CULTURAL RESOURCES EVALUATION FOR THE MISSION BAY PROJECT, SAN FRANCISCO, CALIFORNIA

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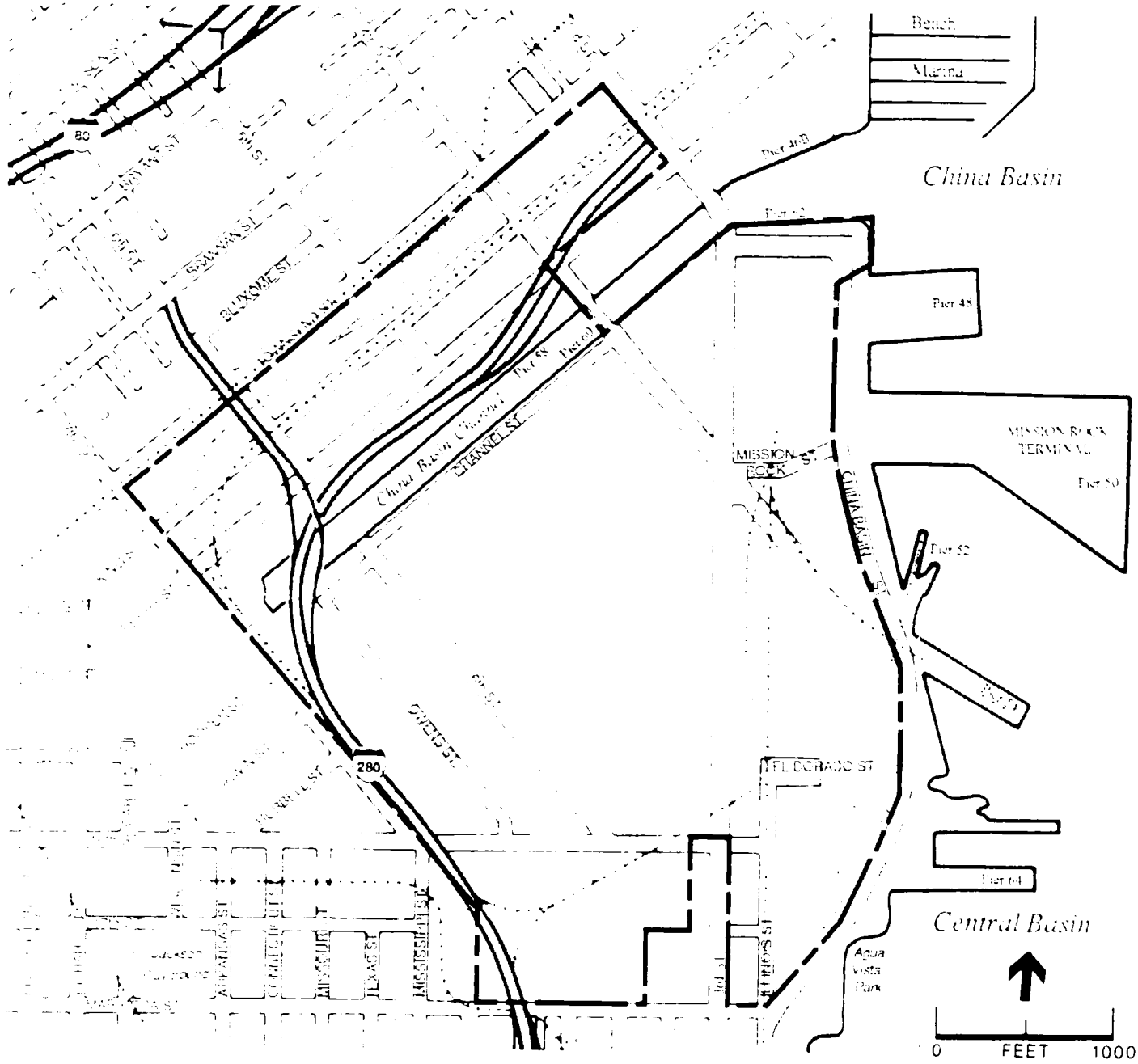
Report Cover: From 1868 Birdseye View of the City of San Francisco and Surrounding Country: Drawn by G. H. Goddard, Britton and Rey, San Francisco

INTRODUCTION

The objectives of these cultural resources evaluations are to identify archaeological and historical resources within the Mission Bay Project Area, to determine the affects of the project alternatives on the resources and to present mitigation alternatives for addressing potential impacts. Underlying these objectives are the requirements for assessing impacts on significant sites and properties set forth by the California Environmental Quality Act (CEQA) and the San Francisco Department of City Planning.

STUDY AREA DESCRIPTION

The Mission Bay Project Area is located in the City and County of San Francisco (see Map 1) within the China Basin Subarea of the Central Waterfront Plan Area of San Francisco. The Project Area includes properties bounded by a line drawn starting at the southwest corner of Townsend and Third Streets, thence southwest along Townsend to the northerly line of Seventh Street, thence southeast along Seventh and the I-280 freeway to the easterly line of Pennsylvania Street, thence southerly along Pennsylvania to the northerly line of Mariposa Street, thence east on Mariposa approximately 940 feet, thence northerly approximately 433 feet, thence easterly again approximately 280 feet, thence northerly approximately 433 feet to the northerly line of Sixteenth Street (excluding Block 3992 and Lots 1, 7 and 3 of Block 3943), thence east along Sixteenth to the easterly line of Third Street, thence south of Third to the northerly line of Mariposa Street, thence east on Mariposa to the easterly line of China Basin Street, thence north on China Basin to the beginning of the north boundary of Pier 48, thence north, following the waterside boundary of Pier 62 to the entrance of China Basin Channel, thence west along the waterside boundary of Pier 62 to the westerly line of Third Street and the southeasterly line of Channel Street, thence southwesterly along Channel Street to the southwest line of Fourth Street, thence northwest to the northwesterly line of Berry Street, thence northeasterly on Berry to the southwest line of Third Street (excluding Block 3803, the China Basin Building and part of the channel), thence



MISSION BAY BOUNDARY

Mission Bay

SOURCE: ESA

MAP 1
PROJECT AREA

northwest to the southwest line of Townsend Street to the point of beginning.

PROJECT ALTERNATIVES

For sometime now, the Mission Bay project area has been studied and several alternative land use and development plans have been considered. These efforts have led to the development of three alternatives, which are depicted in Chapter V of the Environmental Impact Report and summarized below.

Alternative A

Housing - There are 7,700 units of housing proposed in Alternative A. High-density residential development is located in the blocks north of the China Basin Channel. Medium/high-density units are located in three areas: on Fifth Street, between King and Berry Streets; on the east side of Fourth Street, south of the China Basin Channel; and along the east side of Owens Street. Medium-density housing is located south of China Basin Channel and occupies most of the central area of the site. Medium-density housing also occupies part of the area east of Third Street and extends to the China Basin Street boundary of the site. Low-density housing is located in the far eastern portion of the site near China Basin Street.

Building heights for high-density housing range from six to eight stories. In the medium/high-density residential development, heights range from four to eight stories. Medium-density housing heights range from four to six stories. Low-density housing heights are two to four stories. Off-street parking is provided at a ratio of one space to one unit for all housing and is included as part of the residential buildings.

There are 4.4 acres of public access open space and an unspecified quantity of private access open space provided within the housing blocks.

Office - A total of 4,100,000 square feet of office space is proposed. The office space is located on the six blocks north of Berry Street and east of Sixth Street. The office space will be large floor-plan, mid-rise structures

of steel frame construction. The maximum building height is eight stories. Structured parking is provided on each block at a ratio of one space per 750 square feet of office space.

A total of 5.1 acres of open space will be provided in the form of plazas and landscaped areas.

Service-Light Industrial-Research and Development (S-LI-RD) - There are 3,600,000 square feet of S-LI-RD space proposed, with uses located along the west and south edges of the Project Area. Construction of S-LI-RD structures will be either concrete tilt-up or steel frame, with typical building heights of one and two stories. Structured or surface parking is provided on each block at a ratio of one space per 1,000 square feet of S-LI-RD space.

