

3.8 Cultural Resources

The cultural resources encountered in the SPSP Restoration Project Area are a result of human behaviors in, and adaptations to, the environment. To better understand the origin and implications of these resources, an environmental and cultural context must be established. The following paragraphs describe the natural setting of the Project Area, and summarize cultural developments through the prehistoric, ethnographic, and historic past. The Regional Setting addresses South San Francisco Bay as a whole, while the Project Setting addresses the SBSP Restoration Project Area specifically and individual cultural resources identified during background research.

3.8.1 Physical Setting

The South Bay, including the SBSP Restoration Project Area, is located in portions of San Mateo, Santa Clara, and Alameda Counties, and comprises approximately 50,000 acres of bayshore mudflats and marshes, as well as low hills and valleys ranging from sea level to approximately 25 ft (8 m) above mean sea level in elevation. It is depicted on five USGS 7.5' topographical quadrangle maps: Newark, Redwood Point, Palo Alto, Milpitas, and Mountain View. Vegetation within the Project Area consists of marsh species, including cordgrasses, pickleweeds, and other salt-tolerant plant species. The soils underlying the South Bay consist of alluvial and marine unconsolidated and semi-consolidated deposits (Jennings and others 1977).

Methodology

Background research, in the form of a record search performed by the Northwest Information Center (NWIC) of the California Historical Research Information System in Rohnert Park, was conducted in July 2006. The record search covered the Area of Potential Effect (APE) for the SBSP Restoration Project as well as the APE for the first Interim Feasibility Study (Alviso Ponds and Santa Clara County) of the Shoreline Study (see Figure 1-5b in Chapter 1, Introduction). Information for the Shoreline Study is included herein because it includes a portion of the SBSP Restoration Project – the Alviso Pond complex – and surrounding lands. As such, the setting information for the first Interim Feasibility Study is useful in understanding the cultural resources context for the SBSP Restoration Project. In addition, an archaeologist visited the SBSP Restoration Project Area in May 2006, and an architectural historian visited the Project Area in July 2006. The predominant historic use of the landscape for salt production could be seen in the form of piers, pilings, levees, berms, irrigation ditches, and Archimedes Screws. Remnants of historic dwelling areas, such as the pilings at the Town of Drawbridge and the settlement at Alviso, are also present. More recent structures include the Union Pacific Railroad, boardwalks and high tension lines and towers used by Pacific Gas and Electric (PG&E).

No Project-specific archaeological field inventories were performed as part of this effort. The purpose of the NWIC search was to determine whether there were previously recorded cultural resources and if archaeological surveys had been previously conducted within the APE for the SBSP Restoration Project. In addition, the NWIC search for the first Interim Feasibility Study of the Shoreline Study provides the context for cultural resources in the South Bay, including the SBSP Restoration Project Area.

The NWIC search included examination of information resources such as:

- Office of Historic Preservation Historic Property Directory;
- California Inventory (1996);
- California Historic Landmarks (1996);
- National Register of Historic Places (2000 and updates);
- California Points of Historical Interest (1992 and updates); and
- Historic Maps.

The earliest historic maps and records cited above depict the South San Francisco Bay shoreline as a relatively continuous series of salt marshes. A considerable quantity of early development followed shortly, in the form of roads, buildings, various salt works, and townships beginning in the mid-19th century.

The NWIC reported that there are 22 known cultural resource sites within the SBSP Restoration Project boundary (Table 3.8-1). The NWIC also had records of 23 archaeological surveys (Table 3.8-2) that were conducted within the SBSP Restoration Project APE. The results show that approximately 50 percent of the Project Area was previously inventoried for cultural resources. A more detailed description of the various sites may be found in the discussion of the individual pond complexes below.

The NWIC reported that there are 49 known cultural resources sites within the APE for the first Interim Feasibility Study of the Shoreline Study (Table 3.8-1). The NWIC also had records of 259 archaeological surveys (Table 3.8-2) that were conducted within the Shoreline Study First Interim Feasibility Study APE. Many of these inventories focused on the area east and south of the historic town of Alviso, as well as Alviso itself.

Table 3.8-1 Known Cultural Resources Within the SBSP Restoration Project APE and the Shoreline Study First Interim Feasibility Study APE

APE	NUMBER OF KNOWN RESOURCES		
	Prehistoric	Historic	Total
Eden Landing	2	17	19
Alviso	1	2	3
Ravenswood	0	0	0
Total within the SBSP Restoration Project APE	3	19	22
Shoreline Study First Interim Feasibility Study APE	24 ¹	29	51
Note: ¹ Two sites include both prehistoric and historic resources Source: EDAW 2006			

Table 3.8-2 Cultural Resources Inventories

APE	NUMBER OF INVENTORIES
Eden Landing	11
Alviso	8
Ravenswood	4
Total within the SBSP Restoration Project APE	23
Shoreline Study First Interim Feasibility Study APE	259 ¹
Note: ¹ Many of these inventories focused on the area east and south of the historic town of Alviso, as well as Alviso itself. <i>Source: EDAW 2006</i>	

Regional Setting

Changing climatic patterns affected the variety and availability of natural resources throughout California. These changes led to shifts in subsistence and settlement patterns among the Native American inhabitants and contributed, at least in part, to regional cultural differentiation seen in the archaeological record.

By mid-prehistoric times, the Ohlone peoples resided in and near the South Bay (Moratto 1984); Coast Miwok could be found to the north. There were an estimated 7,000 to 10,000 Native Americans living near the Bay by the time of the first major European contact in 1770 (Kroeber 1925, Levy 1978). Archaeological remains related to the prehistoric occupation of the area are evidenced by hundreds of shellmounds and occupation sites that lined the shores of the San Francisco, San Pablo and Suisun bays (Nelson 1909, Gifford 1916). The locations of these shellmounds approximately follow the current shoreline, but also line major tributaries feeding into the Bay.

During the last major ice age, San Francisco Bay was well above sea level as the site of converging river valleys that drained through the Golden Gate and towards the continental shelf (Bickel 1978, Howard 1979). Glacial melt began approximately 15,000 years ago and the Bay began filling around 10,000 to 11,000 years before present (B.P.). Sea levels rose rapidly until approximately 6,000 B.P. and have continued to rise more slowly since then (see Milliman and Emery 1968, Emery 1969, and Bloom 1971 as cited in Bickel 1978). The more gradual rise in sea level since 6,000 B.P. was marked by minor up and down oscillations until reaching the present sea level (see Lajoie 1972, Atwater and Hedel 1976, and Atwater and others 1977 as cited in Bickel 1978). The slower rise in sea levels allowed sediment accumulation in some areas, which promoted the growth of marshes and increased potentially habitable areas (Lightfoot 1997). Many of the shellmounds known in the Bay have been found in close relationship with marshy areas. A number of known shellmounds stand partially below current sea level, indicating that their accumulations began during lower water level occurrences in the past (Nelson 1909, Bickel 1978). Given the long duration both of the Bay water rise and human occupation of the shore zone, it is likely that earlier use and occupation sites, such as shellmounds, are below current sea levels. The climate during the prehistoric occupation is little different from the modern day. Winter temperatures average 45 to 55° F; summer averages are 55 to 65° F near the Bay with higher temperatures inland. Precipitation varies from 50 to 100 centimeters per year (Moratto 1984).

The configuration of the Bay shoreline has also changed in the last hundred years or so due to the deposition of gold mining sediments flowing downstream from hydraulic mining locations, agriculture, the narrowing of river channels through levee construction, construction of salt ponds, development of “made land,” and more modern construction and fill near the shore. It is estimated that 875 million cubic meters of sediment were deposited in San Francisco Bay from 1850 to 1914, as a result of mining in the Sierra Nevada foothills (Moratto 1984, p. 219).

Prehistorically, the dominant natural vegetative communities in the region were a mosaic including saltmarsh, redwood forest, grassland, and mixed-evergreen woodland. Each sustained an array of animals including deer, elk, various waterfowl, sea mammals, shellfish, and a wide variety of fish species.

Edible plants (or their products) found in the region included species of oak, buckeye, California laurel, hazelnuts, dock, gray or foothill pine, holly-leaf cherry, blackberries, elderberries, strawberries, manzanita berries, gooseberries, madrone berries, wild grapes, toyon berries, cattail roots, chuchupate, amole, wild carrots, and clover shoots. Tule was harvested to make numerous objects including baskets, boats, and structures.

Faunal species that frequented the prehistoric prairie grasslands and tule marshes included black-tailed deer, pronghorn, grizzly bear, mountain lion, sea lions, and whales. Other mammals eaten included skunk, raccoon, brush rabbit, cottontail, jackrabbit, squirrels, woodrat, and small rodents. Migratory waterfowl such as Canada geese, snow goose, white-fronted goose, American widgeon, pintail, mallard, green-winged teal, shoveler, and American coot were hunted. Other birds eaten included mourning dove, robin, California Quail, and hawks. In the waterways, salmon, steelhead trout, lamprey, and sturgeon seasonally joined other fish species indigenous to the area, as well as mollusks like mussels, abalone, Olive snails, and others (Moratto 1984).

Prehistoric Setting

The Central California Taxonomic System (CCTS) was developed as a framework for comparing different archaeological sites in central California (Lillard, and others 1939; Heizer 1949). The earliest versions of the CCTS emphasized the concept of cultural Horizons. However, the Horizon concept was considered too broad and later was refined with the addition of cultural Patterns (Bennyhoff 1968) and further subdivided later yet into Phases or Aspects. A number of refinements added more subdivisions (Willy and Phillips 1958), and broke the system up by geographical as well as temporal variation (Bennyhoff 1977).

In the early 1970s, Fredrickson (1973, 1974) proposed a sequence of cultural manifestations or patterns for the central districts of the North Coast Ranges, placing them in a framework of cultural periods he believed were applicable to California as a whole. Fredrickson’s idea of cultural patterns was distinct from the concepts of previous researchers (Beardsley 1954; Meighan 1955) who tended to emphasize assemblages of material goods as the basis for their classifications. Fredrickson took a much broader view of archaeological material culture and defined the term pattern as “...an adaptive mode shared in general outline by a number of analytically separable cultures over an appreciable period of time within

an appreciable geographic space” (Fredrickson 1973). These different cultural modes could be characterized by:

- Similar technological skills and devices (specific cultural items);
- Similar economic modes (production, distribution, consumption), including especially participation in trade networks and practices surrounding wealth (often inferential); and
- Similar mortuary and ceremonial practices.

Fredrickson also recognized that the economic/cultural component of each pattern could be manifested in neighboring geographic regions according to the presence of stylistically different artifact assemblages. He introduced the term “aspect” as a cultural subset of the pattern, defining it as a set of historically related technological and stylistic cultural assemblages. Fredrickson argued that these temporal periods should be kept separate from the dating and definition of particular patterns given the coexistence of more than one cultural pattern operating at any given point in time in California prehistory (Fredrickson 1974). This integrative framework provides the means for discussing temporally equivalent cultural patterns across a broad geographic space.

The earliest well-documented entry and spread of humans into California occurred at the beginning of the Paleo-Indian Period (10,000 to 6,000 Before Christ [B.C.]). Social units are thought to have been small and highly mobile. Known sites have been identified in the contexts of ancient pluvial lake shores and coastlines evidenced by such characteristic hunting implements as fluted projectile points and chipped stone crescent forms. Prehistoric adaptations over the ensuing centuries have been identified in the archaeological record by numerous researchers working in the area since the early 1900s, as summarized by Fredrickson (1974) and Moratto (1984).

Few archaeological sites have been found in the Bay Area that date to the Paleo-Indian or the Lower Archaic (6,000 to 3,000 B.C.) time periods; however, archaeologists have recovered a great deal of data from sites occupied by the Middle Archaic period. The lack of sites from earlier periods may be because of high sedimentation rates, leaving the earliest sites deeply buried and inaccessible. During the Middle Archaic Period (3,000 to 500 B.C.), the broad regional patterns of foraging subsistence strategies gave way to more intensive procurement practices. Subsistence economies were more diversified, possibly including the introduction of acorn processing technology, as well as use of the dart and atlatl for hunting. Populations were growing and occupying more diverse settings. Permanent villages that were occupied throughout the year were established, primarily along major waterways. The onset of status distinctions and other indicators of growing sociopolitical complexity mark the Upper Archaic Period (500 B.C. to Anno Domini [A.D.] 700). Exchange systems become more complex and formalized and evidence of regular, sustained trade between groups was seen for the first time.

Several technological and social changes characterized the Emergent Period (A.D. 700 to 1800). The bow and arrow were introduced, ultimately replacing the dart and atlatl. Territorial boundaries between groups became well established. It became increasingly common that distinctions in an individual’s social status could be linked to acquired wealth. Exchange of goods between groups became more regularized with more goods, including raw materials, entering into the exchange networks. In the latter

portion of this period (A.D.1500 to 1800), exchange relations became highly regularized and sophisticated. The clamshell disk bead became a monetary unit for exchange, and increasing quantities of goods moved greater distances and specialists arose to govern various aspects of production and exchange.

The Middle and Upper Archaic and Emergent Periods are further broken down under the Central California Taxonomic System. These three time periods are well represented in archaeological assemblages in the general vicinity of the Project Area. The assemblages are discussed in detail in Bennyhoff and Fredrickson (1969) and Moratto (1984) and summarized here.

The Windmill Pattern (3,000 to 500 B.C.) peoples placed an increased emphasis on acorn use as well as a continuation of hunting and fishing activities. Ground and polished charmstones, twined basketry, baked-clay artifacts and worked shell and bone were hallmarks of Windmill culture. Widely ranging trade patterns brought goods in from the Coast Ranges and trans-Sierran sources as well as closer trading partners. Distinctive burial practices (ventrally extended, oriented westward) identified with the Windmill Pattern also appeared in the Sierra foothills, indicating possible seasonal migration into the Sierra. Perforated charmstones were associated with some burials, and manos and metates and small mortars were used, but rare.

The Berkeley Pattern (200 B.C. to A.D. 700) exhibited an increase in the use of acorns as a food source than was seen previously in the archaeological record. Distinctive stone and shell artifacts differentiated it from earlier or later cultural expressions. Burials were predominantly placed in a tightly flexed position, and frequently included red ochre. Minimally shaped mortars and pestles were much more prevalent than manos and metates and non-stemmed projectile points became more common. Dating of the Berkeley Pattern varies across central California; in the Stockton region, the Windmill Pattern continued longer than in other areas, gradually giving way to the changes that marked the Berkeley Pattern (Bennyhoff 1982). These people combined Windmill and Berkeley pattern traits, as seen in mortuary practices and the stone tool industry.

The Augustine Pattern (A.D. 700 to 1800) reflected increasing populations resulting from more intensive food procurement strategies, as well as a marked change in burial practices and increased trade activities. Intensive fishing, hunting and gathering, complex exchange systems and a wider variety in mortuary patterns were all hallmarks of this period. Mortars and pestles were more carefully shaped; bow and arrow technology was present. Fishing implements became more common, trade increased and cremation was used for some higher status individuals.

Previous Research in the Region

Bay Area archaeological investigations have occurred in three major waves (Lightfoot 1997). The first, early in the 20th century, focused on examination of the most visible prehistoric site type; shellmounds, sometimes hundreds of feet in diameter, that lined the bayshore, as well as large earthen mounds found near stream outlets and banks running inland. Early archaeologists assumed that the shellmounds were the remains of large Native American villages that subsisted solely on bay and estuary resources. The second wave of investigations took place after World War II, when mounds and other sites were

investigated by archaeologists working through various local universities, particularly U.C. Berkeley, San Jose State, and Stanford. By this period, research questions being asked had broadened to a wider interpretation of the region's prehistory and the connection to different geographic areas. In the last 30 years or so, the third push in archaeological exploration has been largely the result of compliance with new cultural resources regulations. The most recent research has been able to take advantage of new technology and paradigms that have evolved over the course of the 20th century.

