protected from destruction that might result from development, through identification, Native American consultation, preservation in place or recovery, respectful treatment and study, and appropriate disposition. The implementation of the identified measures would reduce the impact to a less-than-significant level.

LRDP Impact CULT-5: Development under the 2005 LRDP has the potential to disturb or destroy unique paleontological resources.

Significance: Potentially significant

LRDP Mitigation CULT-5A: During project planning, the Project Manager shall consult the most recent Campus Soils and Geology map to determine whether the proposed project is underlain by a formation that is known to be sensitive for paleontological resources.

LRDP Mitigation CULT-5B: If the project site is underlain by paleontologically sensitive formations, the Campus shall retain a qualified paleontologist to determine, through assessment of results of geotechnical investigations or site inspection, whether proposed excavation or grading has the potential to encounter the members of sensitive formations that are fossiliferous, and if so, to develop a paleontological monitoring and data recovery plan and implement it during the construction period as appropriate. In addition, the paleontologist shall conduct a construction crew education session regarding paleontological potential and significance, and of stop-work provisions in the event of a discovery,

LRDP Mitigation CULT-5C: In the event of a discovery of a paleontological resource on campus, work within 50 feet of the find shall halt until a qualified paleontologist has examined and assessed the find and, if the resource is determined to be a unique paleontological resource, the resource is recovered. The Campus

shall ensure that all finds are adequately documented, analyzed, and curated at an appropriate institution.

LRDP Mitigation CULT-5D: In the event that a proposed project would result in impacts to a unique paleontological resource, the project planning team shall work together to reduce impacts to the find through design and construction modifications, to the extent feasible.

Residual Significance: Less than significant

As defined in CEQA, when a paleontological resource meets the eligibility criteria of a “unique paleontological resource,” any disturbance to or removal of the resource would constitute a significant impact. Based on the records search conducted for this EIR, no paleontological resources have been recorded on the campus to date. Geologic formations underlying the main campus that are determined to have a high potential for yielding significant fossils include the Santa Margarita formation, which is present in some areas of the north campus, and Santa Cruz mudstone, which underlies the 2300 Delaware Avenue property at depth. The mitigations described above would ensure that project sites underlain by sensitive formations are assessed by a qualified paleontologist and that unique paleontological resources that might be present are identified and their scientific value is preserved through data recovery and documentation.

It is possible that additional sedimentary formations on campus could contain fossils, as discussed in preceding sections, but the lack of discoveries in these formations to date, despite extensive development in the areas where they are located, suggests that the potential to encounter fossils in these formations is low. Nonetheless, the mitigation measures above provide for assessment of additional formations, should future discoveries in the region or on campus reveal that additional formations are paleontologically sensitive. Implementation of these measures would reduce the potential impacts to unique paleontological resources to a less-than-significant level.

LRDP Impact CULT-6: Increased population on campus as a result of implementation of the 2005 LRDP could result in damage to the scientific and cultural value of unique geologic resources.

Significance: Potentially significant

LRDP Mitigation CULT 6: The Campus shall implement LRDP Mitigation BIO-8.

Residual Significance: Less than significant

The limestone caves on campus appear to qualify as unique geologic resources, because they are rare and scientifically valuable geological features, and because they shelter a group of rare and possibly unique species that are valued by the local scientific community. These caves lie within the Campus Natural Reserve (CNR), where they are protected, and where no development is proposed under the 2005 LRDP. Potential effects to biological resources in the caves are addressed in Section 4.4 (*Biological Resources*, Volume I of this EIR), and potential hydrological effects are discussed in Section 4.8 (*Hydrology and Water Quality*, Volume II of this EIR). However, continued incidental visitation of the caves could jeopardize their scientific value if uninformed visitors engage in activity, such as littering, use of camp

fires, graffiti or removal or cave elements, that would be deleterious to the scientific and cultural value of the caves. Although these activities are not new impacts of the proposed project, increases in population could increase the number of visitors. These activities could impair the appearance, biological functioning and scientific value of the caves. Under LRDP Mitigation BIO-8, the Campus will continue to limit activity in the vicinity of the caves in the CNR, and will post appropriate signs informing visitors of the values represented by the caves and informing visitors of prohibitions against, fire, littering or removal of materials. The Campus will also ensure that similar information, along with the results of scientific studies regarding the caves, are also included in other interpretive materials developed by the campus such as CNR literature and website postings. With the implementation of these measures, the impact would be less-than-significant.