A total of 6.5 acres of S-LI-RD land is dedicated to public access open space.

Retail - A total of 250,000 square feet of retail space is proposed. Retail space is concentrated in three locations: 1) around the central square and along the street which runs north and south of the square. Retail space here will be located at street level and second level with residential units located adjacent to and above the retail space. Most retail enterprises will be in the form of small shops, restaurants and small service-oriented businesses; 2) along the open space area proposed north of the China Basin Channel, between King Street and the channel; and 3) in addition to these areas, a total of 65,000 square feet of retail space is located within the six office blocks. Parking is accommodated at a ratio of one space per 1,000 square feet of retail space.

Port-Related - Alternative A proposed 6.5 acres of port-related land uses. This acreage is located east of Third Street and south of Mission Rock Street.

Community Facilities - There are 2.4 acres of land proposed for community facilities. This figure includes the site of the old firehouse (0.5 acre) south

of Mission Rock Street, on the corner of Mission Rock and Third Streets. One and one-half acres is also provided at this corner on the north side of Mission Rock Street. Two 0.2-acre sites are also provided around the central square.

Open Space - Alternative A proposes 71.3 acres of public access open space. This figure includes open space associated with housing (4.4 acres), office (5.1 acres) and S-LI-RD (6.5 acres), as well as parks (43.3 acres) and water in China Basin Channel (12 acres). The major open space features are the parks and plazas along the channel (approximately 20 acres), the pier park east of Third Street (16.5 acres), the crescent-shaped, linear open space (approximately 5 acres) and the central square (2 acres). No wetlands are proposed.

Train Station - The existing Caltrain Station is proposed to be moved to the easterly side of Seventh Street, between Channel and Hooper Streets. The area dedicated to train tracks and the station totals 13.7 acres.

Berths - A total of fifty-five berths are provided for boats. Berths for twenty houseboats and thirty-five pleasure crafts are located on the south side of the China Basin Channel. Dredging of the channel is proposed.

Hotel - A 500-room hotel (approximately 400,000 gross square feet) is proposed for the 3.5-acre site located on the west side of Third Street, directly south of the channel and west of the 14.6-acre park. Parking is provided on-site in a ratio of one space for every five guest rooms.

Alternative B

Housing - There are 10,000 units of housing proposed in Alternative B. There is no high-density housing. Medium/high-density residential development is concentrated in two areas: north of China Basin Channel, between Berry and Townsend Streets; and south of Sixteenth Street, between Minnesota Street and I-280. Medium-density units are located in the central and eastern sections of the site. Low-density residential development is limited

to the center of the site. Building heights are the same as for Alternative A.

There are 6.4 acres of public access open space in addition to an unspecified quantity of private access open space within the housing blocks. These public open space areas could include children's play areas, tot lots and passive recreation areas with seating and game tables.

Office - A total of one million square feet of office space is proposed on the western perimeter of the project site between Owens Street and the railroad tracks. The maximum building height is eight stories. Structured parking is provided at a ratio of one space to 750 square feet of office space.

There are 1.1 acres of public access open space provided.

Retail - A total of 300,000 square feet of retail space is proposed. Retail space is sited as frontage along Daggett Street, and concentrated at the intersection of Hooper and Owens Street, and on King Street between Fourth and Fifth Streets.

Service-Light Industrial-Research and Development (S-LI-RD) - There are 420,000 square feet of S-LI-RD space proposed, which is located in the extreme southeast corner of the site, east of Third Street and north of Mariposa Street.

Community Facilities - A total of 5.6 acres of community facilities is proposed. These are located along Third Street in the center of the Project Area and along Sixteenth Street west of Owens Street. Community services include schools, libraries, performing arts facilities and day care centers.

Open Space - Alternative B proposed 102.4 acres of public access open space. This figure includes major land use open space (48.3 acres), open space associated with housing (6.4 acres), office (1.1 acres), S-LI-RD (0.8 acre), water bodies/China Basin Channel (12 acres) and wetlands (33.8 acres).

Alternative N (No Project)

The No Project Alternative is a future development scenario that assumes continuation of economic trends under existing M-2 industrial zoning except for the block bounded by Townsend, King, Third and Fourth Streets, which is zoned C-M. Office development would be expected to occur on the C-M-zoned block.

The area west of Third Street would be expected to develop as a business park of lower-rise structures, with a mix of office, research and development, light manufacturing, storage and distribution, and service activities occupying the space. The characteristics of the development would be similar to those associated with the service, light industrial, research and development designation in the other alternatives: lower-rise structures, flexible floor plans, with improvements tailored to the needs of lower-rent paying businesses. Higher-cost amenities such as structured parking and open space would not be emphasized. The business park would be expected to develop incrementally, more slowly then the master-planned Mission Bay Alternatives. It would also develop at a lower density (building area to land area) overall.

The area East of Third Street is also zoned M-2. This area would not be expected to undergo as major a change during the environmental analysis time period (see Impact Section) as would the area West of Third. This is due to the complications inherent in multiple landownership (including the Port of San Francisco) and the land use/permit processing powers over waterfront property held by multiple agencies. In the absence of a coordinated development program, these and other market factors would limit the pace of development East of Third Street. Over time, there would be some intensification of activity compared to current levels, but no new development of the scale envisioned West of Third. It is assumed that new development and some non-maritime activities would be allowed while reserving the option for a container terminal east of Third Street in the long-term future. During the environmental analysis time period no major maritime or port-related development is expected in this area. Port terminal expansion and

related activities are expected to occur in areas to the south of the Project Area.

Retail development could occur in the M-2 areas as well as in the office block. Retail development would take the form of smaller restaurants and shops oriented to the workers in the area as well as larger-scale retail stores with a more extensive market area. The houseboats are assumed to remain in the China Basin Channel for the No Project Alternative. The City fire station site at the intersection of Third, Fourth and Mission Rock Streets is assumed to be returned to active use as a community facility.

Open space is assumed to be developed bordering the China Basin Channel to the north and south per Bay Conservation and Development Commission (BCDC) requirements.

STUDY METHODOLOGIES

The archives of major libraries in northern California were used in researching the prehistory and history of the Project Area. Included were the following: the California State Library and California State Archives in Sacramento; the Bancroft Library at the University of California in Berkeley; the San Francisco Room of the San Francisco Public Library; the California Historical Society Library in San Francisco; the Maritime Museum in San Francisco; and the California Archaeological Inventory Northwest Information Center at Sonoma State University in Rohnert Park. A wide range of secondary source material was examined at these facilities, both in order to put the history of San Francisco in its proper historical context and to reconstruct the history of the Project Area in as much detail as possible.

The archival research and resources evaluation were conducted by archaeologist David Chavez and historians Dr. Laurence H. Shoup and Dr. Daniel Cornford. Research assistance was provided by Jan M. Hupman, Anabel E. Adler and Mary E. Regan.

The task of locating vital secondary sources pertaining to the Project Area was greatly enhanced by four relatively recent and lengthy cultural resource

management studies of the San Francisco waterfront. These studies were especially useful because portions of them focused on locations encompassed by the Project Area. Most useful was the "San Francisco Waterfront" report (1977) by Roger Olmsted et al., which provided much information about the history of segments of the area in the second half of the nineteenth century and many of the industries and businesses that operated there. The Olmsted et al., study of the "San Francisco Bayside" (1982) also proved helpful, as did the Archeo-Tec study "Behind the Seawall" (1981) and the Wirth Associates study "Potrero 7: Phase I" (1979). It should be stressed that these later sources were most useful in researching the period from the Gold Rush until the late nineteenth century and of only limited utility in studying the Project Area in the twentieth century.

Notwithstanding these studies, and a thorough search of the secondary literature, researching the history of San Francisco from the pre-Gold Rush era to the mid-twentieth century poses great problems; writing the history of a small district within San Francisco poses even greater difficulties. The historiography on San Francisco has tended to focus on certain colorful eras such as the Gold Rush, the Workingmen's Party (1877-1878) and the Boss Ruef and the labor movement in the early twentieth century at the expense of comprehensive economic and social histories of the City. As William Issel and Robert Cherny have put it "there have been...few efforts at historical synthesis of the long-term patterns in the city's development" (Issel and Cherny 1986:xiii). The works of Issel and Cherny (1981 and 1986), Mel Scott (1985) and Charles Wollenberg (1985) have begun to rectify the problem, but enormous gaps remain in understanding the history of San Francisco.