Thoughts regarding the development and use of these shellmounds have changed as investigations have expanded. Nelson (1909) regarded the Bay Area as an archaeological unit and recorded 425 shell mounds along San Francisco Bay, San Pablo Bay and the Carquinez Strait, and along the East Bay shoreline, as well as numerous earthen mounds up and down the various drainages. He noted that, even by then, there were no undisturbed mound sites left as they were being destroyed by agriculture and urban development, or were being mined for fertilizer. Gifford (1916) analyzed materials from 11 of the mound sites and concluded that they were created by refuse from village sites that had accumulated over hundreds of thousands of years.

Schenck (1926) assumed that the principal use of the shellmounds was for occupation rather than for mortuary complexes. Gifford (1940) suggested that the Bay be separated into two areas, northern and southern, based on preferences for cremation or inhumation of burials. These analyses were focused more on the bayshore zone, with little consideration of inland sites as contributing cultural elements. There was an implicit separation being made by early archaeologists based on perceived differences in subsistence methods (Bickel 1981).

As the century progressed, questions arose regarding the duration of occupation of the mounds and the degree to which populations could be sustained on shellfish and estuarine resources (Lightfoot 1997). Recent archaeology including exploration of the deepest levels of the shellmounds, more detailed analysis of mound constituents, identification of dozens of sites unassociated with mounds, and development of a more accurate chronology and assessment of occupation in the Bay region have led to a more detailed picture of the true complexity of prehistoric lifeways in the Bay. The rich and abundant artifact collections recovered from sites on and near the bayshore demonstrate the affluence of Native American communities living there. Shells and shell beads extracted from the bay region were exchanged for exotic raw materials obtained from as far as the Napa Valley and the eastern Sierra Nevada, such as obsidian, quartz crystals, schist, chert, shell, cinnabar, ocher, and other materials, clearly indicative of an extensive trading network (Hope and others 1996).

The current body of archaeological evidence indicates that the mounds served multiple purposes as residential places, ceremonial locations, and burial sites with many diverse and complex aspects. Other prehistoric site types recorded in the Project region include lithic scatters, quarries, bedrock mortars or other milling sites, petroglyphs, and isolated burial sites (Basin Research Associates 2004). Together these sites form part of a larger pattern of subsistence and interaction in prehistoric San Francisco Bay that is being explored in an ever-expanding series of investigations in the Bay Area.

Ethnographic Setting

The SBSP Restoration Project Area and its vicinity were most recently occupied by Costanoan Indians, members of the Penutian linguistic family. The word “Costanoan” was derived from a Spanish word meaning coast people or coastal dwellers, who occupied the area roughly from Carquinez Strait and the northern tip of the San Francisco Peninsula to the region south of Monterey Bay and east to the Diablo Range (Basin Research Associates 2004, Levy 1978). The Costanoans, also known as the Ohlone, entered the Bay Area approximately 1,500 years ago, coming in from the Delta region and displacing earlier Hokan speakers living there. Archaeologically, this coincides with the Lower Emergent period. Linguistic and archaeological data seem to suggest that Plains Miwok bands held the northern San Joaquin Valley area until some time during the Late Horizon (Wallace 1978). Migration of the Monache caused tribes on the upper portions of the San Joaquin River to spread northwards along the valley floor, resulting in Yokuts displacement of the Costanoans, pushing them westward (Kroeber 1925, 1959).

Spanish expeditions in the 18th century encountered Costanoan tribes all along the coastline. The missionization of Coastanoans was disastrous; by 1832, the population had been reduced by approximately 80 percent due to changes in lifestyle and diseases resulting from contact and conflict with Europeans.

The following section was excerpted from Rosenthal (2001):

Several sources describe the lifeways, subsistence patterns, material culture, and belief systems of the native peoples who once lived along the edges of the San Francisco Bay, including Kroeber (1925), Levy (1978), Harrington (1942), Margolin (1978), Milliken (1995, 1997), and Powers (1877).

At the time of European contact, the Eden Landing Project site was within the territory of the Yrgin, a group of 300 to 400 people who held a portion of the East Bay plain in the vicinity of Hayward and San Leandro, east of the interior Diablo Ranges, encompassing the entire San Lorenzo Creek watershed. There is some confusion about whether or not the Yrgin were one of several linguistically-related groups known as the Ohlone, which occupied the bayshore to the south, or were part of the Bay Miwok language family which controlled the northern portion of the bay (Milliken 1995). The Yrgin and their neighbors were organized as independent tribelets; each had one to five semi-permanent villages and numerous temporary camping spots within a territory, some six to ten miles in diameter (Levy 1978, Milliken 1995). According to Levy (1978), territorial boundaries among the Ohlone and Bay Miwok were firmly fixed.

Positioned on the edge of the bay and incorporating an extensive complex of marshes, sloughs, and mud flats, the Eden Landing Project site probably served an important role in the economy of the local Ohlone. Waterfowl and small schooling fish would have been available in the sloughs and marshes, while bayward mudflats probably served as important localities for gathering shellfish. Tules, sedges, and other marsh plants which grew along the fresh and brackish-water streams and sloughs were probably used for house construction, basketry material and for a variety of other purposes (Hope and others 1996). Heizer (1974) suggested that the region was also important to the Ohlone as a place for collecting rock salt which formed as the natural tidal ponds evaporated in

the spring and summer. Salt was not only used by the Ohlone for flavoring foods, but also served as an important commodity for exchange with interior peoples.

Among the better documented Ohlone-speaking groups, the principle village was known to be the home of the tribelet's chief, who attained his or her position through patrilineal inheritance. Typically, the office was passed father to son, but when no male heir existed, the position was given to a man's sister or daughter (Levy 1978). Accession to chief typically required approval of the entire community. Acting as the leader of a council of elders, it was the Chief's responsibility to provide for visitors and the impoverished, direct ceremonial activities, and to arrange hunting, fishing, gathering, and warfare expeditions (Levy 1978).

The Ohlone were organized as clans, divided into deer and bear moieties. Households consisted of patrilineally extended families ranging from 10 to 15 members. The most common type of house described ethnographically was a dome-shaped structure constructed of willow poles and thatched with tule, grasses, ferns, or wild alfalfa (Kroeber 1925, Levy 1978). Tule was also employed in making clothing and to construct the balsas used to cross San Francisco Bay and maneuver among the marshes and streams surrounding the bay. The balsas were propelled by a double-bladed paddle and were used as transportation and for hunting waterfowl and perhaps sea mammals. Sinew-backed bows were made by the Ohlone, and used with arrows tipped by either stone or bone points. Nets were employed to hunt a variety of ducks, quail, rabbits, and, along with basketry traps, to capture the small schooling fish common to the bay-estuary (Kroeber 1925, Levy 1978).

Like most California groups, acorns were probably an important part of the Ohlone diet, as were numerous other nut and seed crops which occur on the bay plain and surrounding foothills and canyons. Seasonal burning of the grassland helped to promote the growth of annual seeds and forbs and increased the grazing area for deer, elk, and pronghorn. These large animals were hunted communally or in small groups. Waterfowl were an important part of the diet, often attracted by the use of tule or feather-clad decoys.

Ananian (1985) adds that, while the Ohlone houses were more insubstantial structures, their sweat houses would have been more permanent, had timbered sides, and were semi-subterranean.

The Yrgin controlled the region including the Eden Landing pond complex and points east; to their south were the Tuibun, Alson, Tamien, Puichon, and Lamchin, controlling territories in progression around the southern edge of the Bay and within the sphere of the SBSP Restoration Project Area and its vicinity. In 1770, the Bay region consisted of assorted tribal territories populated by groups of 200 to 400 people each; by 1810 the tribal lands were nearly empty, thanks to the combined effects of partial removal to missions, disease, and loss of traditional gathering areas (more detail below).

Spain claimed California in 1542 though made no moves to occupy any of the territory. The Spanish attitude changed when the Russians and English began showing interest in the region. Spanish explorers came into increasing contact with the Native Americans in the first half of the 1770s as Portola, Fages, Rivera, and Anza led expeditions through the region (Milliken 1995). The general history of the Missions in California is explored more thoroughly in the Historic Setting section below.

In 1776, the San Francisco Presidio and the mission of Our Seraphic Father San Francisco de Asís were begun in Yalamu territory near the northern end of the San Francisco peninsula. Later that year, the mission of Our Seraphic Mother Santa Clara began construction in Tamien territory to the south, and a small civilian settlement was begun near Mission Santa Clara. At first, the local Natives came to see the strange people, technologies, and structures that were being erected. However, cultural differences and misunderstandings almost immediately became felt. The first Indians were killed in the fall of 1776 after some Spanish items were stolen; the Yelamu shot an arrow near a soldier, and tried to kiss a Spanish woman (Milliken 1995). Similar violence erupted a year later in Santa Clara.

During the first two years of the missions' existence, most of their converts came from within short walking distance. Larger groups from farther away only began visiting the missions after the Spanish had established control of the immediate territory. The missionaries offered miracles and wonder to the Indians, giving them an opportunity theoretically to join in this new way of life. As more and more Indians joined, the local tribal power structure changed to the point where tribal leaders must have felt that they needed to join the Missions as well to retain their influence and position (Milliken 1995).

After moving to a mission, Indian life changed dramatically to regimented days spent in the fields, mixing with people from other tribes, isolation from family members of the opposite sex, diseases, and a complete inability to change their situation. Runaways were brought back by the military. In spite of these factors, increasing numbers of Indians came to the missions, particularly in the 1790s. Towards the turn of the century, some of the more distant tribes tried to organize resistance to the missionization effort but the Spanish soldiers defeated these efforts. The defeat of warriors and/or spiritual leaders and the intimidation of the tribes led to ever-greater stress to succumb to the invaders. The lingering effects of this included depression, disease, and social marginalization of those who still tried to rely on religious rituals or traditional ways of life that no longer worked (Milliken 1995).

Historic Setting

This historical overview provides information on the growth and development of the SBSP Restoration Project Area. The Project Area spans three California counties: Alameda, Santa Clara, and San Mateo, and encompasses or borders portions of various cities in the South Bay including Redwood City, East Palo Alto, Palo Alto, Mountain View, San Jose, Fremont, and Sunnyvale. While a comprehensive history of each of these counties and cities is beyond the scope of this analysis, the following summarizes the overall patterns of historic development in the South Bay. The South Bay Salt Pond Restoration Project Historic Context Report (May 16, 2005) is also herein incorporated by reference. The report traces the history of the region from the pre-salt industry period as conversion of the salt marshes and development of salt ponds, and finally to the current period as it moves towards marshland restoration.

Early History: Missions and Ranchos

Spanish colonial expansion into Alta California in the latter part of the 18th century was stimulated by geopolitical and religious considerations (Cleland 1944). Spain and its colonial authorities were interested in countering Russian expansion into northern California and the perceived threat of British colonial expansion. Additionally, the replacement of the Jesuits by the Franciscan Order in the missions

of Baja California created renewed fervor for the conversion of Native Americans to Christianity. As elsewhere along the northern borderlands of New Spain, the plan for the colonization of Alta California included three types of settlements: missions to convert the Native Americans and provide them with an agricultural subsistence; pueblos to act as residential, commercial, and administrative centers; and presidios to protect the colony from foreign powers and potential Native American hostility (Hallenbeck 1926).

King Carlos III of Spain gave orders to the Viceroy of Mexico to begin forming settlements at San Diego and Monterey. The King's viceroy authorized establishment of each mission and chose the approximate location (Blackmar 1976). Once the location was determined, the padres were sent with a few soldiers to establish the new mission (Blackmar 1976). In 1769 Gaspar de Portola led an expedition that began the Spanish exploration of northern California. However, it was Juan Bautista De Anza who received orders from the viceroy in 1775 to establish a mission in San Francisco. De Anza left Monterey on March 22, 1776 for San Francisco; the Mission San Francisco de Asís was established on October 9, 1776. The pueblo located nearby was named Yerba Buena (later renamed San Francisco). A few months later, Jose Joaquin Moraga and Fray Tomas de la Pena set out to establish Mission Santa Clara de Asís along the Guadalupe River (Payne 1987). The climate of the Santa Clara Valley was a prime location for a mission with its mild winters and long growing season for crops. The first mass at the Mission Santa Clara de Asís was held on January 12, 1777 (Payne 1987). Another three missions were built in Santa Clara Valley: Santa Cruz (1791), San Jose (1797), and San Juan Bautista (1797).

The Franciscans eventually established 21 missions and four presidios between Sonoma and San Diego from 1769 to 1823 (Beck and Haase 1974). The missions were situated so that they could be reached within a day's ride of each other. The presidios were spread out evenly among the missions although some missions also housed soldiers within their walls.

Most missions included a *Convento* (padre's residence), residences for the neophytes, and various other facilities such as school rooms, shops, mills, tanneries and storehouses, sheds, and corrals. Other amenities, such as gardens, vineyards, orchards, cultivated fields, and grazing land were developed in and around the missions (Blackmar 1976). The missions were self-sustaining as they raised a variety of grains and crops as well as sheep and cattle. Each mission had its own shipping port to expedite the trading and selling of goods.

Mexico achieved independence from Spain in 1821 and in 1822 California was declared a territory of the Mexican republic. In 1834, the Mexican government secularized the missions and divided their land holdings into ranchos; portions of several ranchos are located in the Project Area. Ranchos within or adjacent to the Project Area in Alameda County included *Mission San Jose*, *Potrero de los Cerritos*, *Arroyo de Alameda*, *San Antonio*, *San Lorenzo*, and *San Leandro*. Ranchos within Santa Clara County within or adjacent to the Project Area included *Mission Santa Clara*, *Rincon de los Esteros (Alviso)*, *Embarcadero de Santa Clara*, *Agua Caliente*, *Pastoria de las Borregas*, and *Rinconada de los Gatos*. Ranchos within San Mateo County within or adjacent to the Project Area included *Rancho de las Pulgas* (Beck and Haase 1974).

During the 1830s and 1840s, new settlers from the United States arrived in California and commercial activity between the United States and California increased. Settlers in search of large expanses of land or trappers and mountain men in search of fur-bearing animals began to occupy California in large numbers. Tensions between the settlers and Native Americans escalated during the Mexican War in 1846. The war ended with the signing of the Treaty of Guadalupe Hidalgo in February of 1848 and the cession of California to the United States.

Discovery of Gold

James Marshall's gold discovery in Coloma in 1848 led to an influx of miners, prospectors, and settlers into California looking for their fortune. Though the Gold Rush was concentrated on the mining country, the Bay Area attracted merchants and settlers looking to capitalize upon California's emerging maritime and agricultural economies. The Gold Rush had a large impact on San Francisco, as the city became the main port, transportation hub, and commercial center for the new settlers coming to work in the mines. As the city grew, the transportation network throughout the region also improved and expanded.