Cumulative Impacts and Mitigation Measures

LRDP Impact CULT-7: Development under the 2005 LRDP could contribute to cumulative damage to and loss of the resource base of unique archaeological resources, historical resources (including archaeological sites and historic buildings and structures) and human remains in the Santa Cruz west side.

Significance: Potentially significant

LRDP Mitigation CULT-7: The Campus shall implement LRDP Mitigations CULT-1 through CULT-4.

Residual Significance: Less than significant

The cumulative context in which the cultural resources impacts of the 2005 LRDP are analyzed in this EIR consists of the development of the main campus and of the remaining undeveloped parcels located within the Santa Cruz west side (both upper and lower) by about 2020, as well as continuing growth throughout the Monterey Bay area. This analysis assumes that development of the Santa Cruz west side would be carried out according to existing City of Santa Cruz General Plan land use designations. Although the General Plan is currently being updated, it is assumed that, under a new General Plan, the undeveloped parcels in the west side of the City of Santa Cruz would be developed at similar intensities and densities as those described under the current General Plan.

Any disturbance of native soils carries the potential to result in impacts to archaeological resources. Development may also result in alterations to or demolition of historic buildings and structures. These impacts may be significant if a significant resource is disturbed or destroyed, particularly if the significant information represented by the resource is not adequately recovered. Development in the Santa Cruz region, over time, has resulted in some significant impacts to historical resources and unique archaeological resources because, in some cases, significant buildings have been substantially altered or demolished or archaeological sites destroyed without data recovery, due to past policies that did not adequately protect the resources.

However, it appears that campus development under the 1988 LRDP, and development in the Santa Cruz region, generally, under the current General Plan, has not resulted in a significant cumulative impact to cultural resources. The current Santa Cruz City and County General Plans provide for the identification and appropriate treatment of cultural resources in the region, and these provisions would be expected to reduce the potential for future impacts to the cultural resources base in the region to a less-than-significant level, except in rare cases. On the campus, the Cowell Ranch historic district was designated as an historic overlay in the 1988 LRDP and continues to be so designated in the proposed 2005 LRDP. The district has retained its overall historic character and continues to be eligible for listing on the CRHR. Further, Campus protocols under the 1988 LRDP resulted in the preservation of at least part of each discovered archaeological site, avoided disturbance of human remains, documented historic structures and buildings, and preserved historic buildings on site through adaptive reuse. In recent decades, the campus cultural resources mitigation program has proven effective in preventing or mitigating additional damage to unique archaeological resources, human remains, and historical resources.

The cultural resources protocols described in the mitigation measures above, which would be implemented under the 2005 LRDP, would also, except in rare and exceptional cases, reduce the potential for impacts to significant cultural resources to a less-than-significant level. The campus is in the process of formally nominating the Cowell Ranch Historic District to the National Register of Historic Places, and is preparing a historic resources management plan for the district, with the goal of preserving and interpreting the district's historic character, and these measures would further protect the district from future significant impacts. The mitigations proposed above would, except in rare, exceptional cases, reduce potential impacts upon campus cultural resources to a less-than-significant level, thereby minimizing the campus contribution to the destruction of the cultural resources database of the west side and the region. Similarly, the protocols in place in the Santa Cruz General Plan would also be expected to minimize significant impact to the cultural resources base. It is concluded that the cumulative impact would be less than significant, and the campus' contribution to the less-than-significant impact would not be cumulatively considerable.

LRDP Impact CULT-8: Development under the 2005 LRDP would not contribute to cumulative damage to and loss of the resource base of unique paleontological resources in Santa Cruz County.

Significance: Less than significant

LRDP Mitigation: Mitigation not required

Residual Significance: Not applicable

The geographic area for the analysis of cumulative impacts to paleontological resources is Santa Cruz County.