Books and articles about the historical development of particular neighborhoods are hard to find; most works have focused on the more elite neighborhoods of San Francisco, such as North Beach, and not the South of Market area, which for much of its history was inhabited by the anonymous working class of San Francisco and the flotsam and jetsam of humanity that provided labor for the California seafaring and mineral-extraction industries (Averbach:1973). An exception is the recently published Vanished Waters: A History of San Francisco's Mission Bay by Nancy Olmsted (1986).

To discover the history of anonymous people, trade networks and small businesses, social historians have always been very dependent on local newspaper sources, however, they were of limited use in our research. Not until adequate indexes are established for the San Francisco Chronicle and other San Francisco newspapers, will it be a manageable task for community historians to write definitive histories of San Francisco's many neighborhoods.

In the absence of more comprehensive newspaper indexes, the Sanborn Fire Insurance Maps constitute perhaps the most important source for reconstructing the spatial-economic history of an era. Certainly they were indispensable to this study and to the previously cited cultural resource management reports. The Sanborn Maps provide a detailed block-by-block, business-by-business picture of an area at a given point in time. By tracing the names of businesses listed on the maps backwards and forwards in time through City directories, it is possible to construct a reasonably accurate history of a particular area's development. It should be noted, however, that the Sanborn Maps were drawn up at irregular intervals (in the case of San Francisco in 1887, 1913 and 1949-50) and that City directories are not always a comprehensive and infallible source. Nevertheless, Sanborn Maps in tandem with City directories provide the best means for reconstructing the history of a particular locale such as the Mission Bay Project Area.

Finally, both private and agency historians and archaeologists were consulted regarding cultural resources sensitivities within the Project Area (see Appendix).

CULTURAL RESOURCES SETTING

THE HISTORICAL SIGNIFICANCE OF SAN FRANCISCO

The historical importance of San Francisco and its integral role in the social and economic development of California and the American West in the second half of the nineteenth century and the early twentieth century cannot be overstated.

The history of San Francisco and the Bay Area, of course, antedates the mid-nineteenth century Gold Rush, and indeed, a number of archaeological and historical studies of the pre-Gold Rush period have revealed important sites, artifacts and aspects of this earlier era. At least 5,000 years ago, Native Americans began inhabiting the San Francisco Bay region (Henn and Schenk 1970; Salzman 1984:19). Some of the most significant archaeological remains left by these early inhabitants were hundreds of shellmounds containing important clues to the history of the region's first native peoples; unfortunately few of these cultural resources remain today. By 1776, between 15,000 and 20,000 California Indians lived in close proximity to the shores of San Francisco Bay (Wollenberg 1985:23-27).

For more than 200 years, fog and the narrow entrance to the Golden Gate delayed the discovery, by Spanish and English explorers, of the San Francisco Bay. It was not until 1769 that scouts from an overland Spanish expedition, led by Gaspar de Portola, became the first white men to see the Bay. Impressed with its natural resources and feeling increasingly threatened by Russian colonization from the north, the Spanish extended their chain of missions and presidios northwards to the San Francisco Bay region in the late eighteenth and early nineteenth centuries; by 1823, there were seven Hispanic settlements around the Bay. In 1821-1822, the Mexicans attained independence from Spain and the Californios (the Spanish-speaking people who remained in California after Mexican independence) inaugurated an era of economic development in California and the San Francisco Bay Area. The following decade witnessed the emergence of the area's ties to the world economy as ships from New England in particular, as well as from

Latin America and Europe entered the Golden Gate to engage in whaling and the hide and tallow trade. By the mid-1830s, the volume of trade was such that Governor Jose Figueroa designated Yerba Buena Cove (now the area between Montgomery Street and the Embarcadero in San Francisco) as the region's principal mercantile center and port. Yerba Buena Cove was shallow and, at low tide, a large expanse of mud flats extended out into the Bay. Even before the Gold Rush, the village of Yerba Buena had been renamed San Francisco and steps had been taken to build piers into the Bay.

Writing in 1844, two years before the outbreak of war with Mexico, South Carolina Senator and former Vice President John C. Calhoun urged the American acquisition of San Francisco Bay, predicting that a city built on its shores would become "the New York of the Pacific Coast, but more supreme, as it would have no such rivals as Boston, Philadelphia and Baltimore (Issel and Cherny 1986:11). Calhoun was not alone in his assessment of the importance of the Bay. Massachusetts Senator Daniel Webster asserted in 1845, for example, that "the port of San Francisco would be twenty times as valuable to us as all of Texas" (Issel and Cherny 1986:12). Calhoun did not live to witness the accuracy of his prophecy, even though, under the impetus of the Gold Rush, San Francisco was beginning to emerge as the Far West's major port and metropolis. Strategically located at the junction of the ocean with the Bay and river routes to the gold fields, San Francisco grew from a population of 600 in 1848 to over 40,000 by 1852. The waterfront was littered with abandoned ships and San Francisco was a community of tents, shacks and shanties. From those humble beginnings, San Francisco emerged not only to dominate the gold mining era of the late 1840s and the 1850s, but the whole precious metal frontier from the Pacific to the Blacks Hills of South Dakota. Well into the late nineteenth century it was the social and economic capital of the American West, the unchallenged "Queen City of the West," as contemporaries often referred to it. No major city in American history grew faster in its early years or dominated the economy of a region and a state more comprehensively than San Francisco did in the second half of the nineteenth century.

San Francisco's preeminence as a regional population center is evidenced by the fact that of America's fifty largest cities in 1880, only San Francisco was located west of St. Louis (Issel and Cherny 1986:14). In terms of its national significance, in the four decennial censuses from 1870 to 1900, San Francisco ranked among the country's ten most populous cities.

Population statistics alone, however, understate the importance of San Francisco in the development of California and the West during the second half of the nineteenth century and well into the twentieth century. Even by comparison with the nation's longer established cities and ports, San Francisco ranked near the top in terms of the volume of its trade and commerce within a few years of the Gold Rush. By 1852 only three cities (New York, Boston and New Orleans) could claim a larger share of the nation's foreign commerce, and San Francisco ranked sixth among U.S. ports in total freight handled (Cherny and Issel 1981:11). San Francisco dominated local trade with Bay Area counties, as well as the coastal trade from Panama to Alaska. In 1880, with twenty-one percent of the total population of California, Oregon and Washington, San Francisco merchants handled ninety-nine percent of the coast's imports and eighty-three percent of its exports (Issel and Cherny 1986:23). Not surprisingly, San Francisco also dominated the West's trade with Pacific rim nations.

San Francisco was not only a major entrepot and staging point for the diggings in the Sierra and Comstock Lode, it also developed into a manufacturing center. By 1860 the City's growing manufacturing base accounted for fifty-five percent (and by 1880 for sixty-nine percent) of California's manufactured products. In 1880 San Francisco also employed sixty-five percent of all California's manufacturing workers (Issel and Cherny 1986:25). In terms of its regional preeminence, that same year the City accounted for sixty percent of the value of manufactured goods produced in the states of California, Oregon and Washington combined. It had more manufacturing establishments, more employees, greater capitalization, larger value of materials and higher value of products than the next largest twenty-four western cities combined (Issel and Cherny 1986:23).

San Francisco's dominance as a manufacturing center was exceeded in extent and duration only by its importance as a financial center. The large profits that San Francisco capitalists obtained from investments in real estate, the mining industry of the American West and San Francisco manufacturing itself (to name only the most important), were channeled into financing development throughout the West to promote the further growth of mining, lumbering and agriculture. By the 1860s, the ascendance of San Francisco as a banking center was apparent. In spite of the establishment of financial institutions elsewhere in the State, by 1887 San Francisco banks had almost twice the assets of all the other banks in California combined (Issel and Cherny 1986:23-24). During the first two decades of the twentieth century, even as San Francisco's status as the "Queen City of the West" was beginning to wane in the face of the growth of Los Angeles, it remained the region's preeminent financial center. In 1911, San Francisco bank clearings almost equalled those of Los Angeles, Portland, Seattle, Tacoma, Oakland and San Diego combined (Issel and Cherny 1986:42).