San Francisco Bay and the Transportation Network

Prior to the 1860, the main form of transportation throughout the San Francisco Bay region was either by boat or stagecoach. The first roads in the South Bay were constructed in the mid-19th century and these roads were primarily used to transport agricultural products to market (Jones & Stokes 2001). A maritime transportation network grew up around the economy of the Bay Area to facilitate the movement of agricultural products. The Port of Alviso was one of the earliest ports in the Bay Area. The agricultural activity of the Santa Clara Valley increased the need for an active shipping port in the mid-19th century and Alviso filled this role. By 1861, a steamboat company and four sail companies operated out of Alviso (Jones & Stokes 2001). Other shipping centers developed in the Bay Area such as Redwood City and Union City, which became active commercial and industrial ports. Additional access to the ports and points inland was provided by the development of the railroads.

In 1864 the construction of the San Francisco-San Jose Railroad and the organization of the Southern Pacific Railroad Company created a direct link between the communities in the South Bay and San Francisco. The railroad also spurred the development of new towns. For example, C. B. Polhemus laid out San Mateo after the railroad was constructed. San Mateo became a place for people to build vacation and weekend homes outside of San Francisco. In 1868 the leaders of the Central Pacific Railroad Company, Collis Huntington, Charles Crocker, Mark Hopkins, and Leland Stanford (known as the "Big Four") acquired the Southern Pacific Railroad in an effort to eliminate competition. In 1869, the Southern Pacific line was extended from San Jose to Gilroy. The Southern Pacific grew quickly and absorbed the original Central Pacific Railroad in 1899.

In addition to the Southern Pacific, other railroad lines were constructed in the Bay Area in the mid-19th century. Because the Southern Pacific did not directly connect the agricultural communities of Santa Clara County to San Francisco, A. E. Davis formed the South Pacific Coast Railroad Company. The construction of railroads contributed to the decline in the maritime transportation network, including the use of the port at Alviso. Davis was interested in bringing the railroad to Alviso and in 1878 the South

Pacific Coast Railroad Company completed a line to the town (Figure 3.8-1). A few years later this line was extended to Santa Cruz, and in 1887 the Southern Pacific Railroad acquired this line.

The San Francisco, Alameda and Stockton Railroad Company was organized in 1863 for the purpose of connecting these three cities. This railroad line was extended to San Leandro and later to Hayward (Jones & Stokes 2001). The entire line was acquired by Central Pacific Railroad in 1870, which was absorbed by Southern Pacific Railroad in 1899. All of these railroad lines would ultimately be absorbed into the Union Pacific railroad system, the largest railroad in North America and still operating today.

Growth of Alameda, Santa Clara, and San Mateo Counties

Alameda County. Alameda County was formed in 1853 from portions of Santa Clara and Contra Costa counties (Willard 1988). Alvarado, the county seat as of 1853, was founded in 1852. The adjacent cities of Union City and New Haven, along with Alvarado, were collectively known as Alvarado. Alvarado was an active shipping port in partial thanks to the salt and beet-sugar industries. Union City grew out of *Rancho Portrero de los Cerritos* and was conceived of as a commercial center to compete with San Francisco (Jones & Stokes 2001). The county seat was moved to San Leandro in 1854 and to Oakland in 1873.

In the mid-19th century, six townships were established in Alameda County including Washington, Eden, Murray, Alameda, Brooklyn, and Oakland (Figure 3.8-2). Washington and Eden townships are located within or adjacent to the SBSP Restoration Project Area, and the following provides a brief summary of the history of Washington and Eden townships.

Washington Township grew out of separate agricultural communities including Irvington, *Mission San Jose*, Centerville, Niles, and Warm Springs. Washington would later incorporate into the city of Fremont in 1956. Irvington was located on the northern edge of *Mission San Jose* and became known for its wine and dried fruits (Jones & Stokes 2001). Centerville was settled in the 1850s and contained a commercial and residential area along with a farming community. Niles, originally known as Vallejo Mills, was located at the junction of the San Jose and Stockton branches of the central Pacific Railroad (Willard 1988). Warm Springs was formed from lands occupied by *Rancho Agua Caliente*, and the Warm Springs Hotel stood on the land until the earthquake of 1868. Following the earthquake, Leland Stanford purchased the land and constructed a vineyard for his railroad and resorts (Willard 1988).

Like Washington Township, a portion of Eden Township grew up out of the early ranchos. In the 1850s, an association of farmers known as the Mount Eden Company began settling the Baumberg area, located west of *Rancho Arroyo de la Alameda* (in the present day Hayward city limits). By 1855, the Mount Eden Company established a wharf and warehouses on the north bank of Mt. Eden Creek. This landing, one of two in the community, became known as Eden Landing and was used to ship agricultural products to San Francisco.

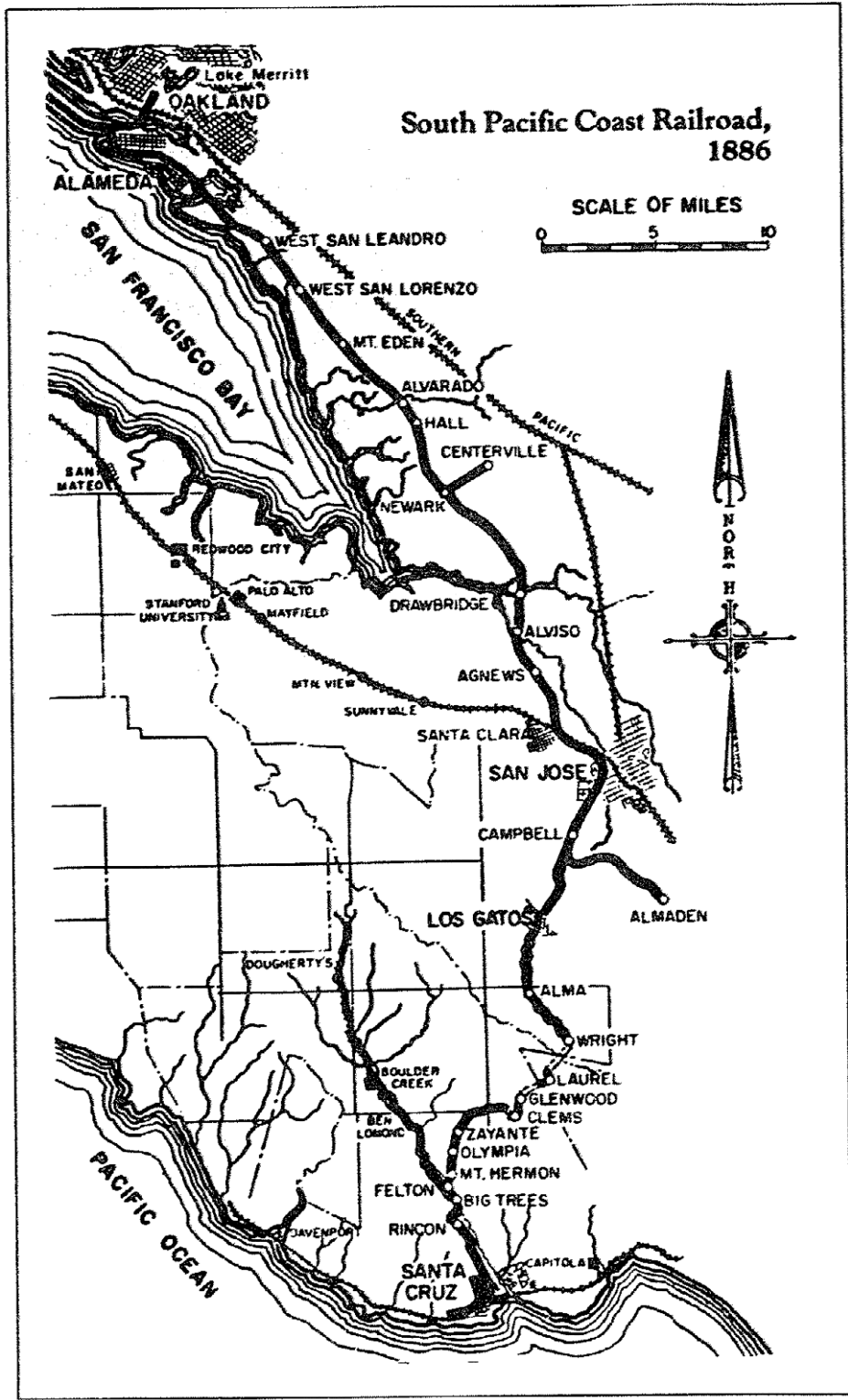


Figure 3.8-1 South Pacific Coast Railroad, 1886
 Source: *South Pacific Coast: A Centennial*, Bruce A. MacGregor and Richard Truesdale, 1982

The Mount Eden area along the Alameda County coast (from San Leandro Creek to Alvarado (present day Union City) developed into several small salt producing operations. In 1855 Captain Richard Barron constructed several warehouses along Eden Landing and by the end of the 19th century had built Barron Salt Works. In 1882-83 approximately a thousand tons of salt were manufactured by the company (Sandoval 1988). However, the Barron Salt Works did not build the first artificial salt ponds in the Bay Area. The first construction of levees to create artificial salt ponds was completed by John Johnson in 1853 (Watt 2005). San Francisco Bay, with its natural tidal marshlands, was a prime environment to be modified for the mining of salt. By the late 19th century, most of the East Bay shoreline south of San Lorenzo Creek had been converted to salt ponds (Jones & Stokes 2001). By 1896, there were numerous salt works in the Baumberg area including Oliver Salt Works, Peterman Salt Works, Barron Salt Works, F. F. Lund Salt Works, and Liquori's Salt Works. By the mid-1920s, Oliver Salt Works had acquired most of the smaller salt works operations. In 1901 the Leslie Salt Refining Company was established; later it would grow to become the largest salt producing company in San Francisco. By 1931, Leslie had absorbed Oliver Salt Works and controlled the salt operations in the Baumberg area (Ver Planck 1958).

Santa Clara County. Santa Clara County was one of the original 27 counties of California, organized in 1850 (Figure 3.8-3). Similar to Alameda County, Santa Clara County had a strong agricultural base and an economy centered on the cultivation of fruit. San Jose, California's first capital and the county seat, was incorporated in 1850. San Jose remained the state capital until 1852 and throughout the Gold Rush acted as a supply base for miners. In 1864 the San Francisco-San Jose Railroad connected the Santa Clara Valley to San Francisco and San Jose became a major distribution point for agricultural products cultivated in the South Bay.

Other towns in Santa Clara County such as Mountain View and Sunnyvale, sprang up with economies based upon agricultural activities. Both towns were originally part of *Rancho Pastoria de las Borregas* and the village of Mountain View was a stop on the Butterfield Stage Line between San Francisco and San Jose (Butler 1981). Before the town of Sunnyvale was developed, it consisted of hundreds of acres of orchards (Jones & Stokes 2001). Martin Murphy, Jr. settled in the area of Sunnyvale in 1849 and developed a wheat farm. In 1898, W. E. Crossman purchased land there and began to market it as "the City of Destiny."

San Mateo County. San Mateo County, originally part of the Mexican *Rancho de las Pulgas*, was founded in 1856 from portions of San Francisco and Santa Cruz counties. One of the earliest and most prominent cities in the county, East Palo Alto, was originally known as Ravenswood. Ravenswood was established in 1849 by Isaiah Woods, who led a group of investors that constructed the first buildings and a wharf at the end of present-day Bay Road. Supposedly named for a stand of nearby trees and the crows or ravens that nested there, the subdivision was the first planned community in San Mateo County and one of the earliest in the region. The pier constructed by Woods and his partners was an attempt to establish the new town as a commercial port that would rival San Francisco. However, their plans were never realized, as in later years Oakland became the chief competing port and the San Francisco-San Jose Railroad bypassed the town altogether.

In 1868, Lester Cooley, a former miner, purchased the unused and apparently dilapidated wharf at Ravenswood and over 400 acres of bayfront property (Romic Environmental Technologies Corp 1993). Cooley repaired the pier, which then became known as Cooley's Landing. The pier began to serve as a loading point for shipping grain and other goods to San Francisco. One locally made commodity was bricks that were manufactured by Hunter, Shackelford and Company, established in 1874. Due in part to its new-found status as a manufactory and shipping port, Ravenswood prospered and became part of Menlo Park when it was incorporated in 1874.

Another early and prominent city in San Mateo County is Redwood City, founded in 1854. Like Ravenswood, Redwood City was an active port with lumber, shingles, hay, and wheat commonly shipped from its piers. The city's economy, however, was more diverse than simply shipping and commercial enterprises in the city and included shipbuilding and blacksmithing, to name but a few industries. As a prominent commercial center, the population and importance of Redwood City grew and in 1867 it was designated the county seat. A population boom occurred following the 1906 San Francisco earthquake, and by 1920 the population had reached 5,500, some of whom worked in the Leslie Salt Company, which had a strong presence in the area as it owned Bair Island, located directly to the north of the Project Area.

Expanded Historic Context Statements. Three areas adjacent to the Project Area are discussed more extensively due to their proximity and historical connections to the Project Area. Alviso was one of the earliest shipping ports in the San Francisco Bay Area. Much of Alviso's downtown is listed in the National Register of Historic Places (NRHP) as part of an historic district. Drawbridge, an abandoned town located in the marshes and salt ponds, is a unique remnant of the Project Area's history. Finally, Moffett Federal Airfield, a military base located on the south side of the salt ponds, had an influence on the development of the surrounding region.

Alviso. Originally known as *Embarcadero de Santa Clara*, Alviso is located on the south side of San Francisco Bay in Santa Clara County. The *Embarcadero de Santa Clara* was one of the principal landings for Mission Santa Clara and was a prosperous shipping port, sending hides, tallow, grains, and redwood to San Francisco. The port at Alviso was established in 1840 within the land grant and served the increasing trade coming up the Guadalupe River and surrounding sloughs. The increase in trade was partially a result of the development of the mercury mines at New Almaden in response to the use of mercury to help separate gold from its matrix in the gold fields.

In 1849 the community of Alviso was laid out by surveyor Chester S. Lyman (Figure 3.8-4). Lots were put up for sale at the price of \$600 (Munro-Fraser 1881) and the plan was for Alviso to become a large, active shipping and commercial center. In 1850, regular steamboat service between San Francisco and Alviso was established at a cost of \$35 per trip (Butler 1981). During the 1850s, Alviso became the major north-south passenger and freight link between San Francisco and the South Bay. From the dock, a stagecoach would take travelers to San Jose. The importance of Alviso along this transportation corridor led to the development of docks, warehouses, and homes in Alviso. In 1852, Alviso incorporated and became one of the first cities in California.

In 1864, the new San Francisco-San Jose Railroad (Southern Pacific Railroad) bypassed Alviso and the town began to decline. In 1876 the South Pacific Coast Railroad was built and did stop in Alviso, but residents and business owners resisted the construction of a depot, as they blamed the railroad for the town's downfall (Butler 1981).

In 1890, an entrepreneur named P. H. Wheeler attempted to capitalize on the location of Alviso and the growth of California during the late 19th century. Wheeler devised a plan for a community known as New Chicago, to be located in Alviso. Wheeler had acquired a bankrupt watch factory near San Diego and he proposed New Chicago as the home for this company, which was to be known as the San Jose Watch Factory. On the north side of Alviso, 4,000 lots were laid out and street names, such as State, Wabash, Dearborn, and LaSalle, were borrowed from downtown Chicago. Wheeler's vision was for a new city based on diversified industries, foundries, iron works, sugar refineries, clothing mills, wineries and car shops. Advertisements in the *San Jose Daily Mercury* described New Chicago as "The Coming Manufacturing Center of California" (Tvedt 1975). Wheeler's vision of a bustling city was not realized, as new industries did not locate in the area. By the summer of 1890, interest in New Chicago had waned, as no new businesses opened other than the San Jose Watch Factory.