No paleontological resources of any kind have been found on the UC Santa Cruz campus to date, despite 40 years of development. Development under the proposed 2005 LRDP has the potential to affect formations that are considered to be paleontologically sensitive, but the mitigation measures proposed are

expected to reduce the impact on paleontological resources to a less-than-significant level should significant resources be discovered.

Any attempt to identify impacts to paleontological resources that might occur as a result of cumulative development within the county would involve undue speculation. However, the County and the incorporated cities within the county all implement policies requiring projects that might adversely affect paleontological resources to be managed to avoid damage to those resources, and that the resources be protected when it is feasible to do so. In addition, CEQA and the CEQA Guidelines require lead agencies to assess the potential impacts that the development projects they approve might have on paleontological resources, and that appropriate measures to mitigate the significant adverse effects to such resources be implemented when it is feasible to do so. It is possible, nonetheless, that damage to such resources that cannot be avoided or adequately mitigated will occur as a result of cumulative development within the county. Any attempt to assess the location, scope, or magnitude of such damage would entail speculation and cannot, therefore, be meaningfully evaluated in this EIR. Implementation of the proposed 2005 LRDP, as mitigated, will not itself cause or contribute to a cumulatively considerable effect on paleontological resources.

LRDP Impact CULT-9: Development under the 2005 LRDP would not contribute to cumulative damage to and loss of the resource base of unique geological resources in Santa Cruz County.

Significance: Less than significant

LRDP Mitigation: Mitigation not required

Residual Significance: Not applicable

The geographic area for the analysis of cumulative impacts to unique geological resources is Santa Cruz County. Caves in the karst topography in the CNR on the UC Santa Cruz campus have been determined to be unique geological resources. Development under the proposed 2005 LRDP has the potential to affect these resources as the result of incidental damage related to increased visitation. LRDP Mitigation CULT-6, above, would reduce this potential impact to a less-than-significant level. There are similar formations elsewhere in the Santa Cruz Region, and these are similarly acknowledged to be significant resources in the Santa Cruz County General Plan. These features are located in areas that generally are not susceptible to development, but would be expected to have increased visitation over time, as regional populations grow. However, because the locations of these caves are not widely known, and because continuing research is recovering the important values associated with these caves, it is not anticipated that the potential increase in visitation, regionally, would result in a cumulatively significant impact to unique geological resources. Development under the proposed 2005 LRDP would not cause or contribute to a cumulatively significant impact to unique geological resources.

4.5.3 References

Addicott, W O. 1966. *Late Pleistocene marine paleoecology and zoogeography in central California*. U.S. Geological Survey Prof. Paper 523-C: 1-21.

- ARG. (Architectural Resources Group). 2005a. List of historic structures and historic context statement for UC Santa Cruz. Draft on file UC Santa Cruz Physical Planning and Construction Office.
- ARG 2005b. *Cowell Ranch, Revised Draft Historic District Evaluation, University of California, Santa Cruz, Santa Cruz, California*, in progress. Draft on file at UC Santa Cruz Physical Planning and Construction Office.
- Barnes, L. G. 1971. Imagtaria (Mammalia: Otariidae) from the late Miocene Santa Margarita Formation near Santa Cruz, California. *Paleobios*, No. 11: 1-10.
- Brabb, E. E. 1989. *Geologic Map of Santa Cruz County*. U.S. Geological Survey, Miscellaneous Investigations Series, Map I-905.
- Branner, J. C., J. F. Newsome and Ralph Arnold. 1909. *Description of the Santa Cruz quadrangle, California*. U.S. Geological Survey, Geol. Atlas, Folio 163: 1-11.
- Carter, Luther J. 1971. University of California at Santa Cruz: New Deal for Undergraduates. *Science*, Vol. 171, No. 3967. January 15, 1971:153-157.
- Carter, Luther J. 1980. Rethinking the Dream at Santa Cruz. *Science*, Vol. 207, No. 4427. January 11, 1980:157-158, 160, 162.
- Cartier, R. 1993. *The Scotts Valley Site: CA-SCR-177*. Santa Cruz Archaeological Society, Santa Cruz, CA.
- Clark, J. C. 1981. *Stratigraphy, Paleontology, and Geology of the central Santa Cruz Mountains, California Coast Ranges*. U.S. Geological Survey, Prof. Paper 1168: 1-51.
- Cummings, J. C., R. M. Touring, and E. E. Brabb. 1962. *Geology of northern Santa Cruz Mountains, California*. California Division Mines and Geology, Bulletin 181: 179-220.
- Domning, D. P. 1978. *Sirenian Evolution in the North Pacific Ocean*. University of California Publications Geological Sciences, Vol. 118: 1-176.
- Edwards, R. and E. Kimbro. 1986. *Mission Fields in the Great Meadow, University of California, Santa Cruz*. On file, Environmental Assessment Group, University of California at Santa Cruz.
- Edwards, R., P. Podzorski, J. Pryor and J. Toenjjes. 1978. *A Preliminary Archaeological Reconnaissance of the Lands of the University of California at Santa Cruz*. On file, Environmental Assessment Group, University of California at Santa Cruz.
- Eselius, D. 2003. Letter to UC Santa Cruz Environmental Group regarding "UCSC Proposed Humanities and Social Sciences Facility Environmental Impact Assessment." On file at Pacific Legacy, Inc., Santa Cruz. April 25, 2003.
- Fischer, John. 1968. The Easy Chair: A Different Kind of Campus, The Experiment at Santa Cruz. *Harper's Magazine*, Vol. 239, No. 1430. July 1968:12-83.