By 1920, Los Angeles had surpassed San Francisco as California's principal metropolis. With over half a million residents, San Francisco was easily the State's second most populous city and was also a vital industrial and commercial center. During the 1920s, the Port of San Francisco was so overburdened that cargo had to be diverted to Oakland and Richmond. During that decade the tonnage handled at the Port of San Francisco doubled and, by 1929, the value of all cargo handled amounted to twice the cargo handled at all other Bay Area ports (Scott 1985:202). San Francisco's dominance of the Bay Area's retail trade was also pronounced; with two-fifths of the region's population, the City accounted for over half the value of retail sales in 1929. Further, the annual total value of building permits remained between fifty and sixty million dollars, testifying to San Francisco's continued economic expansion and vitality (Scott 1985:202).

In the 1930s, two factors were responsible for a relative decline in San Francisco's social and economic stature. First was the Great Depression, which hit the City with particular severity, and second was the decentralization of the Bay Area's economy. From the late nineteenth century, ports at Oakland and Richmond had begun to challenge San Francisco's regional

dominance. The completion of the Bay Bridge (1936) and the Golden Gate Bridge (1937) both reflected and increased this trend. Thus, the 1930s heralded the end of an era dating back to the Gold Rush, in which San Francisco had dominated the regional economy. That is evidenced by the fact that in the 1930s the City gained only one hundred forty-two residents, while most Bay Area counties increased their populations by several thousands (Scott 1985:243). It must be stressed, however, that San Francisco's "decline" was relative to other Bay Area cities and did not represent an absolute one. San Francisco still remained a vital financial, commercial and industrial center.

During the 1940s, especially under the impetus of the growth of World War II-related industries such as shipbuilding, San Francisco held its own in competition with its Bay Area rivals and showed that it was far from being a moribund city. In the war years (1941-1945), the number of factories in the City increased by one-third, while the number of industrial workers doubled (Lewis 1980:71).

Important structural changes occurred in the San Francisco economy between the late 1940s and mid-1980s. At the end of the 1940s, six out of ten workers in San Francisco were employed in either wholesale and retail trade, manufacturing or construction. By 1977, however, wholesale and retail employees as well as manufacturing workers accounted for only a quarter of the labor force, with jobs in the service industries, finance, real estate, transportation, public utilities and government work employing most of the remainder (Cherny and Issel 1981:70). San Francisco accounted for one-third of all Bay Area manufacturing jobs in 1947, but only twelve percent in 1977, compared with Santa Clara County's forty-five percent share (Cherny and Issel 1981:70). Furthermore, the City's relative importance as a port has diminished since World War II, especially compared to the Port of Oakland. With the advantage of proximity to transcontinental railroad lines and its modernization (beginning in 1962) to accommodate container ships, the Port of Oakland now handles from eighty to eighty-five percent of all cargo moving through the Golden Gate (Scott 1985:322-323).

In 1953, San Francisco's population peaked at 784,000 and then gradually decreased to 671,000 by 1980. In spite of San Francisco's decline as a port city and a population and manufacturing center, it remains a vital element in the economy of California and the Bay Area. The City still provides employment to workers in the service, financial and retail sectors far out of proportion to its residential population, as evidenced by large numbers of people that commute daily to San Francisco.

The historical importance of San Francisco as a socio-cultural and economic center thus sets the tone for understanding the potential for the presence of significant cultural resources in the City environs. Such a background is important in discussing the particular environmental setting and historical development of the Mission Bay locale and defining areas of cultural resources sensitivity.

PREHISTORY

Past Environment

The San Francisco Bay region has been subject to significant environmental changes during the past 15,000 years; the most relevant of which have resulted from world-wide rising of sea levels following the Wisconsin Glacial Period (Wirth Associates 1979:11). The changes which most affected prehistoric cultural activity in the Bay Area were the alteration of the coastline and the formation of estuaries and marshes (Bickel 1978:7). The following summation of those occurrences are drawn from Bickel (1978), Atwater, Hedel and Helley (1977) and Wirth Associates (1979).

Approximately 15,000 years before the present, sea level was at a low point and then rose rapidly thereafter until approximately 6,000 years ago. After that, sea level rose at a relatively slower rate which is estimated to have been 1 to 2 meters per 1,000 years. A significant effect of this was the reduction of land area along the coastline. A large amount of oceanside and Bay-front land (approximately 20,000 square kilometers) has been inundated in the last 15,000 years, which caused prehistoric populations to move further inland and, thus, created greater population densities in the interior

areas. The rise in sea level also resulted in the creation of estuaries in the San Francisco locale that began to form approximately 11,000 to 10,000 years ago. Prior to that occurrence, the location of the Bay was a montage of converging river valleys. Approximately 11,000 years ago, sea level had risen to the point where salt water began to enter the Bay and significant changes in floral and faunal communities occurred. As the rate of sea level rise slowed, sediment accumulation at the mouths of streams resulted in the growth and maintenance of marshes along the Bay shores.

These marshes became highly important to the prehistoric populations in the area, as they provided a rich and vast range of subsistence resources in the form of fish, shellfish, birds, land and sea mammals, and marsh plants. At the time of European contact, marshlands in the general vicinity of the Project Area were situated in the Islais Creek and Mission Valley Creek regions; further discussion on this subject is presented in the "Spanish and Mexican Period" section of this report. Similar marsh areas described as estuarian lagoons also occurred in the extreme north end of the San Francisco Peninsula in the Fort Mason/Palace of Fine Arts area (Baker 1978). All of these marshlands have virtually disappeared under man-made fill as a result of nineteenth- and twentieth-century reclamation projects. The potential for discovering prehistoric cultural resources (beneath land-fill and urban development) in once highly favorable settings such as the Mission Bay environs is, therefore, a possible project-related issue.

Prehistoric Period, 2500 B.C. to A.D. 1500

Relatively little is known about the pre-European occupation and use of the San Francisco Bay Area. The majority of prehistoric archaeological sites, which are believed to have existed in San Francisco are either totally destroyed or inaccessible (and thus not precisely plotted) due to ground surface cover. Urban San Francisco developed so early and rapidly that numerous archaeological sites were destroyed throughout the City long before rigorous archaeological recording and evaluation procedures were practiced. It is, however, possible to present at least a partial picture of the prehistoric way of life in the San Francisco locale based on archaeological data

from San Francisco sites which have survived, information from sites located in other Bay counties and ethnographic sources.

Hunting and gathering systems were the basis of the native populations subsistence practices. Parties went out from the main villages to temporary camps within their territory to exploit the various seasonally available resources. Subsistence techniques included the exploitation of marine resources by gathering mussel and shellfish, fishing for salmon, taking seals and the hunting of land mammals. Intensive use of plant foods included the use of acorns which were rendered edible through the leaching process. Native hazelnuts, tubers and grasses were gathered and baked in earthen ovens. Ethnographic evidence suggests that San Francisco area people also relied on seed-bearing annual plants and gathering areas were burned over yearly to increase the yield (Stanger and Brown 1969:94).

Very little of the prehistoric social and religious organization and structure is known from the San Francisco archaeological record. Ethnographic information suggests that clusters of extended families habitually lived in the same area under a "chief" or headman. Warfare between the northern peninsula Indians and those groups further south was mentioned by Father Palou, an early missionary (Kroeber 1925:466).

Domestic shelters were likely made in a hemisphere formed of poles and flexible elements, covered with brush, thatch or tule reed mats. However, by about 1800, this type of housing, as witnessed in the Mission Dolores area, was replaced by the building of one-room, tile-roofed, rectangular adobe houses arranged in rows to form an "Indian village" (Engelhardt 1924:132-137).