There was some recreational development during that period, however. In 1888, the South Bay Yachting Association was founded. In 1896, the club was renamed the South Bay Yacht Club and in 1903, their clubhouse was built in Alviso. In 1983, the clubhouse was moved to its present on-levee location because of continued flooding due to land subsidence.

Some industrial development came to Alviso in the early 20th century. In 1906, Thomas Foon Chew opened the Bayside Canning Company (Kyle 2002) (Figure 3.8-5). By 1921, the Bayside Canning Company was the third largest in the United States. Chew used a canning technique that retained the crispness and freshness of asparagus and he became known as the Asparagus King. The Bayside Canning Company was Alviso's most successful operation and it employed hundreds of workers. Many of the workers lived in company owned housing nearby. Chew passed away in 1931 and the cannery slowed production during the Great Depression. In 1936, the cannery closed. Alviso also went through a disreputable phase. By 1915, five of the nine businesses in town were saloons (Butler 1978I). In the 1920s and 1930s, Alviso had become known as a place for gambling and prostitution.

Some redemption arrived in the form of new industry. In 1929, the Alviso Salt Company dredged the tideland to create the salt evaporation ponds located there today. The company constructed levees and harvested the salt, and was almost immediately acquired by the Arden Salt Company (Watt 2005). Alviso annexed to San Jose in 1968.

Alviso – Existing Conditions. In 1973 the community of Alviso was listed in the NRHP as an historic district (#73000449). Although it is now technically a part of San Jose, Alviso retains much of its historic fabric and therefore still retains the character of a small town, isolated by its location. In addition, many of the buildings in the historic district exhibit architectural styles prevalent throughout the San Francisco region. The Tilden-Laine residence constructed in 1887 reflects a blend of Italianate and Eastlake styles with its bay windows, one-story porch, and paired entry doors (Figure 3.8-6). In addition, the use of wood reflects the mechanization and industrialization of the late 19th century, as architectural details

could be replicated easily. Other buildings reflect the industrial history of the town, as the brick Wade Warehouse and Bayside Canning Company buildings still stand.

History of Drawbridge. Drawbridge is located on Station Island, an isolated, windswept mud formation in the marshes and salt ponds of the southeast corner of San Francisco Bay between Mud Slough on the north and Coyote Creek on the south (Figure 3.8-7). Considered a ghost town today, Drawbridge existed from 1876 to 1979 and had its heyday in the late 1920s. While many of the buildings in Drawbridge are currently deteriorating, their architecture in many ways is a microcosm of the architecture of the Bay Area.

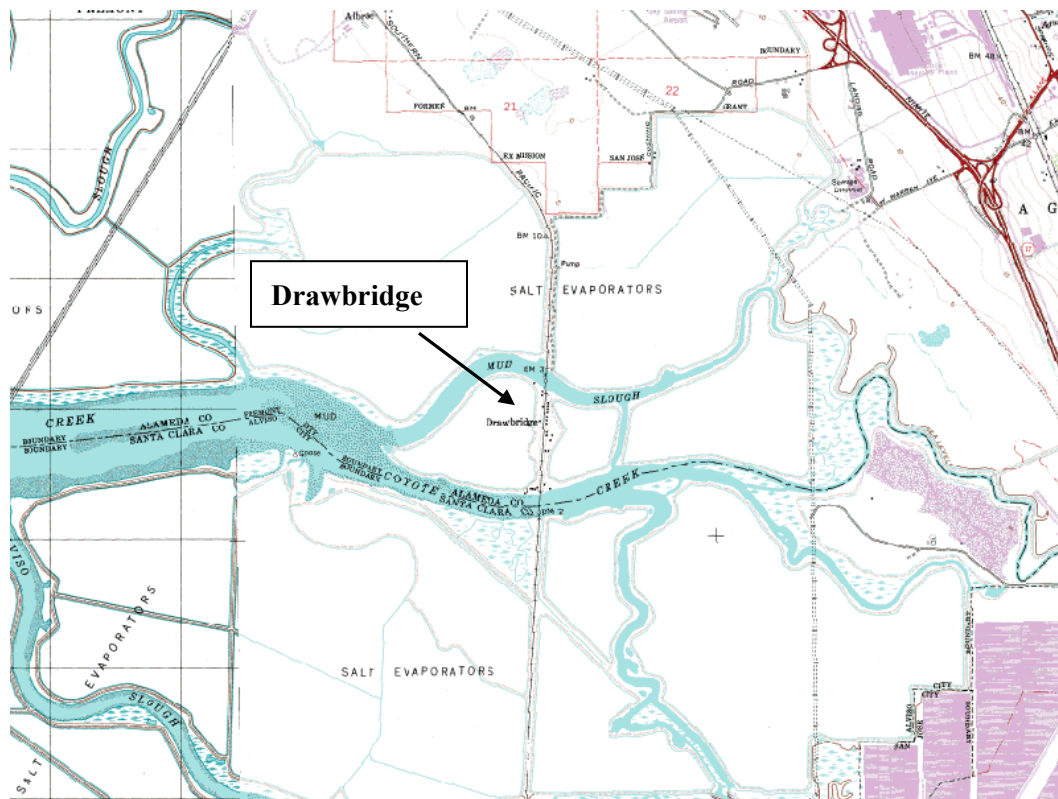


Figure 3.8-7 Location of Drawbridge, USGS Milpitas Quad

Source: <http://www.topozone.com>

A combination of factors influenced the development of Drawbridge. These factors included the Bay environment, the development of the creek and slough boat landing system, the establishment of railroad transportation, and the subsequent development of towns in the surrounding areas. The physical environment of the rivers, creeks, and sloughs allowed access to the mud flat in the marsh and led to the development of Drawbridge as they provided a waterway transportation system. Ship captains, sportsmen, and residents capitalized upon the transportation network in the 1850s and 1860s. However, this transportation network had already been heavily used by the Missions and ranchos in the surrounding areas to ship agricultural products (Morrow 1978). One of Mission San Jose's main landings was at Warm Springs, located four miles inland at the head of Mud Slough (then called Warm Springs Slough).

Until the discovery of gold and the influx of immigrants into the San Francisco Bay Area in the late 1840s, the marine transportation network was sufficient for moving goods and people. With the discovery of gold in 1848, changes in the transportation system became necessary. The harbors at Pittsburg, Benicia, San Francisco, and Oakland were made into ports, the embarcaderos in the East Bay were enlarged into wharves, and the landings along the sloughs were enlarged (Morrow n.d.). Power boats and steam ships were introduced in order to improve efficiency, and soon lines were operating under an established schedule. In 1854, the California Steam Navigation Company was founded as some of the smaller lines consolidated into one operation. While the steam ships continued to be useful means of transportation in the late 1850s, the construction of the railroad in the 1860s in the Bay Area led to the establishment of Drawbridge and other surrounding communities.

In 1864, the Southern Pacific Railroad Company built a railroad line from San Francisco to San Jose. While this railroad contributed to the growth of some communities in the Bay Area, it did not serve the Santa Clara Valley. To supply the missing service, in 1876, Alfred C. “Hog” Davis purchased the bankrupt Santa Clara Valley Railroad. The Santa Clara Valley Railroad connected Alviso, San Jose, and Santa Clara, but had gone bankrupt in its attempt to extend the line to Santa Cruz. Davis wanted to connect Newark to Santa Cruz and therefore formed the South Pacific Coast Transportation Company in 1876 (Dewey 1989). Construction began in May 1876 and by the fall, work was complete, including a bridge over Coyote Creek. When the construction crews left, they left the company’s bridge tender with a one-room cabin, the beginning of Drawbridge (Figure 3.8-8).

The opening of the South Pacific Coast Railroad influenced the development of the South Bay including Drawbridge. Drawbridge, as an area with an abundance of waterfowl, fish, and shellfish, was an attraction to sportsmen. By 1880, two trains were stopping on Sundays, one in the morning on its way to Santa Cruz and one in the evening on the way back to Alameda. Numerous duck hunter’s cabins were built, the first of which was the Gordon Gun Club in 1880. In 1894, the first residence was built on the island and in 1897 the railroad officially named the stop “Drawbridge”. In 1902, the Sprung Hotel opened and Drawbridge “developed a reputation as a sporting town outside the law, with gambling, drinking and prostitution” (Figure 3.8-9) (Morrow n.d.). Hunter’s Home, another hotel, was located on the south side of the island and became a spot for serious hunters (Morrow n.d.).

Drawbridge reached its peak in popularity in the 1920s. By 1926, there were 90 cabins, assorted outhouses, sheds, catwalks, boat houses, and water towers and five passenger trains each day (Figure 3.8-10). Electricity arrived on the island in 1931 and the only phone was in the railroad station. There was no school, library, post office, city hall, police station, or firehouse. The homes were set on pilings above the marsh and catwalks led from each house to the bed of the railroad track (Morrow n.d.). The sloughs, catwalks and railroad substituted for streets.

The distribution of buildings on Drawbridge was influenced by the shape of the area along the railroad tracks. There was a distinct north and south end with an uneven bulge in the middle (Figure 3.8-11). The architectural style of the homes was influenced by the architecture of the region. Many of the homes featured characteristics of the Queen Anne, Victorian, or Craftsman styles of architecture, three styles

popular in the San Francisco region. Queen Anne features included steeply-pitched roofs, exterior fish-scale shingles, and narrow strips of wood cladding. Along with Queen Anne, the Craftsman style was well suited for Drawbridge, with porches, gable roofs, over-hanging eaves, and clapboard or board-and-batten siding (Figures 3.8-12 and 3.8-13).

Residents of Drawbridge continued to occupy their homes until the late 1930s and early 1940s. The deterioration of the natural surroundings along with the growth of San Jose and Newark contributed to the decline of the settlement. The use of the South Bay as a sewage dump in the early 1930s killed many of the fish in the slough, so the waterfowl left the area. Sprung Hotel closed at the start of the Great Depression and Hunter's Home burned in late 1930s. Abandonment and diking of the slough also contributed to the town's decline. By 1939, Mud Slough was navigable only by Coast Guard and USGS boats (Morrow n.d.). Leslie's Salt plant diked off parts of the east and west marshes at the southern end of San Francisco Bay, leaving Drawbridge in isolation. After that, the only way to access the town was by way of the railroad tracks. Drawbridge became home to only a handful of people, as most homes and duck hunting clubs closed. Vandalism and arson increased in the 1960s and by 1979, the last resident moved away from Drawbridge.

Existing Conditions – Drawbridge. Since the last resident left Drawbridge, the town has been slowly sinking into the marsh (Figure 3.8-14). The Sprung Hotel burned down and many of the structures have been vandalized or have simply collapsed through neglect. Therefore, it appears that the integrity of the buildings may not rise to a level that would make them eligible for the NRHP or the California Register of Historical Resources (CRHR). While none of the buildings at Drawbridge have been formally evaluated for the NRHP or the CRHR, they have been documented and studied (Morrow 1984). In 1978, a student crew from the Department of Anthropology, California State University, Hayward completed a survey of the town and documented the town's history (Morrow 1978). In 1984, a dissertation was completed on the town including an analysis of its architecture (Morrow 1984).

Naval Air Station, Moffett Field (now called NASA Ames Research Center). Naval Air Station, Moffett Field opened in 1933 and was originally known as Naval Air Station Sunnyvale, California (Figure 3.8-15). Located at the southern tip of San Francisco Bay, the air station encompasses 2,200 acres. It was bordered on the north by salt evaporation ponds, on the west by Stevens Creek and the National Aeronautics and Space Administration (NASA) Ames Research Center, on the south by US 101, and on the east by Lockheed Aerospace Center. The air station was originally built to house lighter-than-air craft. The success of lighter-than-air craft in World War I inspired the Navy to develop a fleet of giant dirigibles that they hoped would become successful battleships of the air. The first lighter-than-air craft were built in the early 1920s; it was intended that one of these, the USS Macon, would be based on the west coast (Chivers 1981).

Hangar One at Moffett Field was constructed to house the USS Macon. The building had a steel skeleton and was sheathed with galvanized steel (US Navy). The floor of the hangar covered eight acres and could accommodate ten football fields. Along with Hangar One, support buildings were constructed. The dedication of Hangar One was held on April 12, 1933, but about a week earlier the USS Akron, the east coast based airship, was lost off the coast of New Jersey and 73 men died (US Navy). Admiral William

Moffett, Chief of the Bureau of Aeronautics, went down with the USS Akron and Moffett Field was named in his honor. The USS Macon arrived in California in October 1933. At 785 ft (239 m) in length and 146 ft (45 m) in height, the USS Macon was the world's largest airship.

After arriving on the west coast, the USS Macon was put to work in war game exercises. These exercises proved to be the craft's downfall, as in November 1933, the game's umpires ruled that the USS Macon had been destroyed twice. Two years later, in 1935, during fleet exercises near Point Sur, the USS Macon crashed during a storm. Of the 81 aboard, all but two survived (Chivers 1981). Though the lighter-than-air craft days were over, Moffett Field remained useful to the Department of Defense. The air station became an Army Air Corps base briefly before it was re-commissioned into the Navy in 1942 (US Navy). During the Army's tenure, in 1940, the National Advisory Committee for Aeronautics (the predecessor to the NASA) established Ames Aeronautical Laboratory on land northwest of Moffett Field. The primary role of the Ames Laboratory was research in high-speed aerodynamics.

During World War II, Moffett Field saw an increase in heavier-than-air craft and by mid-1944, the air station was used for both lighter-than- and heavier-than-air craft. Between 1933 and 1943, several buildings were constructed on the base, altering the Beaux Arts design theme intended by the original builders (DMJMH&N, and others 2002). By 1947, the air station was exclusively used for heavier-than-air traffic (US Navy n.d.). With the outbreak of the Korean War in 1950, Moffett Field was equipped to become the home base of the fighters guarding the Pacific. In the early 1950s, Moffett Field was named a Naval Historical Monument (Chivers 1981). The base continued to support Navy aeronautical activities and it became the largest naval air transport base on the west coast.

In 1991, under the Base Realignment and Closure Act, Moffett Field was recommended for closure. In 1994, Naval Air Station, Moffett Field closed and the property was transferred to NASA Ames Research Center. Also in 1994, portions of Moffett Field were listed in the NRHP as the Shenandoah Historic District. The district includes Hangars One, Two, and Three, ancillary buildings, and roads.

Existing Conditions – Naval Air Station, Moffett Field. In 1994, NASA developed a plan for the future use of Moffett Field. As part of this plan, NASA decided to consolidate its high-tech and aviation resources and develop partnerships with government agencies, local universities, private industry and non-profit groups in an effort to establish a research and development community. The NASA Ames Development Plan laid out an approach to accomplish this goal. One component called for the establishment of the NASA Research Park, a 213 acre research and development campus (DMJMH&N, and others 2002). The NASA Research Park was slated to occupy the same area and some of the buildings of the Shenandoah Historic District. In order to integrate the planning, preservation and use of the historic properties in the NASA Research Park, the Shenandoah Plaza Historic District Development Plan was completed (DMJMH&N, and others 2002). This document provides guidance and procedures on how to integrate new buildings, landscapes, and other features of the research facility while maintaining the integrity of the historic district.

Historic Background Summary. The South Bay has a unique history that is tied to its physical setting and natural environment. San Francisco Bay, including its marshes and mud flats, had a tremendous impact on the social and economic development of the region. The environment lent itself to the

construction of shipping ports and industrial uses, which encouraged the growth and settlement of Alameda, Santa Clara, and San Mateo counties. The construction of the railroad brought an influx of people. The mild climate contributed to the development of a strong agricultural community. Agricultural activities, in combination with the solar salt industry and transportation network, led to vibrant communities throughout the region.