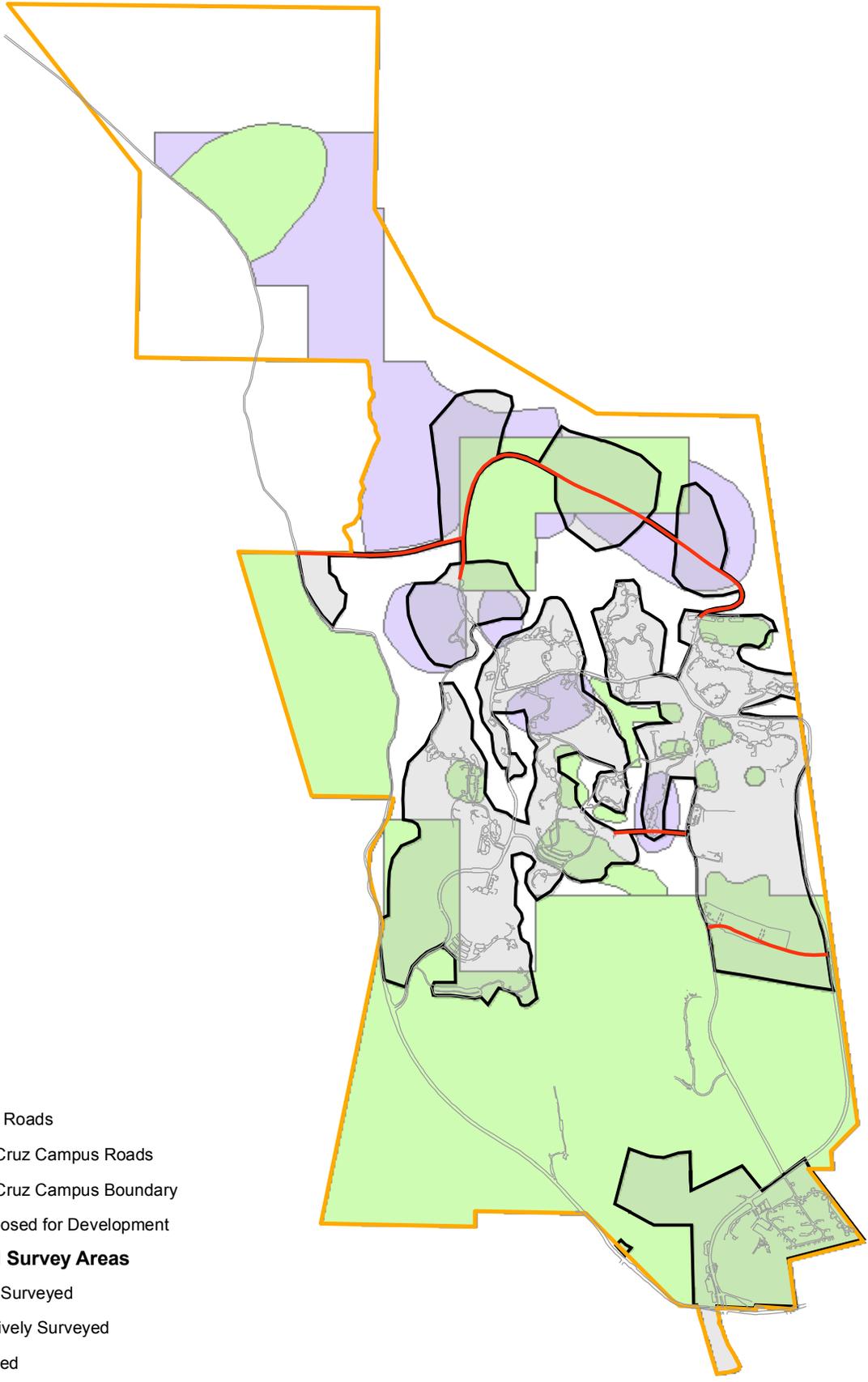
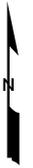
- Fitzgerald, R.T. and A. Ruby. 1997. Archaeological Test Excavations at CA-SCR-117, the Davenport Landing Site. Report prepared for U.S. Abalone, Inc. Davenport, CA. Report on file at the NWIC at Sonoma State University (California).
- Garret, James L. 1967. The Small College on the Big Campus: Santa Cruz after One Year. *Saturday Review*, Vol. 50, Jan. 21, 1967:67 and 79.
- Hoover, M. B., H. E. Rensch, E. G. Rensch and W. N. Abeloe. 1966. *Historic Spots in California*. Third Edition. Stanford University Press. Stanford, CA.
- Hylkema, Mark G. 1991. Prehistoric Native American Adaptations along the Central California Coast of San Mateo and Santa Cruz Counties. Masters Thesis, San Jose State University
- Jackson, R. H. 1983. Disease and Demographic Patterns at Santa Cruz Mission, Alta California. *Journal of California and Great Basin Anthropology* 5(1, 2):33-57.
- Jennings, C. W. and Burnett, J. L. 1961. *Geologic map of California*. Olaf P. Jenkins edition, San Francisco sheet: California Division of Mines, scale 1:250,000.
- Jones, T. L. 1991. Marine-Resource Value and the Priority of Coastal Settlement: A California Perspective. *American Antiquity* 56:419-443.
- Kellogg, Remington. 1927. *Fossil pinnipeds from California*. Carnegie Institute Washington, Publ. 346: 25-37.