Protohistoric Period, 1500s to 1770s

The California Indians who occupied the San Francisco Peninsula at the time of European contact are known as the Costanoan. The term Costanoan is derived from the Spanish word "Costanos" meaning coast people. No native name for the Costanoan people as a whole is known to have existed in protohistoric times. Scholars believe the Costanoans were neither a single ethnic

group nor a political entity (Levy 1978:485). Native Americans living in the Bay Area today prefer the term "Ohlone" (meaning the "abalone people") when referring to their ancestral identity. The term Costanoan is thus a linguistic one and designates a language family consisting of eight languages. In 1770 Ramaytush was the language spoken by the approximately 1,400 people who made up the various groups in San Mateo and San Francisco. According to Richard Levy (1978:486), linguistic evidence suggests that the immediate ancestry of the historically known Costanoan people moved into the San Francisco region around A.D. 500. Likely they migrated from the Delta of the San Joaquin-Sacramento River area. That theory of Costanoan language arrival into the San Francisco area is chronologically consistent with the appearance of Late Horizon artifact assemblages in archaeological sites in the Bay Area.

Informational sources for Costanoan ethnographic data are limited primarily to European accounts during the visits to the coast. Those sources include accounts of the exploring expeditions that crossed Costanoan territory from 1769 to 1776, replies of missionaries to the interrogatorio of 1812, accounts of seafarers who visited the seven missions in the Costanoan territory, ethnographic data collected by anthropologists between 1900 and 1935 and statements of the Costanoan themselves (Levy 1978:495).

Archaeological Investigations in the San Francisco Area

The first systematic archaeological fieldwork was initiated in the San Francisco area by Max Uhle in 1902. He partially excavated one of the largest shell-midden mound sites in the Bay Area, which was located in Emeryville (CA-Ala-309). Uhle's definition of two diachronic cultures within the stratified layers of the Emeryville shellmound was an important contribution, not only to San Francisco Bay archaeology, but also to American archaeology in general (Moratto 1971; Wirth Associates 1979).

Uhle's work was followed by two excavations conducted by N. C. Nelson at Ellis Landing (CA-CCo-295) and at the Bayshore Mound (CA-SFr-7) located near Hunters Point in San Francisco. Also, Nelson conducted an archaeological field survey of the greater San Francisco Bay region, and between 1907

and 1909 he recorded 425 archaeological resources. In 1912 Loud excavated another San Francisco site known at the Presidio Mound Site (CA-SFr-6).

Following the work of the 1910s, archaeological fieldwork in the Bay Area was conducted only intermittently until 1948 when the University of California Archaeological Survey was formed. During these years, however, excavation in nearby areas and analysis of recovered materials contributed to the development of a chronology of California prehistory. The accepted view at that time was that there was an absence of significant cultural change in California (Kroeber 1909). According to David Fredrickson (1973:18), this viewpoint prevailed until 1929 when cultural sequences were developed for the Santa Barbara coast (Olsen 1930; Rogers 1929).

It was a decade later when the identification of a culture sequence in the lower Sacramento Valley revealed that significant culture change had indeed taken place in prehistoric central California (Lillard, Heizer and Fenenga 1939). The prehistory of the Sacramento Valley was divided into a three-period sequence, consisting of Early, Middle and Late Horizons. Heizer's (1949:39) time chart specified the following beginning dates for the periods, which came to be known as the Central California Taxonomic System (CCTS):

Late Horizon Phase III	A.D. 1800
Late Horizon Phase II	A.D. 1700
Late Horizon Phase I	A.D. 500
Middle Horizon	1500 B.C. (amended to 2000 B.C.)
Early Horizon	2500 B.C.

Beardsley (1948, 1954) attempted to apply the CCTS scheme to the San Francisco Bay, based on observable similarities between cultural traits found in that area and those of Middle and Late Horizon sites in the Valley. However, problems arose from attempting to apply a local sequence originally defined in the lower Sacramento Valley to other regions (Gerow with Force 1968; Bickel 1976). As research projects and interest broadened into non-chronological areas, criticism of the CCTS scheme pointed out further basic analytical weaknesses and interpretive gaps. In attempts to present a less troublesome and more useful scheme for central California, both Gerow

(Gerow with Force 1968) and Fredrickson (1968, 1974) have presented alternative approaches.

Gerow's views derived from his excavations of the University Village Site (CA-SMa-77) in east Palo Alto; he concluded that a convergent model of cultural traditions better fits the data from the Delta and Bay areas, rather than a tight sequence of periods, phases and facies, or a sequence of patterns and aspects as presented by Beardsley. Gerow's "Bay Tradition" as an early generalized food gathering pattern (involving hunting, gathering and fishing) is basically equivalent to the Middle Horizon facies of Beardsley and is contemporaneous to Windmiller and other sites in the "Delta Tradition." Both traditions coexisted in their respective regions until about the beginning of the Christian Era or the Late Horizon, when the two traditions converged into a generalized expression with some local variation (Gerow with Force 1968).

Fredrickson (1973:7) proposed the second alternative system which combines the Early and Middle Horizons into an "Archaic Period" and replaces the Late Horizon with the "Emergent Period." Regional cultural variation within periods was then accommodated into "patterns" and "aspects" (Fredrickson 1973:99). Neither Fredrickson's nor Gerow's systems have received general acceptance to date, and most archaeologists continue to use the three horizon system (Bickel 1976, cited in Wirth Associates 1979).

The Bay Area environment is sufficiently different from the Valley in subsistence resources to suggest different cultural adaptations. On the other hand, similarities in material culture imply cultural interaction (Wirth Associates 1979). Bickel (1976:381-382) states in her discussion of Bay Area prehistory that there is strong evidence for change in both the Valley and Bay areas and "separate traditions in each, interwoven with evidence of interplay between them -- a complex picture which cannot be portrayed in simple models of parallel or convergent change." It is suggested that archaeologists should draw upon what is useful from both models and focus on defining a sequence and tradition or traditions for the Bay Area itself, but new data will be necessary, in addition to a reexamination of existing information (Bickel 1976, cited in Wirth Associates 1979:15).

In 1967 King conducted archaeological surveys of portions of the City in an attempt to relocate some of Nelson's early sitings. These efforts resulted in the relocation of the Sutro Bath Sites (CA-SFr-5, CA-SFr-21 and CA-SFr-24). These sites were further investigated in 1977 (Holman et al. 1977).

In 1969, Bay Area Rapid Transit (BART) excavations along Market Street exposed an important prehistoric archaeological discovery. Fragmentary remains of a human skeleton were found at a depth of about 75 feet below the existing ground level. Radiocarbon dating of the burial resulted in a date of 4900 ± 250 years ago: 2950 B.C. ± 250 years (Henn and Schenk 1970:7). Analysis of the sediments containing the skeletal material led to the conclusion that those materials were deposited after the Bay was established, following the Wisconsin Glacial Period. The site of this discovery has been designated as CA-SFr-28. The obvious conclusion is that many sites "are either lying below thick deposit of sediments, or are submerged below the present bay" (Henn, Jackson and Schlocker 1972:209).

In 1970 an archaeological site (CA-SFr-25) was recorded on the grounds of San Francisco State University. In 1972 human bone fragments (CA-SFr-26) were encountered during the construction activities at the San Francisco Army Presidio; the remains were in a layer of wet, brown, muddy sand at a depth of about 8 feet and were radiocarbon dated at 1210 ± 85 years ago: A.D. 740 ± 85 years (Heglar and Moratto 1973:3). This find corresponds to the recorded location of CA-SFr-6. Some confusion arose regarding the two site numbers, which was later clarified by Rudo (1982:27).

Archaeological fieldwork conducted by Baker in 1978 at Fort Mason resulted in the recording of three previously unknown prehistoric sites (CA-SFr-29, CA-SFr-30 and CA-SFr-31). According to Baker (1978), of the known extant sites in San Francisco at that time, the three Fort Mason sites were believed to be the least disturbed and the most likely to provide significant information in reconstructing the prehistory of the northern San Francisco Peninsula. Those sites were discovered below existing pavement and fill.