Cultural Resources within the Shoreline Study First Interim Feasibility Study Area

As noted above, much of the first Interim Feasibility Study area of the Shoreline Study (the Alviso Ponds and Santa Clara County geographic area)¹ has been surveyed for cultural resources (259 survey reports have been filed with the NWIC), and 49 cultural resources were identified. Since this Interim Feasibility Study encompasses the SBSP Restoration Project Area, the results of this search are useful in understanding the cultural resources context for the SBSP Restoration Project. Information concerning these resources is presented in Table 3.8-3.

Project Setting

Eden Landing

The Eden Landing pond complex contains a representative sample of all of the various types of cultural resources that might be expected within the SBSP Restoration Project Area; that is, the pond and levee system itself, pilings, piers, Archimedes screws, and other related structures. It is a large pond complex, somewhat overgrown through disuse but visually conveys the scope and scale of the general salt works theme seen along the Bay shoreline. Table 3.8-4 lists the 19 known cultural resources identified within the Eden Landing portion of the SBSP Restoration Project Area. Two of the sites, ALA-485 and ALA-486 consist of prehistoric midden deposits. The remaining sites are historic sites that all appear to be related to the production of salt. Most of the sites were at least informally evaluated for the NRHP, and several, including ALA-487H (a historic trash scatter with Chinese ceramics, possibly from a Chinese camp), ALA-494H (the Oliver Salt Works), ALA-496H (the Union Pacific Salt Works), and ALA-501H (a salt works complex), appear to be eligible for listing. Listing on the NRHP automatically places a site on the CRHR (please see Section 3.8.2 for a discussion of these policies).

None of the Eden Landing ponds south of Mt. Eden Creek have been formally inventoried for cultural resources, although several surveys were conducted north and east of Mt. Eden Creek.

The cultural resources enumerated above were identified within several of the ponds in the Eden Landing pond complex, including Ponds E6B, E9, E10, E11, E12, E13, and E14.

Ponds E8A and E9. There are no known cultural resources within Pond E8A. Site ALA-496H, the Union Pacific Salt Works complex, lies at the northwestern corner of Pond E9. This is one of the sites considered to be eligible for listing on the NRHP. Remnants from the industrial complex include a

¹ The Shoreline Study Alviso Ponds and Santa Clara County geographic area contains the community of Alviso, the Alviso Historic District, and NASA Ames Research Center (formerly named Moffett Field Naval Air Station).

Table 3.8-3 Cultural Resources Identified within the Shoreline Study First Interim Feasibility Study Area

SITE P-NUMBER ¹	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	USGS QUAD MAP	DATE RECORDED
	SCL-5	P	Occupation site, midden – AKA Nelson 339	Milpitas	1912;1980
	SCL-6	P	Occupation site, midden, burials – AKA Nelson 340	Milpitas	1912;1980
	SCL-13	P	Occupation site – AKA Nelson 347	Palo Alto	1912
	SCL-14	P	Occupation site – AKA Nelson 348	Palo Alto	1912
	SCL-15	P	Occupation site – AKA Nelson 349	Palo Alto	1912
	SCL-16	P	Occupation site – AKA Nelson 350	Palo Alto	1912
	SCL-17	P	Occupation site – AKA Nelson 351	Palo Alto	1912
	SCL-18	P	Small camp site almost totally destroyed by 1912f	Palo Alto	1912
	SCL-19	P	Occupation site – AKA Nelson 353 – probably destroyed by Moffett Field	Palo Alto	1912
	SCL-20	P	Mound site, groundstone, burial – probably destroyed	Palo Alto	1912;1987
	SCL-21	P	Mound site, burials	Palo Alto	1912
	SCL-24	P	Mound site	Mt. View	1912
	SCL-25	P	Mound site	Mt. View	1912
	SCL-268	P	Mound site, midden	Milpitas	1976
	SCL-381	H	Henny A. Rengstorff house – late Victorian Italianate, built 1867 or 1887	Mt. View	1979
	SCL-416	P/H	Prehistoric elements (shell and fauna) plus ironware seen in backdirt from pipe trench	Mt. View	1979
	SCL-447	P	Midden site probably disturbed by river levee construction	Milpitas	1980
	SCL-439	P	Shell midden disturbed by previous construction	Mt. View	1978
	SCL-485	P	Midden site	Milpitas	1982
	SCL-528	P	Midden site, burials, historic ceramic fragments	Milpitas	1983
	SCL-747	P	Midden site	Mt. View	1993
01-001777		H	WPRR South Bay Route segment	Milpitas	1994

Table 3.8-3 Cultural Resources Identified within the Shoreline Study First Interim Feasibility Study Area (Continued)

SITE P-NUMBER ¹	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	USGS QUAD MAP	DATE RECORDED
01-001783		H	WPRR and SPRR – Warm Springs portion of the San Jose Branch line	Milpitas	1999
01-010628		H	1890s-1920s domestic debris, mid-20 th century corral and concrete watering trough, 1950s-1970s garbage	Milpitas	1984;2003
43-000032	SCL-12H	P/H	The Ynigo Mound site, burials, prehistoric occupation, historic debris, reported to have ranch buildings in 1912	Mt. View	1912;1984;1987
43-000043	SCL-23	P	Crittendon Mound – possibly obliterated	Mt. View	1909;1912;1995
43-000346	SCL-339H	H	Ruins of the Bayside Cannery Warehouses and Engineering Shed, within the Port of Alviso Historic District	Milpitas	2001
43-000735		H	Shaughnessy-Murphy Ranch, started ca.1861	Milpitas	1986
43-001139		H	Moffett Field – NASA Ames Research Center Administration, Building N200	Mt. View	1995
43-001140		H	Moffett Field – NASA Ames Research Center Auditorium, Building N201	Mt. View	1995
43-001141		H	Moffett Field – NASA Ames Research Center Main Library, Building N202	Mt. View	1995
43-001142		H	Moffett Field – NASA Ames Research Center Imaging Technology Branch, Building N203	Mt. View	1995
43-001143		H	Moffett Field – NASA Ames Research Center Main Library, Building N206A	Mt. View	1995
43-001144		H	Moffett Field – NASA Ames Research Center Plant Engineering Facilities, Building N207	Mt. View	1995
43-001145		H	Moffett Field – NASA Ames Research Center Flight Systems Research Laboratory, Building N210	Mt. View	1995
43-001146		H	Moffett Field – NASA Ames Research Center Flight Support Facility, Building N211	Mt. View	1995
43-001147		H	Moffett Field – NASA Ames Research Center Model Development Bldg., Building N212	Mt. View	1995

Table 3.8-3 Cultural Resources Identified within the Shoreline Study First Interim Feasibility Study Area (Continued)

SITE P-NUMBER ¹	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	USGS QUAD MAP	DATE RECORDED
43-001148		H	Moffett Field – NASA Ames Research Center Research Support Bldg., Building N213	Mt. View	1995
43-001149		H	Moffett Field – NASA Ames Research Center Paint Shop, Building N214	Mt. View	1995
43-001150		H	Moffett Field – NASA Ames Research Center Army Aeromechanics Lab/7x10 ft Wind Tunnel, Building N215	Mt. View	1995
43-001151		H	Moffett Field – NASA Ames Research Center Army Aeromechanics Lab/7x10 ft Wind Tunnel #2, Building N216	Mt. View	1995
43-001152		H	Moffett Field – NASA Ames Research Center 14 ft. Transonic Wind Tunnel and Laboratory, Building N218	Mt. View	1995
43-001153		H	Moffett Field – NASA Ames Research Center US Army Aviation Research and Technology, Building N219	Mt. View	1995
43-001154		H	Moffett Field – NASA Ames Research Center Technical Services Machine Shop, Building N220	Mt. View	1995
43-001155		H	Moffett Field – NASA Ames Research Center 40x80 ft Wind Tunnel, Building N221	Mt. View	1995
43-001156		H	Moffett Field – NASA Ames Research Center Substation, Building N225	Mt. View	1995
43-001157		H	Moffett Field – NASA Ames Research Center Supersonic Wind Tunnel and Laboratory, Building N226	Mt. View	1995
43-001278		H	UPRR alignment	Milpitas	2001
43-001468	SCL-339H	H	Alviso historic district	Milpitas	1978
43-001473		P	Midden site	Mt. View	2000
C-1415		P	Native American burial found during utility trenching	Mt. View	1996
C-1512		P	Charmstone	Mt. View	2004
<p>Note:</p> <p>¹ There are two separate site numbering systems in Table 3.8-3 and those that follow. The trinomial system, based upon a three-letter county code followed by a number, is used preferentially in this document. However, the California Historical Resources Information System is switching to a numeric system designated by the letter “P” followed by a number. As a result, the earliest identified sites may only have received a trinomial designation; more recently identified sites may have received both a trinomial and a “P” number; the most recently identified sites have been designated with only the “P” numbering system.</p>					

Table 3.8-4 Known Cultural Resources Identified within The Eden Landing Portion of the SBSP Restoration Project Area

SITE P-NUMBER	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	USGS QUAD MAP	DATE RECORDED
01-000201	ALA-485	P	Midden deposit – may have been on slight terrace prehistorically	Newark	1985;2000
01-000202	ALA-486	P	Midden deposit – may have been on slight terrace prehistorically	Newark	1985;2000
01-000203	ALA-487H	H	Historic trash scatter, possibly redeposited – may include Chinese ceramics – Chinese camp?	Redwood Point	1985;1996
01-000204	ALA-488H	H	Historic trash scatter, possibly redeposited – may include Chinese ceramics – Chinese camp?	Newark	1985;1996
01-000206	ALA-490H	H	Historic trash scatter, possibly redeposited – may include Chinese ceramics – Chinese camp?	Newark	1985;1996
01-000207	ALA-491H	H	Historic trash scatter, possibly redeposited – may include Chinese ceramics – Chinese camp? Could not be relocated in either 1996 or 2000	Newark	1985;1996;2000
01-000208	ALA-492H	H	Historic trash scatter, possibly redeposited – may be associated with G. Liguori Salt Works?	Newark	1985;1996
01-000209	ALA-493H	H	Historic trash scatter, possibly redeposited	Redwood Point	1985;1996
01-000210	ALA-494H	H	Oliver Salt Works levees, foundations, wharf, wooden vats, rail line, historic and modern trash	Redwood Point	1985;2001
01-000211	ALA-495H	H	Rocky Point Salt Works – no surface remains, location based on historic documentation	Redwood Point	1985
01-000212	ALA-496H	H	Union Pacific Salt Works levees, foundations, wharf, toppled windmill, historic trash	Redwood Point	1985;2001
01-000214	ALA-498H	H	Nielson's (or Meeklesen Bros.) Salt Works – no surface remains, location based on historic documentation	Redwood Point	1985;2001
01-000215	ALA-499H	H	Barbed wire fence and remains of a stock loading chute, modern garbage	Redwood Point	1985;2001
01-000216	ALA-500H	H	Elevated dirt pads, concrete rubble, plum tree, modern grave marker, historic and modern trash – single household occupation from ca. 1910s-1930s	Newark	1985;1996

Table 3.8-4 Known Cultural Resources Identified within The Eden Landing Portion of the SBSP Restoration Project Area (Continued)

SITE P-NUMBER	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	USGS QUAD MAP	DATE RECORDED
01-000217	ALA-501H	H	Historic debris, foundations, and bridge remnants from 1870-1910 – assoc. with Eden Landing, Mt. Eden Salt Works, Peterman's Salt Works – was once a complex including warehouses and wharves	Newark	1985;1996;2001
01-002256	ALA-592H	H	Domestic refuse including Chinese ceramics – predates Oliver Bros. Salt Works. Just outside the Project APE	Redwood Point	2001
01-002257	ALA-593H	H	Domestic refuse including Chinese ceramics	Redwood Point	2001
01-010740		H	Row of 7 Archimedes Screw Windmills from the Oliver Salt Co.	Redwood Point	2000
01-010791		H	Wood-bottomed barge hull	Newark	1996
Note: H = Historic P = Prehistoric					

historic levee which is currently used as an access road for Cargill, Inc. (Cargill), a historic levee which runs along Mt. Eden Creek, a series of brick buildings and foundations and partially collapsed structures, footings, machinery platforms and foundations, the remains of a wharf, posts, and windmills.

Ponds E10 and E11. Two sites were identified along the southern edge of Pond E10. These are ALA-495H, the location of the Rocky Point Salt Works and ALA-498H, Nielson's (also referred to as Meeklesen's) Salt Works. There are no known surface remains from either of these companies. Both were documented in these locations based upon historic maps. Each could include subsurface remnants of structures and foundations related to the earlier operations.

Ponds E12 and E13. Pond E12 includes the potentially NRHP-eligible Oliver Salt Works site (ALA-494H) on the western edge of the pond. The historic complex is large and includes submerged salt vats, historic levees littered with historic debris, a waterfront area north of the levee, machine mounts and foundations, wooden pylons, platforms, machinery, concrete pylons, posts, and other related debris.

ALA-593H is a refuse deposit that appears to include Chinese ceramics, as well as colored bottle glass from the turn of the century. That site is located on the western end of Pond E13. A row of seven Archimedes screw windmills (site P-01-010740) lines the southern edge of Pond E13/northern edge of Pond E14.

Alviso

The Alviso pond complex appears less industrial than Eden Landing because there are fewer surface remnants of salt works and a larger evaporation pond complex. There is quite a bit of natural vegetation surrounding the ponds. The historic town of Alviso lies to the southeast. Table 3.8-5 lists the three cultural resources identified within the Alviso pond complex. One of the sites, ALA-338, consists of a prehistoric midden deposit. The second site, SCL-801H, is the remnants of a World War II shipyard. The third is a bridge crossing over Coyote Creek. Of the three, only the bridge was evaluated for the NRHP; it was determined to be ineligible (reviewed by the Office of Historic Preservation in 1998).

Table 3.8-5 Known Cultural Resources in or Immediately Adjacent to Alviso

SITE P- NUMBER	TRINOMIAL	PREHISTORIC OR HISTORIC	SITE TYPE/COMMENTS	EVALUATED ¹	USGS QUAD MAP	DATE RECORDED
01-002057	ALA-338	P	Shell midden	N	Milpitas	1980
43-001110	SCL-810H	H	WWII ship-building facility foundations, boat ramp, footings, and piers plus modern rubble	N	Milpitas	1998
01-010205/ 43-001578		H	Coyote Creek Bridge built in 1948 – not eligible for NRHP	Y	Milpitas	1998
Note: ¹ If a site was evaluated for the NRHP, even informally, and found eligible, the word "eligible" will appear. If a site was evaluated, even informally, and found ineligible, the "Y" indicating the evaluation will appear, but there will be no additional information. H = Historic P = Prehistoric Source: EDAW 2006						

Many of the ponds in the Alviso pond complex were inventoried for cultural resources during the course of at least four separate cultural resource surveys. Portions of the Alviso pond complex within the Sunnyvale Corporate Boundary and north of Coyote Creek remain unsurveyed. Ponds A17, A20, and A21 all provide footings for the Southern Pacific railroad bridge over Coyote Creek; prehistoric midden site ALA-338 is located in the northeast corner of Pond A19, and site SCL-810H is located on the eastern edge of Pond A8, along Alviso Slough.