- King, C. 1994. Central Ohlone Ethnohistory. In *The Ohlone Past and Present: Native Americans of the San Francisco Bay Region*, edited by L. J. Bean, pp. 203-228. Ballena Press, Menlo Park, CA.
- Levy, Richard. 1978. Costanoan. In *Handbook of the Indians of North American, Volume 8: California*: pp.485-495. Edited by R.F. Heizer. Smithsonian Institution. Washington, D.C.
- Merriam, J. C. 1921. *An outline of progress in Paleontological research on the Pacific Coast*. University California Publications Geologic Sciences, Vol. 12: 237-266.
- Milliken, R. 1985. The Historic Indians of Santa Cruz Mission. In *Como la Sombra Huye la Hora: Restoration Research, Santa Cruz Mission Adobe, Santa Cruz Mission State Historic Parks, 36-48*. Report submitted to Cultural Heritage Section, California Department of Parks and Recreation, Sacramento.
- Milliken, R. 1988. Ethnographic Context. In *Archaeological Investigations at Elkhorn Slough: CA-MNT-229, a Middle Period Site on the Central California Coast*. S. Dietz, W. Hildebrandt and T. Jones. Papers in Northern California Anthropology, No. 3. Northern California Anthropological Group. Berkeley.
- Milliken, Randall. 1994. The Costanoan-Yokuts Language Boundary in the Contact Period. In *The Ohlone: Past and Present, Native Americans of the San Francisco Bay Region*, pp. 165-181. Ballena Press Anthropological Papers No. 42. Edited by L. J. Bean. Ballena Press, Menlo Park, CA.