More recent prehistoric archaeological resources investigations in San Francisco were accomplished by Banks in 1981. Subsurface testing was

conducted along a San Francisco Wastewater Program project alignment in the South Basin/Candlestick Park area. Deep power-auger borings (18 to 25 feet below existing ground surfaces) led to the location of three buried prehistoric archaeological sites; the sites are identified as CA-SFr-7 (also known as Nelson's Site No. 387, the Crocker Mound or Bayshore Mound), the Griffith-Shafter Shellmound and the Thomas-Hawes Shellmound. According to Banks (personal communication, 1983a) another site (Nelson's Site No. 388) was probably located in the Candlestick Point area, northeast of CA-SFr-7 and is likely now totally destroyed. Nelson mapped additional sites in the Islais Creek and Hunters Point area (Nos. 388, 389, 397a, 390, 391, 392, 392a and 396), and Rudo (1982:29) identifies these sites as CA-SFr-8 through -14 and -16, respectively. The site CA-SFr-7, located by Banks, is the same site excavated by Nelson in 1910. However, Nelson's excavations had generally been restricted to the upper 9 feet of the shellmound which exhibited Late Horizon cultural deposits dating from approximately A.D. 300 to 1300 (Rudo 1982:133). At least 5 to 7 feet of the lower portion of the shellmound was explored by Banks (1981:4) and, while no culturally diagnostic materials were recovered, earlier occupation deposits may be present in the deeper, unexcavated portions of CA-SFr-7.

The most recent prehistoric archaeological excavations in San Francisco were conducted in 1986 at two separate sites by Pastron and Walsh of Archeo-Tec, Inc. Report preparation is in progress for both investigations and detailed information was not available for this report; however, Pastron (1987) provided the following summary. One site (CA-SFr-112), located near First and Mission Streets, is a deeply buried prehistoric shellmound. Radiocarbon and obsidian hydration datings of excavated materials indicate early Late Horizon cultural deposits from approximately A.D. 400 to A.D. 600. The other site (CA-SFr-113) is located at Fifth and Market Streets. This site is a deeply-buried, Middle Horizon shell midden dating from around 100 B.C. to A.D. 100. The excavation reports (Pastron and Walsh 1987a and 1987b) for these two sites will be important contributions to the understanding of buried sites in San Francisco and Bay Area prehistory.

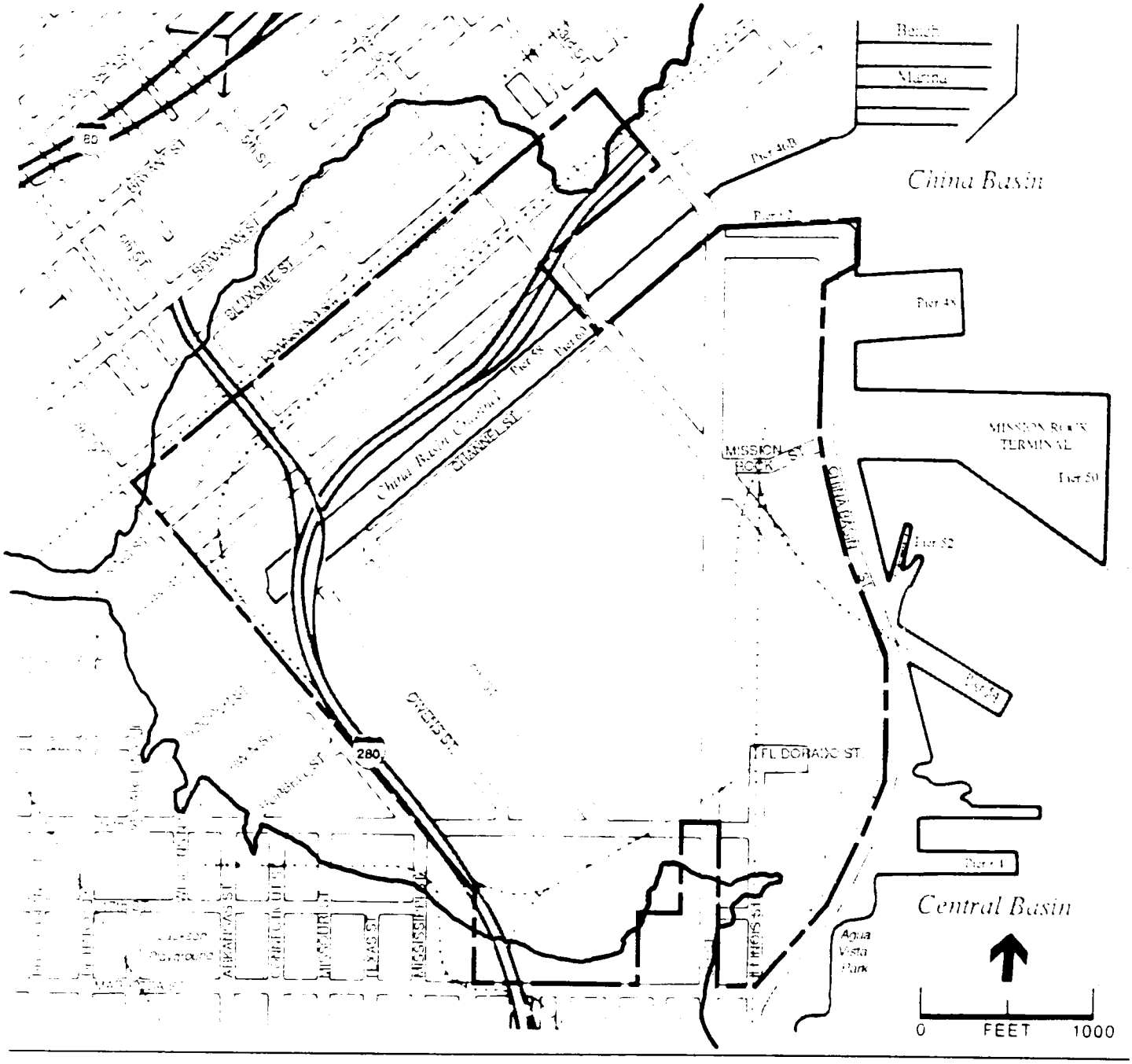
The existing archaeological data from San Francisco suggests that prehistoric (and protohistoric) cultural sites tended to be located in "pre-fill"

environmentally favorable areas such as the Islais Creek, Mission Creek and South Basin locales on the original bay shore, the freshwater lagoons and marshes along the north shore of the San Francisco Peninsula and the west coast shore where Lobos Creek drains into the Pacific. Furthermore, the potential for uncovering known, as well as undocumented prehistoric archaeological sites during subsurface construction activities in those general areas, is relatively good. Pastron and Walsh's (1987a and 1987b) recent discoveries at CA-SFr-112 and -113 further support the contention that important prehistoric archaeological sites are well preserved below fill and highly developed areas of San Francisco.

Prehistoric Resources in the Project Area

No recorded prehistoric archaeological sites are located within the Mission Bay Project Area and those resources located in the general region will not be affected by the project. Most of the Project Area lay beneath the waters of Mission Bay during prehistoric times (see Map 2). However, three prefill land areas which were on the shores of Mission Bay are included in the Project Area and are regarded as possible locations for prehistoric archaeological sites. These areas are the south tip of Steamboat Point, south of the intersection of Townsend and Third Streets; the north shore of Mission Creek where it entered Mission Bay, southeast of the intersection of Townsend and Seventh Streets; and the northern end of Point San Quentin, north of Mariposa Street, between Pennsylvania Avenue and China Basin Street. The portion of the Mission Creek north shore that was situated within the Project Area likely consisted of marshlands, with diminished archaeological sensitivity. The Steamboat Point and Point San Quentin areas are more likely locations for prehistoric habitation and resource gathering encampments.