Pond A6. There are no known cultural resources within Pond A6.

Pond A8. As stated above, site SCL-810H is located on the eastern edge of Pond A8, along Alviso Slough. The site consists of the disturbed remnants of a historic ship building facility at the Port of Alviso, which operated during WWII. Most of the building materials appear to have been salvaged after the facility closed. Concrete crane footings and floors, piers, and a boat ramp still remain.

Pond A16. There are no known cultural resources within Pond A16.

Ravenswood

Like the other pond complexes, Ravenswood retains the large salt flats and levees that were developed historically. Only a very small portion of the Ravenswood pond complex was inventoried for cultural resources. None were identified during the course of those surveys.

Pond SF2. There are no known cultural resources within Pond SF2.

3.8.2 Regulatory Setting

A number of federal, state, regional, and local regulations were established to protect cultural resources and preserve them for future generations. In California, the two most applicable sets of legislation include Section 106 of the National Historic Preservation Act (NHPA) (Section 106), and CEQA.

Federal Regulations

Section 106 of the NHPA requires federal agencies to take into consideration the potential effects of proposed undertakings on cultural resources listed on or considered eligible for inclusion in the NRHP, and to allow the Advisory Council on Historic Preservation the opportunity to comment on the proposed undertaking. The regulations implementing Section 106² are promulgated by the Secretary of the Interior, as codified in Title 36 Code of Federal Regulations (CFR) Part 800.

Section 106 requirements apply to properties both on the NRHP and those not formally determined eligible, but which are considered to meet eligibility requirements. This may include situations where a federal agency and the State Historic Preservation Office (SHPO) arrive at a consensus regarding a historic property (that is, a cultural resource determined eligible for listing to the NRHP). This consensus

² Documents which include the full text of Section 106 and guidance on working with its provisions may be found at <http://www.achp.gov/work106.html>.

may be reached through the provisions of a Programmatic Agreement or other such document, or may result from case-by-case consultation. The NHPA authorizes the Secretary of the Interior to maintain and expand a National Register of districts, sites, buildings, structures and objects of significance in American history, architecture, archaeology, engineering and culture. A property may be listed in the NRHP if it meets criteria for evaluation as defined in 36 CFR 60.4:

The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

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

There is also a requirement for an APE map, as described in Section 106 and codified in Title 36 CFR 800.4(a)(1). USFWS submitted a letter to the SHPO on July 16, 2004 requesting confirmation of the APE map for the SBSP Restoration Project. The APE map designates the SBSP Restoration Project boundary, as shown in Figure 1-2, as the Project's APE. SHPO sent a letter to USFWS dated November 19, 2004, indicating that the agency concurred with USFWS' determination of the Project's APE.

Section 106 review process occurs in four steps: Initiation of the process; identification of historic properties; assessment of adverse effects; and resolution of adverse effects. Public involvement, particularly from Native Americans, is strongly encouraged during each of these steps.

Cultural Landscapes

The SBSP Restoration Project Area is a heavily modified environment. The scale of this Project, which encompasses approximately 15,100 acres, requires an equally broad perspective. Project goals to re-establish tidally influenced salt marsh are intended to change the existing landscape in direct contradiction to the many years of human-made modifications. Therefore, the entire SBSP Restoration Project Area needs to be reviewed for its potential as a cultural landscape. The following discussion presents an overview of what constitutes a cultural landscape.

In order to properly document, assess and evaluate cultural landscapes, USFWS uses the National Park Service (NPS) guidelines. These guidelines provide standards for undertaking a cultural landscape analysis, including procedures for identifying, evaluating and managing cultural landscapes in the United States. According to these guidelines, a cultural landscape is:

a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (Birnbaum 1994, Page and others 1998).

This definition is broad and is “intended to foster a comprehensive approach to defining and understanding a place” (Mitchell 1997).

The guidelines define four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, vernacular historic landscapes, and ethnographic landscapes (Birnbaum 1994; Page and others 1998). The following is a set of definitions and examples:

1. A historic site is a landscape significant for its association with a historic event, activity, or person (Page and others 1998). Examples include battlefields and president’s house properties (Birnbaum 1994).
2. A historic designed landscape is significant as a design or work of art; was consciously designed and laid out either by a master gardener, landscape architect, architect, or horticulturist to a design principle, or by an owner or other amateur according to a recognized style or tradition; has a historical association with a significant person, trend, or movement in landscape gardening or architecture, or a significant relationship to the theory or practice of landscape architecture (Page and others 1998). Examples include parks, campuses, and estates (Birnbaum 1994).
3. A vernacular historic landscape is one whose use, construction, or physical layout reflects endemic traditions, customs, beliefs, or values; expresses cultural values, social behavior, and individual actions over time; is manifested in physical features and materials and their interrelationships, including patterns of spatial organization, land use, circulation, vegetation, structures, and objects (Page and others 1998). Examples include rural villages, industrial complexes, and agricultural landscapes (Birnbaum 1994).
4. An ethnographic landscape contains a variety of natural and cultural resources that associated people define as heritage resources, including plant and animal communities, geographic features, and structures, each with their own special local names (Page and others 1998). Examples include contemporary settlements, religious sacred sites, and massive geological structures. Small plant communities, animals, and subsistence and ceremonial grounds are often components (Birnbaum 1994).

Vernacular Historic Landscapes are most prolific, as they “have developed without the direct involvement of a professional designer, planner, or engineer” (Alanen and Melnick 2000). They are ordinary places that reflect the customs and everyday lives of people (Page and others 1998).

Cultural Landscape Characteristics

In an effort to identify the complexities of cultural landscapes within the aforementioned framework, the guidelines present a list of cultural landscape characteristics and recommended methods of documentation. Landscape characteristics are:

tangible evidence of the activities and habits of the people who occupied, developed, used, and shaped the land to serve human needs; they may reflect the beliefs, attitudes, traditions, and values of these people (McClelland and others 1999).

The following is an overview of the 13 landscape characteristics (Page and others 1998):

1. Natural systems and features – aspects that often influence the development and resultant form of a landscape;
2. Spatial organization – arrangement of elements creating the ground, vertical, and overhead planes that define and create spaces;
3. Land use – organization, form, and shape of the landscape in response to land use;
4. Cultural traditions – practices that influence land use, patterns of division, building forms, and the use of materials;
5. Cluster arrangement – the location of buildings and structures in the landscape;
6. Circulation – spaces, features, and materials that constitute systems of movement;
7. Topography – three-dimensional configuration of the landscape surface characterized by features and orientation;
8. Vegetation – indigenous or introduced trees, shrubs, vines, ground covers, and herbaceous materials;
9. Buildings and structures – three-dimensional constructs such as houses, barns, garages, stables, bridges, and memorials;
10. Views and vistas – features that create or allow a range of vision which can be natural or designed and controlled;
11. Constructed water features – the built features and elements that utilize water for aesthetic or utilitarian functions;
12. Small-scale features – elements that provide detail and diversity combined with function and aesthetics; and
13. Archaeological sites – sites containing surface and subsurface remnants related to historic or prehistoric land use.

There are many methods for identifying the above characteristics, including plant inventories, archaeological and architectural investigations, ethnographic interviews, tree coring, aerial photography, topographic and hydrographic surveys, geophysical surveys, soil analyses, mapping, and historic research. Tools include magnetometers, ground penetrating radar, electrical resistivity and electromagnetic

conductivity equipment, global positioning systems, and geographic information systems (GIS) computer software.

Historic research is important to the identification and evaluation of the landscape, but equal consideration must be given to “reading the landscape” (Page and others 1998). Although people read landscapes on many levels, including “landscape as nature, habitat, artifact, system, problem, wealth, ideology, history, place and aesthetic,” it is recommended that the landscape always be read in its context of place and time (Birnbaum 1994).

Vernacular Historic Landscapes

For the purposes of the National Register, a Vernacular Historic Landscape is defined as a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features. Vernacular Historic Landscapes commonly reflect the day-to-day occupational activities of people engaged in traditional work such as mining, fishing, and various types of agriculture. Often, they have developed and evolved in response to both the forces of nature and the pragmatic need to make a living. Landscapes small in size and having no buildings or structures, such as an experimental orchard, are classified as sites. Most, however, being extensive in acreage and containing a number of buildings, sites, and structures--such as a ranch or farming community--are classified as historic districts. Large acreage and a proportionately small number of buildings and structures differentiate Vernacular Historic Landscapes from other kinds of historic properties.

Distinct from designed landscapes, Vernacular Historic Landscapes usually are not the work of a professional designer and have not been developed according to academic or professional design standards, theories, or philosophies of landscape architecture. These properties possess tangible features called “landscape characteristics” that have resulted from historic human use. In this way, they also differ from natural areas that embody important cultural values but have experienced little modification, such as sites having religious meaning for Native American groups.

NPS Preservation Brief # 36 defines a Vernacular Historic Landscape as a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those every day lives. Function plays a significant role in vernacular landscapes. They can be a single property, such as a farm, or a collection of properties, such as a district of historic farms along a river valley.

National Register Eligibility

Cultural landscapes are listed in the NRHP as sites or historic districts. To qualify for listing in the National Register, landscapes have to meet one or more of the criteria presented in 36 CFR 60. This includes districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association and the four criteria enumerated above.

The NRHP lists only those properties that meet the NRHP criteria for significance and retain integrity. A landscape may be significant at the local, state, or national level. An historic context statement provides background information about the patterns of history and development of a particular geographic area. Equally important is an assessment of a landscape's integrity or a measure of how the physical fabric has changed over time. A landscape must have both significance and integrity to be considered eligible for the NRHP. Therefore, a Vernacular Historic Landscape will be eligible for the NRHP if it is significant at the local, state, or national level, retains integrity and has physical features that convey its significance.

The South Bay Salt Pond Restoration Project Historic Context Report (EDAW 2005) will be used in conjunction with an evaluation framework (to be developed in consultation with SHPO) to determine the significant features of the solar salt industry landscape.

State Regulations

California Environmental Quality Act

CEQA offers directives regarding impacts on historical resources and unique archaeological resources. CEQA states generally that if implementation of a project would result in significant environmental impacts, then public agencies should determine whether such impacts can be substantially lessened or avoided through feasible mitigation measures or feasible alternatives. This general mandate applies equally to significant environmental effects related to certain cultural resources.

Only significant cultural resources (*e.g.*, “historical resources” and “unique archaeological resources”) need to be addressed. State CEQA Guidelines define an “historical resource” as, among other things, “a resource listed or eligible for listing on the CRHR (CEQA Guidelines, Section 15064.5, subd. (a)(1); see also Public Resources Code Sections 5024.1, 21084.1.) A historical resource may be eligible for inclusion on the CRHR, as determined by the State Historical Resources Commission or the lead agency, if the resource:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or
- (2) Is associated with the lives of persons important in our past; or
- (3) 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; or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, a resource is presumed to constitute an “historical resource” if it is included in a “local register of historical resources” unless “the preponderance of evidence demonstrates that it is not historically or culturally significant.” (CEQA Guidelines, Section 15064.5, subd. (a)(2)).

In addition, the CEQA Guidelines requires consideration of unique archaeological sites (Section 15064.5). (See also Public Resources Code Section 21083.2.) A “unique archaeological resource” is defined as:

“an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.” (Section 21083.2(h).)

If an archaeological site does not meet the criteria for inclusion on the CRHR but does meet the definition of a unique archaeological resource as outlined in the Public Resource Code (Section 21083.2), it is entitled to special protection or attention under CEQA. Treatment options under Section 21083.2 of CEQA include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a “unique archaeological resource”).

Public Resources Code Section 15064.5(e) of the state CEQA Guidelines requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, Section 15064.5(d) of the CEQA Guidelines directs the lead agency to consult with the appropriate Native Americans as identified by the NAHC and directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Regional/Local Regulations

Due to the large, multi-county, multi-municipality nature of the SBSP Restoration Project, there are naturally many individual county and city plans and policies that apply to cultural resources. They all generally encourage preservation and protection of cultural resources when practicable.

Eden Landing

Hayward. The City of Hayward General Plan (City of Hayward 2003) includes the following relevant cultural resources strategies, policies, and implementation measures:

Community Amenities and Facilities Policy and Strategy # 7.

Enhance the city's image through identification and preservation of historic resources.

2. Conduct a survey of potential historic structures and sites based on evaluation criteria that include their individual significance and their contribution to an historic setting.
3. Seek landmark status for valued structures and sites where preservation is deemed feasible, and promote acquisition of historic sites as parks where appropriate.
4. Encourage rehabilitation of valued buildings and sites and provide information on architectural styles, renovation techniques, federal and state tax benefits and other financing sources.
6. Consider establishment of historic districts, or special areas such as Preservation Parks, where there are concentrations of historic structures and/or properties that could serve as receptor sites for relocated historic structures.
8. Promote establishment of a salt manufacturing historic exhibit, either as part of development proposals for the former Oliver Salt Works site or in another prominent location along the Bay Trail.

Alviso

Fremont. The City of Fremont General Plan (City of Fremont 2003) includes the following relevant cultural resources goals, policies, and implementation measures:

Fundamental Goal 13: Vital connections between the history and heritage of the community and everyday life.

Policy LU 7.3: The City shall identify and designate historic buildings and archaeological sites outside of the identified Historic Overlay district. It is the intent of the City to require, where feasible, the preservation or Primary Historic Resources, as identified in the General Plan. It is the policy of the City of Fremont to protect, enhance, perpetuate and use structures, sites and areas which are reminders of past eras, events, and persons important in local, State, or National history. Resources which provide significant examples of architectural styles of the past and are unique and irreplaceable assets to the community should be protected to provide for the present and future generations examples of physical surroundings in which past generations lived. The public health, safety and welfare of the community require the prevention of needless destruction and impairment, and promotion of the economic utilization of such structures, site and areas.

San Jose. The City of San Jose 2020 General Plan (City of San Jose 2004) includes the following relevant cultural resources goals and policies:

Historic, Archaeological and Cultural Resources Goal:

Preservation of historically and archaeologically significant structures, sites, districts and artifacts in order to promote a greater sense of historic awareness and community identity and to enhance the quality of urban living.

Historic, Archaeological and Cultural Resources Policies:

1. Because historically or archaeologically significant sites, structures and districts are irreplaceable resources, their preservation should be a key consideration in the development review process.
5. New development in proximity to designated historic landmark structures and sites should be designed to be compatible with the character of the designated historic resource. In particular, development proposals located within the Areas of Historic Sensitivity designation should be reviewed for such design sensitivity.
7. Structures of historic, cultural or architectural merit which are proposed for demolition because of public improvement projects should be considered for relocation as a means of preservation. Relocation within the same neighborhood, to another compatible neighborhood or to the San José Historical Museum should be encouraged.
8. For proposed development sites which have been identified as archaeologically sensitive, the City should require investigation during the planning process in order to determine whether valuable archaeological remains may be affected by the project and should also require that appropriate mitigation measures be incorporated into the project design.
9. Recognizing that Native American burials may be encountered at unexpected locations, the City should impose a requirement on all development permits and tentative subdivision maps that upon discovery of such burials during construction, development activity will cease until professional archaeological examination and reburial in an appropriate manner is accomplished.
10. Heritage trees should be maintained and protected in a healthy state. The heritage tree list, identifying trees of special significance to the community, should be periodically updated.

County of Santa Clara. The County of Santa Clara General Plan (County of Santa Clara 1994) includes the following relevant cultural resources strategies, policies, and implementation measures:

C-RC 49

Cultural heritage resources within Santa Clara County should be preserved, restored wherever possible, and commemorated as appropriate for their scientific, cultural, historic and place values.