- Mitchell, E. D., Jr. and C. A. Repenning. 1963. *The chronologic and stratigraphic range of desmostylians*. Los Angeles County Museum Science Contribution, No. 78: 1-20.
- Moratto, M. J. 1984. *California Archaeology*. Academic Press, Orlando, FL.
- Morgan, Sally S. 2005. Memo of report of archaeological survey of 2300 Delaware Property. August 15, 2005. On file Physical Planning and Construction, UC Santa Cruz.
- Nolan, Zinn, and Associates. 2005. Geology Study – University of California Santa Cruz. June.
- Pacific Legacy. 2005. *Baseline Inventory Report for the UC Santa Cruz Campus*. Pacific Legacy, Incorporated. Santa Cruz, CA. Manuscript on file at the UC Santa Cruz Office of Physical Planning & Construction.
- Pastier, John. 1979. U.C. Santa Cruz: The Architecture. *AIA Journal* (August 1979).
- Pierce, M. 1990. *San Jose and its Cathedral*. Western Tanager Press. Santa Cruz, CA.
- Piwarzyk, R. W. 1994. *The Limekilns of the Pogonip*. Lime Light. Parks and Recreation Department. Santa Cruz, CA.
- Reinhart, P. W. 1943. *Mesozoic and Cenozoic Arcidae from the Pacific slope of North America*. Geol. Soc. America, Special Paper 47: 1-117.
- Reinhart, R. W. 1959. A review of the Sirenia and Desmostylia. University California Pubs. *Geological Sciences*, Vol. 36: 1-146.
- Repenning, C. A. and R. H. Tedford, 1977. *Otariid seals of the Neogene*. U.S. Geological Survey Prof. Paper 992: 1-93.
- Rodrigues, P., G. Sanchez, and S. Dietz. 1992. *Historic Cowell Ranch Cultural Landscape Report*. On file, Environmental Assessment Group, University of California at Santa Cruz.
- Santa Cruz County. 2005. Santa Cruz County Data Catalog; Santa Cruz County Geologic Paleontologic Dataset. <http://gis.co.santa-cruz.ca.us/>. Accessed September 19, 2005.
- Savage, D. E. and L. G. Barnes. 1972. Miocene vertebrate geochronology of the West Coast of North America. In *The proceedings of the Pacific Coast Miocene biostratigraphic symposium*. Soc. Econ. Paleontologists and Mineralogists, Pacific Section, Bakersfield Calif.: 124-145.
- Schenk, H. G. 1936. *Nuculid bivalves of the genus Acila*. Geol. Soc. America Spec. Paper 4: 1-149.
- Shibley, W.F. 1978. Native Languages of California. In *Handbook of North American Indians*, edited by W. Sturtevant, Volume 8 (California), pp. 80–90. Smithsonian Institution, Washington, D.C.
- Society of Vertebrate Paleontologists, 1994. *Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures*. October.
- State Historical Building Safety Board. 2001. Californian historical Building Code CCR Title 24, Part 8.

UCMP (University of California Museum of Paleontology) 2005. web site.

<http://www.ucmp.berkeley.edu/collections/vertebrate.html> . Accessed September 19, 2005.

Weeks, Kay D. and Anne E. Grimmer. 1995. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.



Legend

-  Envisioned Roads
-  UC Santa Cruz Campus Roads
-  UC Santa Cruz Campus Boundary
-  Areas Proposed for Development

Archaeological Survey Areas

-  Intensively Surveyed
-  Non-intensively Surveyed
-  Not Surveyed

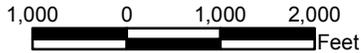
ARCHAEOLOGICAL SURVEY AREAS

October 2005
28649607

UC Santa Cruz LRDP EIR
Santa Cruz, California



FIGURE 4.5-1



URS Corporation L:\Projects\UC_Santa_Cruz_28649607\MXD\Current Working Documents\100705\Figure_4_5-1_Archaeological_Survey_Areas.mxd Date/Time: 10/8/2005 3:39:02 PM Name: dhwright0