The remainder of the Project Area has a low potential for encountering prehistoric cultural resources as it was inundated by the shallow waters of Mission Bay. However, as stated by Banks (1983b:6), the possibility of encountering very ancient archaeological deposits in this area cannot be totally dismissed. Mission Bay was extremely shallow throughout its existence and



MISSION BAY BOUNDARY

MISSION BAY SHORELINE

Mission Bay

SOURCE: David Chavez & Associates and ESA

MAP 2
ORIGINAL SHORELINE

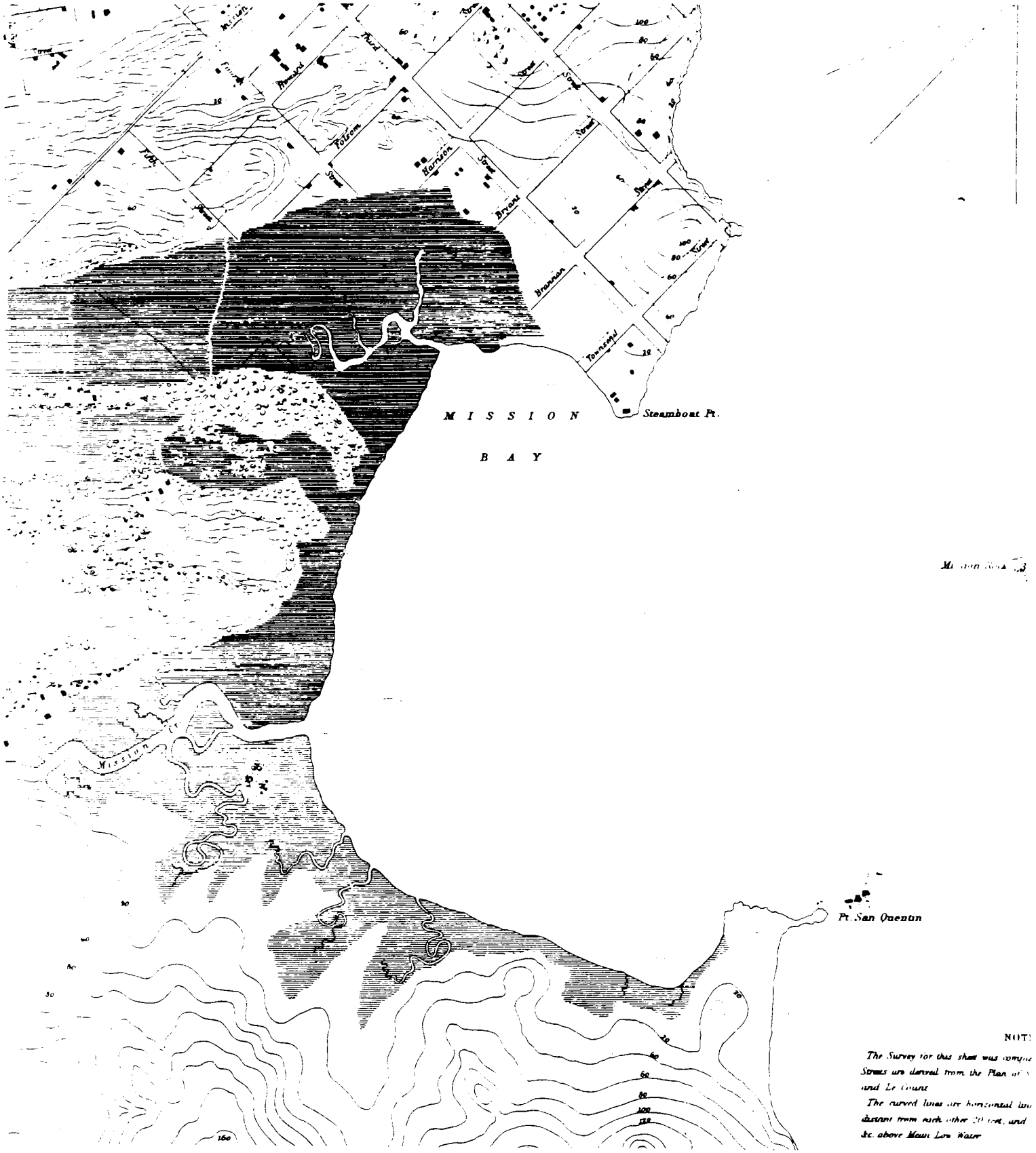
it is possible that very early prehistoric sites may have been located along the perennial Mission Creek drainage in areas which were subsequently covered by bay waters. These sites would predate the historic configuration of San Francisco Bay and would be of considerable antiquity. The discovery of such a cultural resource would be a major San Francisco Bay Area archaeological find.

HISTORY

The Spanish/Mexican and Gold Rush Eras, 1770s to 1860s

The Spanish and Mexican Periods, 1770s to 1848 - In the days before the Gold Rush, nearly all of the Project Area was encompassed by Mission Bay, which derived its name from the Spanish mission located at Laguna de los Dolores. Established in 1776, Mission San Francisco de Asis (or Dolores) lay just over a mile due west of the bay, at what is now the intersection of Sixteenth and Dolores Streets. Mission Bay resembled a half-moon indentation in the shoreline of San Francisco (see Map 3) and was perhaps the most topographically pronounced cove, bay or creek on the peninsula. It measured approximately three-quarters of a mile across, beginning at Steamboat Point in the north to Point San Quentin (now known as Potrero Point) in the south (Dow 1973: 117). A line drawn from Steamboat Point (which is about at the intersection of Third and Berry Streets) to the most easterly horn of Point San Quentin (near the eastern end of Sixteenth Street), marked the eastern boundary of the bay. At high tide the waters of the bay were bounded, approximately, by Eighth Street to the west, Brannan Street to the north and Sixteenth Street to the south (Sharpsteen 1942:113). Sounding a depth of one foot or less at mean low tide and rising to a maximum of five to six feet at high tide, Mission Bay measured approximately 260 acres (Dow 1973:118).

Salt marshes, with intersecting sloughs, penetrated northward deep into an area of shifting sand dunes to a point marked roughly by Mission Street (between Seventh and Eighth Streets) and Folsom Street (between Fourth and Eighth Streets). The marshes extended south and west as well, but not as deeply because of the steep slopes of the Potrero Hills. Mission Creek



Mission Bay

MAP 3
U.S. COAST SURVEY CHART, 1852

entered Mission Bay almost at the center of its shoreline and was the main drainage channel for the east-facing slope of Twin Peaks and adjacent areas. Along its course, where spring tides were liable to flood, the creek was lined with marshes (Dow 1973:117-118; Sharpsteen 1942:113). The marshes surrounding bay and creek covered approximately 330 acres (Dow 1973:119) and John Hittell, writing in the late 1870s, described the marshlands of Mission Bay as follows:

> A swampheading near the corner of Mission and Seventh Streets ran for a mile eastward to the bay with an average width of three hundred yards, and a parallel marsh, not as wide, had its head near the crossing of Mission and Eighth Streets. These were called swamps, but they seem to have been, for part of their area at least, subterranean lakes, from forty to eighty feet deep, covered by a crust of peat eight to ten feet thick (Hittell 1878:432-433).

In the vicinity of Mission Bay and Mission Creek were numerous sand dunes, some as high as eighty feet. These dunes were generally "covered with a thick growth of scrub oak and willows...and were a resort for deer" (Davis 1889:253; Banks 1983b:4). There was an abundance of potable water in the area, as Mission Creek flowed year-round, which was a major reason for establishing Mission Dolores nearby.

It is evident that the Mission Bay area provided all the prerequisites for early human habitation and, unquestionably, Native Americans continued to roam the Mission Bay and Mission Creek environs. Juan Bautista Aguirre surveyed San Francisco Bay in 1775 and his account is mentioned in Hubert Bancroft's History of California: "Aguirre makes a similar reconnaissance in the southern branch of the bay...but he encounters only three natives, who are weeping on the shore of what is now Mission Bay" (Bancroft 1886:246-247). The precise extent and location of Native American settlements in the vicinity of Mission Bay and Mission Creek is unknown. Alan Brown states that:

> The only organized settlement mentioned in the Mission records is the village of Dolores shore, consisting of tiny rancherees named "Chuchui" and "Siscastac" and "Sitlintahc" at the end of the woods running toward the outlet of the lake here at the Mission, and the community headed by the chief of the Presidio shore.... Equally insignificant places were

> "Petlenuc" close to the old camp, "Shiti" towards the big creek (Islais Creek?) and "Ousint" in the mare pasture (potrero de las yeguas). The last named is today Potrero Hill, at that time a peninsula... (Brown 1973-1974:5, cited in Wirth Associates 1979:28).