Strategy #2:***Prevent or Minimize Adverse Impacts on Heritage Resources***

C-RC 52

Prevention of unnecessary losses to heritage resources should be ensured as much as possible through adequate ordinances, regulations, and standard review procedures. Mitigation efforts, such as relocation of the resource, should be employed where feasible when projects will have significant adverse impact upon heritage resources.

Strategy #3:

Restore, Enhance and Commemorate Resources

C-RC 54

Heritage resources should be restored, enhanced, and commemorated as appropriate to the value and significance of the resource.

Sunnyvale. The City of Sunnyvale General Plan (City of Sunnyvale 1995) includes the following relevant cultural resources goals, policies, and implementation measures:

Heritage Preservation Sub-Element

Goal 6.3B To enhance, preserve and protect Sunnyvale's heritage, including natural features, the built environment and significant artifacts.

Policy 6.3B.1 Preserve existing landmarks and cultural resources and their environmental settings.

Policy 6.3B.4 Identify and work to resolve conflicts between the preservation of heritage resources and alternative land uses.

Policy 6.3B.5 Seek out, catalog and evaluate heritage resources which may be significant.

Policy 6.3B.10 Archeological resources should be preserved whenever possible.

Mountain View. The City of Mountain View 1992 General Plan (City of Mountain View 1992) the Environmental Management Chapter includes the following relevant cultural resources strategies, policies, and implementation measures:

Goal J: Identify and preserve the city's archaeological resources.

Policy 27. Improve awareness of the city's archaeological resources.

Ravenswood

Menlo Park. The Open Space and Conservation Element of the Menlo Park General Plan (City of Menlo Park 1973) provides the following relevant cultural resources goal and policy. The City of Menlo Park

General Plan Policy Document (City of Menlo Park 1994) does not include an update of this information associated with cultural resources.

Open Space and Conservation Goal #8: To preserve historic buildings, objects, and sites of historic and cultural significance.

Open Space and Conservation Policy #6: Protect conservation and scenic areas, historic and cultural sites from deterioration or destruction by vandalism, private actions or public actions.

Other Relevant Plans in the Region

Union City. The City's 2002 General Plan Policy Document (City of Union City 2002) includes the following relevant cultural resources strategies, policies, and implementation measures:

Policies

NHR-C.1.3 The City shall encourage the preservation of public landmarks.

NHR-C.1.5 The City shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures and sites.

NHR-C.1.6 The City shall support efforts to protect and recover archeological resources.

Implementation Programs

NHR-C.6 When archaeological resources are uncovered during site excavation, grading, or construction work on the site will be suspended until the significance of the features can be determined by a qualified archaeologist. If significant resources are determined to exist, the archaeologist shall make recommendations for protection or recovery of the resource.

Newark. The City of Newark General Plan Update 2007 (City of Newark 1992) includes the following relevant cultural resources goal:

Major Community Goal 5: Protect and conserve significant resources such as energy, clean air and water and historic or architecturally interesting buildings.

East Palo Alto. The City of East Palo Alto General Plan (City of East Palo Alto 1999) includes the following relevant cultural resources goals, strategies, and policies:

From the Conservation and Open Space Element:

Conservation/Open Space Goal 1.0: Identify and conserve important historic, archaeological and paleontologic resources.

Policy 1.1: Protect areas of important archaeological and paleontologic resources.

Policy 1.2: Protect and conserve buildings or sites of historic significance.

Palo Alto. The City of Palo Alto Comprehensive Plan 1998 – 2010 (City of Palo Alto 2001) identifies the following relevant cultural resources goals, strategies, and policies:

Land Use and Community Design Implementation Plan:

L-54 Review and update the City's Inventory of historic resources, including City-owned structures.

L-67 Using the archaeological sensitivity map in the Comprehensive Plan as a guide, continue to assess the need for archaeological surveys and mitigation plans on a project by project basis, consistent with the California Environmental Quality Act and the National Historic Preservation Act.

Redwood City. The City of Redwood City Strategic General Plan (City of Redwood City 1990) identifies the following relevant cultural resources goals and policies in the Historic Resources Element:

1) Environmental Goals and Principles:

Preserve and enhance the aesthetic quality, architectural character, cohesiveness, historic character, and human scale of designated landmarks, districts, and sites. Bring about development of landmarks which centers on sound economic considerations, authentic historic character, public safety, and Redwood City's land use policy. Recognize sound landmark maintenance and development as an alternative for urban design in the Downtown.

a. Strictly enforce the Historic Preservation Ordinance to preserve and enhance the city's most significant landmark districts and sites, preventing demolition or alteration which would detract from their value to the community.

2) Cultural Goals and Principles:

Retain Redwood City's cultural, historical, and architectural heritage.

3.8.3 Environmental Impacts and Mitigation Measures

Overview

The entire southern rim of San Francisco Bay has been heavily used since humans entered the region. Rising sea levels and concomitant sedimentation likely have buried older prehistoric sites. Gold Rush-era placer mining resulted in the deposition of hundreds of cubic meters of sediment around the Bay, likely burying additional prehistoric early historic sites along the Bay's edge. Agriculture, the salt industry, and other bayshore development have contributed to the destruction or obscuration of evidence of human use.

The scale and scope of the SBSP Restoration Project Area necessarily mean that there is a wide range of known and unknown cultural resources that may be disturbed by some aspect of individual restoration

activities. Because so many of these resources are probably obscured, they may only be encountered during Project-related earthmoving activities. Accidental discoveries made during construction may be unavoidable; however, as emphasized in NHPA, CEQA, and local plans and policies, wherever practicable, preservation of cultural resources is preferred over additional damage and/or data recovery.

Prehistoric use of the bayshore has been clearly identified, but the density of occupation and use has most likely been underestimated because so many sites have been obscured by the processes noted above. Semi-systematic documentation of the most visible prehistoric resources did not begin until the early 20th century, by which time it was noted that many mound and shellmound sites had already been damaged or destroyed (Nelson 1909). Prehistoric sites generally cluster in the vicinity of a water source or other relatively obvious resources such as food collection areas (*e.g.* oak trees), or tool stone deposits. However, being able to predict likely site locations does not mean that they have all been found. Rather, it is assumed that many sites will never be found unless a construction project of some type accidentally uncovers them.

The most obvious evidence of human occupation in the Project Area is the various salt works structures and remnants, ditches and levees, the salt ponds themselves, and the detritus (historic and modern) that has collected around them. The SBSP Restoration Project Area is clearly part of a larger, contiguous complex that lines almost the entire southern rim of San Francisco Bay. The Project Area may meet the requirements of a Vernacular/Rural Historic Landscape (see definition in Section 3.8.2, Regulatory Setting). The overall salt ponds complex around the southern end of the Bay retains many features from the period of use; however, many of the attendant buildings and structures have been removed either through natural deterioration or deliberate removal. It is important to determine whether aspects of this area retain sufficient integrity to be considered as a cultural landscape as defined by NPS. If it is a landscape, then the next step is to determine whether it meets the criteria of eligibility for listing to the NRHP or CRHR, and if it does, to define contributing and non-contributing elements. Project-related alterations to contributing elements of a Register-eligible landscape would be significant impacts to the environment under that scenario. Similarly, Project activities that result in impacts to prehistoric sites that are determined to be eligible to the NRHP or CRHR would be significant impacts to the environment.

The impacts and mitigation measures below are generally discussed using CEQA language such as “significant impacts” rather than “adverse effects.” This discussion includes consideration of resources under NHPA as well as CEQA, but without offering the confusion of using two sets of similar terminology. As a reminder, cultural resources may be historic or prehistoric. The word “historic” may be a temporal reference, or it may signify the importance of a resource from either the historic or prehistoric era. A historic resource, as defined by CEQA, is a site that is eligible or potentially eligible for listing on the CRHR. The reader must follow the context of the discussion to understand which use of the word is being made.

Significance Criteria

NHPA

Under NHPA, if it is determined that historic properties may be affected by an undertaking, the agency proceeds with the Section 106 process, assessing adverse effects (called significant impacts under CEQA). The definition of adverse effects are found in Section 800.5(a)(1) of the regulations of NHPA. The definition of adverse effects states:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with The Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

CEQA

According to the CEQA Guidelines, a cultural resources impact is considered significant if implementation of the proposed Project or alternatives under consideration would do either of the following:

- Cause a substantial adverse change in the significance of a unique archaeological resource or an historical resource as defined in Section 21083.2 of CEQA and Section 15064.5 of the state CEQA Guidelines, respectively; or
- Disturb any human remains, including those interred outside of formal cemeteries.

The CEQA Guidelines (CCR Section 15064.5) define “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

As explained in Section 3.1.2, while both CEQ Regulations for Implementing NEPA and the CEQA Guidelines were considered during the impact analysis, impacts identified in this EIS/R are characterized using CEQA terminology. Please refer to Section 3.1.2 for a description of the terminology used to explain the severity of the impacts.

Program-Level Evaluation

SBSP Long-Term Alternatives

SBSP Impact 3.8-1: Potential disturbance of known and/or unknown cultural resources.

Alternative A: No Action. Under the No Action Alternative, only limited O&M activities would occur within the SBSP Restoration Project Area. Because the Project would not be implemented under Alternative A, no restoration-related construction activities would occur that could affect known or unknown cultural resources. Natural acts such as levee breaching due to tidal action, flooding, or channel scour would occur in the natural course of events if the ponds had not been created and so would not be considered a Project-related impact. The levees are artificial constructs which have been improved from time to time since their construction. While limited levee improvements would occur, they would be part of a long-term, continuous process that would not adversely affect the historic significance of the levees.

Alternative A Level of Significance: Less than Significant

Alternative B: Managed Pond Emphasis. Under Alternative B, levees would be breached, drainage channels excavated, and creeks and sloughs would be restored. In addition, up to 50 percent of the SBSP Restoration Project Area would be subject to ground disturbing activities associated with the reconfiguration of the ponds and construction of new levees and recreation features (*e.g.*, public access trails and platforms, parking, boat launches and other recreational facilities). These are potentially significant impacts.

Ground-disturbing activities related to any of these actions could disturb known or as-yet unknown prehistoric or historic cultural resources. Prehistoric resources are known to occur within the SBSP Restoration Project Area and there is a high probability that additional, as-yet unknown, prehistoric resources are located within the Project Area. These might be visible in the bottoms of the salt ponds, or might be seen in levees, where artifacts were relocated when soils were scraped up and pushed around to form the levees. Prehistoric sites might also be buried by earlier natural and man-made processes and would only be found during Project construction. If cultural resources, including those that appear to be eligible for listing to the NRHP and CRHR, or human remains are discovered during Project construction,

then any impact to these resources from Project construction also could be significant. Implementation of SBSP Mitigation Measure 3.8-1 would reduce potential impacts to recorded or unrecorded cultural resources to less-than-significant levels.

SBSP Mitigation Measure 3.8-1: Discovery of Unknown Resources.

Background. Restoration actions planned for the SBSP Restoration Project Area shall be treated as individual archaeological projects. The overall record search for this EIS/R was performed in June 2006. A new record search shall be performed for any projects within the SBSP Restoration Project Area where the previous record search is more than five years old.

Site Survey. Prior to the beginning of any Project construction activity that could affect the previously unsurveyed portions of the Project Area, qualified professional archaeologists shall be retained to inventory all portions of the restoration site that have not been examined previously or have not been examined within the last 15 years. The survey(s) shall be conducted during a time when the ground surfaces of potential project sites are visible so the natural ground surface can be examined for traces of prehistoric and/or historic-era cultural resources. If the survey(s) reveals the presence of cultural resources on the Project site (*e.g.*, unusual amounts of shell, animal bone, bottle glass, ceramics, and structure/building remains), and those resources have not been dealt with sufficiently in any Cultural Landscape documentation, the resources shall be documented according to current professional standards. The resources shall be evaluated for potential eligibility to the NRHP or CRHR. Depending on the evaluation, additional mitigation measures may be required, including avoidance of the resource through changes in construction methods or Project design or implementation of a program of testing and data recovery, in accordance with all applicable federal and state requirements.

Pre-Construction Contractor Education. Prior to any Project-related construction, a professional archaeologist shall be retained to address machinery operators and their supervisors, preferably by giving an on-site talk to the people who will perform the actual earth-moving activities. This will alert the operators to the potential for finding historic or prehistoric cultural resources.

Construction Monitoring. Any Project-related construction that occurs within 100 ft (30 m) of a known prehistoric resource shall be monitored by a qualified professional archaeologist and a Native American monitor. If elements of the known resource or previously unknown cultural resources are encountered during Project construction, all ground-disturbing activities shall halt within a 100-foot radius of the find. The archaeologist shall identify the materials, determine their possible significance, and formulate appropriate measures for their treatment in consultation with the Native American monitor, Most Likely Descendant (MLD), or appropriate Native American representative and the appropriate Lead Agency. Potential treatment methods for significant and potentially significant resources may include, but would not be limited to, no action (*i.e.*, resources determined not to be significant), avoidance of the resource through changes in construction methods or Project design, or implementation of a program of testing and data recovery, in accordance with all applicable federal and state requirements. These measures shall be implemented prior to resumption of Project construction.

Unanticipated Finds. If contractors identify possible cultural resources, such as unusual amounts of bone, stone, or shell, they shall be instructed to halt operation in the vicinity of the find and follow the appropriate contact procedures. Work shall not resume in the vicinity of the find until a qualified professional archaeologist has had the opportunity to examine the finds. The archaeologist shall identify the materials, determine their possible significance, if the finds are prehistoric, formulate appropriate measures for their treatment in consultation with the Native American monitor, MLD, or appropriate Native American representative and the appropriate Lead Agency. Potential treatment methods for significant and potentially significant resources may include, but would not be limited to, no action (*i.e.*, resources determined not to be significant), avoidance of the resource through changes in construction methods or Project design, or implementation of a program of testing and data recovery, in accordance with all applicable federal and state requirements. These measures shall be implemented prior to resumption of Project construction.

Human Remains. California law recognizes the need to protect interred human remains, particularly Native American burials and associated items of patrimony, from vandalism and inadvertent destruction. The procedures for the treatment of discovered human remains are contained in California Health and Safety Code Section 7050.5 and Section 7052 and California Public Resources Code Section 5097. The California Health and Safety Code requires that if human remains are found in any location other than a dedicated cemetery, work is to be halted in the immediate area.

The appropriate Agency or the Agency's designated representative shall be notified. The Agency shall immediately notify the county coroner and a qualified professional archaeologist. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American interment, then coroner shall contact the Native American Heritage Commission within 24 hours.

The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods, as provided in Public Resources Code Section 5097.98. The landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if: (1) the Native American Heritage Commission is unable to identify a MLD or (2) the MLD fails to make a recommendation within 24 hours after being notified by the commission or (3) if the landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Alternative B Level of Significance: Less than Significant with Mitigation

Alternative C: Tidal Habitat Emphasis. The most extensive restoration efforts would take place under Alternative C. This alternative would include massive pond restoration, breached levees, drainage channel excavation, and creek and slough restoration. Thousands of acres in the SBSP Restoration

Project Area would be graded extensively, new levees would be created, public access trails and platforms, parking, and boat launches and other recreational facilities would be constructed. These are potentially significant impacts.

Ground-disturbing activities related to any of these actions could disturb known or as-yet unknown prehistoric or historic cultural resources. Much of the Project Area has not been inventoried for cultural resources and while the larger remnants of the salt ponds industry are readily visible, they have not been systematically documented. Depending on the results of a cultural landscape identification and assessment effort, the salt ponds and associated structures might be historically significant.

Prehistoric resources are known to occur within the SBSP Restoration Project Area and there is a high probability that additional, as-yet unknown, prehistoric resources are located within the Project Area. These might be visible in the bottoms of the salt ponds, or might be seen in levees, where artifacts were relocated when soils were scraped up and pushed around to form the levees. Prehistoric sites might also be buried by earlier natural and man-made processes and would only be found during Project construction. Implementation of SBSP Mitigation Measure 3.8-1 would reduce potential impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Alternative C Level of Significance: Less than Significant with Mitigation

SBSP Impact 3.8-2: Disturbance of the historic salt ponds and associated structures which may be considered a significant cultural landscape.

Alternative A: No Action. As described in SBSP Impact 3.8-1, only limited O&M activities would occur under the No Action Alternative. While unplanned breaching of levees due to tidal action, flooding, and channel scour may occur under the No Action Alternative over the 50-year planning period, it is assumed that these actions would have occurred in the natural course of events if the ponds had not been created and so should not be considered a Project-related impact. As such, the potential for any changes to the current landscape, which could be designated a cultural landscape, would be less than significant.

Alternative A Level of Significance: Less than Significant

Alternative B: Managed Pond Emphasis. As described in SBSP Impact 3.8-1, up to 50 percent of the SBSP Restoration Project Area would be subject to ground disturbing activities. Much of the Project Area has not been inventoried for cultural resources and while the larger remnants of the salt ponds industry are readily visible, they have not been systematically documented. Depending on the results of a cultural landscape identification and assessment effort, the salt ponds and associated structures (buildings, objects, and structures) may be historically significant. Due to the potential for the Project Area to be considered a cultural landscape, grading and other construction activities under this alternative would result in a significant impact. However, with implementation of SBSP Mitigation Measure 3.8-2 (*e.g.*, inventory/recordation of resources, and public outreach program), potential impacts to the cultural landscape would be reduced to less-than-significant levels.

SBSP Mitigation Measure 3.8-2: Cultural Landscape, Inventory of Resources, Treatment of Finds.

Cultural Landscape. Prior to implementation of any restoration action, a qualified professional shall be retained to determine whether the various salt works-related ponds, buildings, objects, and structures lining the southern San Francisco Bay will be reviewed as a cultural landscape within the historic context and evaluation framework developed for this Project. This will be done for each Project phase. If a cultural landscape is identified, a determination must be made concerning NRHP and/or CRHR eligibility.

If the landscape is determined to be eligible for listing to the NRHP and/or CRHR, an assessment of the Project's effects on the landscape will be conducted. This study shall include documentation of contributing elements to the resources, a list of non-contributing elements, and recommendations regarding any additional mitigation or treatment needed. Mitigation measures may include tasks such as Historic American Building Survey³ / Historic American Engineering Record⁴ / Historic American Landscapes Survey⁵ (HABS/HAER/HALS) documentation, videotaping resources, a public outreach program, or signage at appropriate points along the proposed recreational trails.

Alternative B Level of Significance: Less than Significant with Mitigation

Alternative C: Tidal Habitat Emphasis. As described in SBSP Impact 3.8-1, this alternative would result in the highest proportion of graded area compared to the other alternatives. Similar to Alternative B, the salt ponds and associated buildings could be considered a cultural landscape. Grading activities within a designated cultural landscape area would result in significant impacts and SBSP Mitigation Measure 3.8-2 would be required to reduce potential effects to less-than-significant levels.

Alternative C Level of Significance: Less than Significant with Mitigation**Project-Level Evaluation****Phase 1 Impact 3.8-1: Potential disturbance of known or unknown cultural resources.****Phase 1 No Action**

The following discussion addresses the No Action Alternative (Alternative A) at the project level.

³ The Historic American Buildings Survey (HABS) is the nation's first federal preservation program, begun by the American Institute of Architects, the Library of Congress, and NPS in 1933 to document America's architectural heritage. HABS recording combines drawings, history, and photography to produce a comprehensive, interdisciplinary record. The documentation ranges in scope depending largely upon the level of significance and complexity.

⁴ The Historic American Engineering Record (HAER) was established in 1969 by the NPS, the American Society of Civil Engineers and the Library of Congress to document historic sites and structures related to engineering and industry. Appropriate subjects for documentation are individual sites or objects, such as a bridge, ship, or steel works; or larger systems, like railroads, canals, electronic generation and transmission networks, parkways and roads.

⁵ The Historic American Landscapes Survey (HALS) mission is to record historic landscapes in the United States and its territories through measured drawings and interpretive drawings, written histories, and large-format black and white photographs and color photographs.

As noted under SBSP Impact 3.8-1 above, only limited O&M activities would occur under the No Action Alternative. Natural acts such as levee breaching due to tidal action, flooding, or channel scour would occur in the natural course of events if the ponds had not been created and so should not be considered a Project-related impact. The levees are artificial constructs which have been improved from time to time since their construction. Additional minor improvements would be part of a long-term, continuous process that would not adversely affect their historic significance.

Phase 1 No Action Level of Significance: Less than Significant

Phase 1 Actions

The following discussion addresses the Phase 1 actions (the first phase of Alternatives B and C) at the project level.

Eden Landing. The various activities resulting from the Phase 1 actions at Eden Landing have the potential to adversely affect six of the known sites within that pond complex. Sites ALA-495H (Rocky Point Salt Works), ALA-496H (the Union Pacific Salt Works, potentially eligible to the NRHP and CRHR), ALA-498H (Nielson/Meeklesen Bros. Salt Works, and ALA-501H (historic debris and a wharf/shipping complex, potentially eligible to the NRHP and CRHR) may be affected by water flow created by levee breaches, excavation of channels, covered by borrow ditch blocks or levee reinforcement, disturbed by marsh pond and panne habitat construction, or disturbed by water control structure construction and placement. Site ALA-494H (the Oliver Salt Works, potentially eligible to the NRHP and CRHR) and site ALA-593H (refuse scatter with Chinese ceramics) may be affected by the construction of interpretive trails or recreational access. None of the Eden Landing Phase 1 ponds has been systematically inventoried for cultural resources, and it has not yet been determined whether a salt ponds cultural landscape exists, whether it is eligible for listing to either historic register, whether any of the Eden Landing pond complex includes contributing elements to such a landscape, or whether register-eligible prehistoric sites exist within the Eden Landing pond complex.

Ponds E8A, E9. Some of the levee breaches and associated pilot channel excavations, as well as marsh pond and panne habitat proposed for Ponds E8A and E9, could affect site ALA-496, the remnants of the Union Pacific Salt Works. Ponds E8A and E9 have not been surveyed for cultural resources. The only recorded sites are large, easily visible remnants of the salt works, which would be inundated as part of the Project. The possibility exists that there may be smaller prehistoric or historic sites that would be found in the bottoms of the ponds or along the levees.

Implementation of Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Ponds E12, E13. In Phase 1, these ponds would be divided into a number of smaller cells, islands would be constructed within the cells, a new water intake structure would be constructed from Mt. Eden Creek, a new canal would be built between the ponds, and a discharge mixing basin would be excavated. Many of these new structures would be built using material borrowed from the extant levees. The subdivision and modification of Ponds E12 and E13 would substantially alter their current structures and geography.

One of the new levees would be placed to protect ALA-494H, the historic Oliver Salt Works. Other levees and nesting islands would be constructed across salt pannes that have not been surveyed for cultural resources. Borrow material for this construction would come from lowered existing levees which may not have been inventoried for cultural resources or which may contain known historic resources, such as the levee between Ponds E13 and E14, where a line of Archimedes screws still stands. These alterations would change the view of the larger salt ponds area from the levee above the Oliver Salt Works.

The discharge mixing basin planned for the western end of Pond E13 would be placed in an area that has not been surveyed for cultural resources. The proposed outlet structure may adversely affect elements of Site ALA-593H, a collection of domestic debris that includes Chinese ceramics.

Each of the Phase 1 actions described above has the potential to cause significant impacts to historic resources. Implementation of SBSP Mitigation Measure 3.8-1 would reduce potential Project-related impacts to less-than-significant levels.

Recreation and Public Access Features. The interpretive trail proposed to run along the edges of Ponds E10, E11, E12, and E13 would pass Site ALA-501H, a historic debris and wharf/shipping complex, and ALA-494H, the historic Oliver Salt Works. Both of these sites are considered eligible for listing to the NRHP/CRHR and should be unaffected by trail construction that stays on top of the existing levees. Additionally, the proximity of the trail to these two complexes offers an excellent opportunity for a display of interpretive information for the public. The trail also would pass by the historic locations of ALA-495H and ALA-498H, locations of two historic saltworks with no identifiable standing remnants. There would be no impacts to these sites from construction of the interpretive trail.

The trail appears to cross over Site ALA-593H, a domestic debris scatter that includes Chinese ceramics. This site is located on the levee, and test excavations (Baxter and Beck 2001) demonstrated that the site extends up to 1 ft below the current ground surface. This site has not been evaluated for eligibility to the NRHP or CRHR but may represent the remains of a camp of Chinese laborers brought in to work on the salt farms. As such, it may be eligible for listing to the NRHP or CRHR.

Additional testing would be required to determine the NRHP or CRHR eligibility of ALA-593H. In general, it is desirable to avoid drawing attention to cultural resources such as this. The proximity of a ceramic and glass scatter to a recreational trail may encourage public users to collect artifacts from the site. After the testing program is complete, if the site is found to be eligible for listing to either the NRHP or CRHR, it shall be capped with soil or other appropriate materials and planted with vegetation similar to that found elsewhere on the levee to protect it (see Phase 1 Mitigation Measure 3.8-1).

Implementation of the testing/capping program described above on Site ALA-593H, as well as implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Phase 1 Mitigation Measure 3.8-1: Protection for Site ALA-593H

If ALA-593H (at Ponds E12 and E13) is determined to be eligible for listing to either the NRHP or CRHR, it shall be capped with soil or other appropriate materials and planted with vegetation similar to that found elsewhere on the levee to protect it.

Alviso. Phase 1 restoration actions in the Alviso pond complex would affect pond areas that have already been inventoried for cultural resources. That study took place in 1995 (Basin Research Associates, Inc.) and would not need to be repeated if Phase 1 restoration construction occurs by 2010. Only one previously identified site, SCL-810H, remnants of a small WWII shipyard, is within the vicinity of the Phase 1 actions planned for the Alviso pond complex.

Pond A6. There are no known cultural resources in Pond A6. As-yet unknown cultural resources may be identified during Project implementation. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Pond A8. There is only one recorded cultural resource in Pond A8. Phase 1 actions would involve breaching the levee, excavating pilot channels, lowering existing levees along Guadalupe and Alviso Sloughs, and constructing borrow ditch blocks.

Site SCL-810H is located on the levee overlooking Alviso Slough and runs down towards the slough. The site includes concrete foundations, floors, and footings, a concrete boat ramp and a wooden pier, and has been highly disturbed by the salvage of scrap metal after the yard closed as well as the deposition of urban concrete rubble in the latter half of the 20th century. The site has lost the integrity that would make it eligible for listing to the NRHP or CRHR. As a result, impacts to this site resulting from implementation of the Phase 1 actions would be less than significant.

The Phase 1 actions would have the potential to adversely affect as-yet unknown cultural resources. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Pond A16. There are no known cultural resources in Pond A16. As-yet unknown cultural resources may be identified during Project implementation. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Recreation and Public Access Features. The proposed recreation and public access features would not adversely affect known cultural resources within the Alviso pond complex. However, as-yet unknown cultural resources may be identified during Project implementation. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Ravenswood. Phase 1 restoration actions at Ravenswood may include berm construction, levee raising, nesting island construction, water control structure construction and placement, and construction of recreational and public access facilities. Two very small cultural resource inventories conducted within

the Ravenswood pond complex failed to identify any resources (Billat 2000; Offerman 1985). The Offerman effort would need to be repeated as part of the pre-construction process in Pond SF2 as it is over 20 years old.

Pond SF2. There are no known cultural resources in Pond SF2. As-yet unknown cultural resources may be identified during Project implementation. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Recreation and Public Access Features. The proposed recreation and public access features would not adversely affect known cultural resources in the Ravenswood pond complex. However, as-yet unknown cultural resources may be identified during Project implementation. Implementation of SBSP Mitigation Measure 3.8-1 would reduce Project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

Phase 1 Actions Level of Significance: Less than Significant with Mitigation

Phase 1 Impact 3.8-2: Disturbance of the historic salt ponds and associated structures which may be considered a significant cultural landscape.

SBSP Impact 3.8-2 describes in general potential effects on historic salt ponds and associated structures associated with development of the proposed alternatives. This impact provides additional detail on the known cultural resources and their potential as contributing elements of a cultural landscape.

Phase 1 No Action

The following discussion addresses the No Action Alternative (Alternative A) at the project level.

As described in SBSP Impact 3.8-2 above, only limited O&M activities would occur under the No Action Alternative. While unplanned breaching of levees due to tidal action, flooding, and channel scour may occur under the No Action Alternative over the 50-year planning period, it is assumed that these actions would have occurred in the natural course of events if the ponds had not been created and so should not be considered a Project-related impact. As such, the potential for any changes to the current landscape, which could be designated a cultural landscape, would be less than significant.

Phase 1 No Action Level of Significance: Less than Significant

Phase 1 Actions

The following discussion addresses the Phase 1 actions (the first phase of Alternatives B and C) at the project level.

Eden Landing. As described in Phase 1 Impact 3.8-1 above, none of the Eden Landing Phase 1 ponds has been systematically inventoried for cultural resources, and it has not yet been determined whether a

salt ponds cultural landscape exists, whether it is eligible for listing to either historic register, whether any of the Eden Landing pond complex includes contributing elements to such a landscape, or whether register-eligible prehistoric sites exist within the Eden Landing pond complex.

Ponds E8A, E9. As described in Phase 1 Impact 3.8-1 above, Ponds E8A and E9 have not been surveyed for cultural resources. The only recorded sites are large, easily visible remnants of the salt works, which may be contributing elements to a significant cultural landscape.

Phase 1 actions may result in a significant impact on contributing elements of a cultural landscape if the Eden Landing pond complex is designated a cultural landscape. With implementation of SBSP Mitigation Measure 3.8-2, potential effects would be reduced to less-than-significant levels.

Ponds E12, E13. ALA-593H may be a contributing resource to a historic landscape; as such, Phase 1 actions have the potential to result in a significant impact on the resource. Implementation of SBSP Mitigation Measure 3.8-2 and Phase 1 Mitigation Measure 3.8-1 would be required to reduce potential effects to less-than-significant levels.

Alviso. Built elements of the salt works (*e.g.*, ponds and levees) may be contributing elements of a cultural landscape. Phase 1 actions may result in a significant impact on contributing elements of a cultural landscape if the Alviso pond complex is designated a cultural landscape. With implementation of SBSP Mitigation Measure 3.8-2, potential effects would be reduced to less-than-significant levels.

Ravenswood. Built elements of the salt works may be contributing elements of a cultural landscape. Phase 1 actions may result in a significant impact on contributing elements of a cultural landscape if the Ravenswood pond complex is designated a cultural landscape. With implementation of SBSP Mitigation Measure 3.8-2, potential effects would be reduced to less-than-significant levels.

Phase 1 Actions Level of Significance: Less than Significant with Mitigation