Banks (1983b:5) estimates that the village of "Sitlintahc" was probably about half a mile east of the Mission at the point where Mission Creek widened significantly, which would put it outside the Project Area.

Although Mission Bay waters were shallow they were navigable. The drawings and recollections of George Langsdorf indicate that the bay, as well as the sloughs and estuaries running into it, were navigated by the tule canoes of the Native Americans (Wirth Associates 1979:28). So too was Mission Creek and "Navigation by small boat or Indian tule canoe of about a mile up Mission Creek would bring a traveler within a quarter of a mile of the Mission" (Olmsted et al. 1982:186). Olmsted et al., citing the work of John Young (1912:37), assert that "in the early nineteenth century, several boats as large as two 30-ton schooners built at Fort Ross carried hides and tallow and engaged in trading activities between the missions around the San Francisco Bay, including the Mission Dolores landing on Mission Creek" (Olmsted et al. 1982:220). The Spanish evidently made little effort to build boats to navigate the shallow waters; however, by the 1830s, Mission Dolores had "adapted the use of boats to navigate the shallow waters of Mission Bay" (Wirth Associates 1979:28).

In spite of the navigation on Mission Bay and Mission Creek, Olmsted et al. (1977:158) and Wirth Associates (1979:30) concluded that because of the lack of population and a settlement in that area, Mission Bay was not used extensively as a harbor or place of anchorage in the pre-Gold Rush era; also, better harbor facilities and a larger population and settlement were present at nearby Yerba Buena Cove. On the eve of the Gold Rush, the project area and the whole South of Market region were apparently uninhabited. In 1889 William Davis stated, "there was not a single inhabitant of what is now known as the City and County of San Francisco outside of the Presidio and the Mission" (Wirth Associates 1979:29). According to Davis, the area South of Market was used in the 1830s and 1840s for hiking, picnicking and

hunting. As one early resident of San Francisco expressed it: "We would go to a place called Rincon, a flat between Rincon Hill and Mission Bay, and a resort for deer, the place being covered with a thick growth of scrub oak and willows" (Davis 1889:253).

During and after the Gold Rush, however, Mission Bay waters were undoubtedly used by the San Francisco Bay scow schooner and similar craft. Also evident was the use of Mission Creek, as indicated by the fact that the State Legislature determined, in 1854, that the creek was a navigable stream. When a franchise was issued for the Brannan Street road in 1855, the construction of a drawbridge was required so as "not to obstruct the free navigation of the creek" (Olmsted et al. 1982:220). "Birdseye views" of San Francisco in the 1860s show sailing cargo craft operating on Mission Bay, even after the completion of Long Bridge across Mission Bay in 1868 (see Plate 1) and, indeed, a twenty-five foot drawbridge had to be constructed to allow passage in and out of the Bay (Olmsted et al. 1982:220; Dow 1973:119).

Initial Development: The Gold Rush, 1849 to 1860s - The Gold Rush did not immediately transform the Project Area. In the late 1840s and throughout the 1850s, most settlement, commerce and industry in San Francisco was concentrated at the Yerba Buena Cove waterfront north of Mission Bay. The waters at Yerba Buena Cove were deeper and, thus, more accessible to the host of ocean going vessels that flocked to San Francisco from all over the world as the news of the gold discovery spread. The most significant development within the Project Area during this period was the establishment of shipbuilding facilities located approximately at Fourth and King Streets, at Steamboat Point. The feverish demands of the settlers and argonauts for ships and boats that would take them to the trail heads on the Sacramento and San Joaquin River systems, as well as in the Humboldt Bay region, made shipbuilding one of San Francisco's first boom industries. In addition, the need to maintain and build vessels for the transportation of freight and passengers to the East Coast further stimulated this enterprise. On the supply side, there was a large and accessible quantity of lumber on the shore of San Francisco Bay and along the coast of northern California.

PLATE 1 -- 1868 Birdseye View of San Francisco (courtesy, The Bancroft Library)

The Coast Survey Chart of 1852 shows three structures, probably associated with shipbuilding and maintenance, on the shores of Steamboat Point (see Map 3). Certainly, by the late 1850s, shipbuilding was a flourishing industry at that location, as is vividly conveyed in the Olmsted's account of such activities:

> John G. North had established his shipyard at Steamboat Point...around 1854.... He moved his location slightly at times between 1854 and 1860 (when he moved to the Potrero), but in 1858 he was located "on the south side of Townsend between Third and Fourth" (Scanland 1895:122-127). The noblest vessel ever to be launched from Steamboat Point, the side-wheeler Chrysopolis came from North's yard in 1860. She was the biggest steamer built at San Francisco up to that date, the grandest of the "floating palaces" of the California river trades, and the all-time speed queen of the Sacramento riverboats. North is said to have built 53 steamboats and 220 vessels of other types, including the first three-masted schooner of the Pacific Coast, launched at Steamboat Point in 1854.
>
> Domingo Marcucci...moved out to Steamboat Point, around Fourth and King, between 1853 and 1859.
>
> Another famous and prolific Steamboat Point builder was Patrick Henry Tiernan, who built several vessels at the foot of Third Street (about Third and King) between 1856 and 1858.... At around Fourth and Townsend (he built four ships) between 1859 and 1861. Apparently moving back and forth between and (sic) Third Street and a Fourth Street location he built several more vessels from 1862 and 1864.... Then he, too, moved to Point Potrero complaining, as had North, that Steamboat Point just didn't have enough elbow room any more.
>
> Henry Owens built the side-wheeler Enterprise near Fourth and Townsend in 1860, and there must have been several small builders on the Fourth Street shore extending to King Street and beyond, perhaps mostly engaged in the repair business (Olmsted et al. 1977:35-36).

As Olmsted et al. observed, 'shipyards' were often located in "starkly unimproved surroundings. All that was required for a 'shipyard' was proximity to water and a sliver of flat land big enough to set up the vessel. Materials and craftsmen were really what constituted the shipyard" (Olmsted et al. 1977:164). By 1861, however, the shipbuilders were starting to move away from Steamboat Point:

> Finding the city pushing out toward the South side, and the old landmarks disappearing, houses getting too close to the old shipyard at Steamboat Point, Captain Tiernan, as Captain North and Captain Owen had done, went over to the Potrero (Overland Monthly 1899:149).

The completion of Long Bridge in 1868 across the mouth of Mission Bay, directly linking downtown San Francisco with the Potrero and Hunters Point, encouraged the further migration of the shipbuilding industry away from Steamboat Point, so that by the 1870s Hunters Point was the City's major shipbuilding center. It is evident, from the Coast Survey Map of 1857 and from references in Langley's San Francisco Directories, that by the late 1850s shipbuilding was not the only activity at Steamboat Point. Saloons and dwellings were also located "at King and Steamboat Point" and "at the foot of Third Street" (Langley 1858, 1860; Wirth Associates 1979:79). These facilities probably catered almost entirely to the shipyard workers, considering their somewhat remote location from the other parts of the City. Plate 2, a view from Steamboat Point in 1870, illustrates how built up the area had become by that point in time.

Shipbuilding was not the only maritime-related activity pursued in and around the Project Area during the Gold Rush years. Since Chinatown did not develop until much later, the Chinese population of that period was scattered all over the City. As the San Francisco Herald observed in 1852: "they (the Chinese) are not confined to any street or locality, but are scattered over the city and suburbs." One of these dispersed settlements was a Chinese fishing village established during the early 1850s close to the northern periphery of the Project Area (just east of the intersection of Bryant and Second Streets), in the general region of what became known as China Basin. Charles Lockwood writes of "150 Chinese...living in a picturesque fishing village, complete with twenty-five boats, where Mission Creek emptied into the Bay south of the Rincon Point" (Lockwood 1978:143). A painting of the village by Mathilda F. Mott is reproducted in Schwendinger (1984) and he states that it was probably the first Chinese fishing village in the Bay region. He estimates that the village was established between 1850 and 1852 and notes that a careful scrutiny of the 1857 Coast Survey Map shows a small village of some two dozen houses, while an 1859 soundings

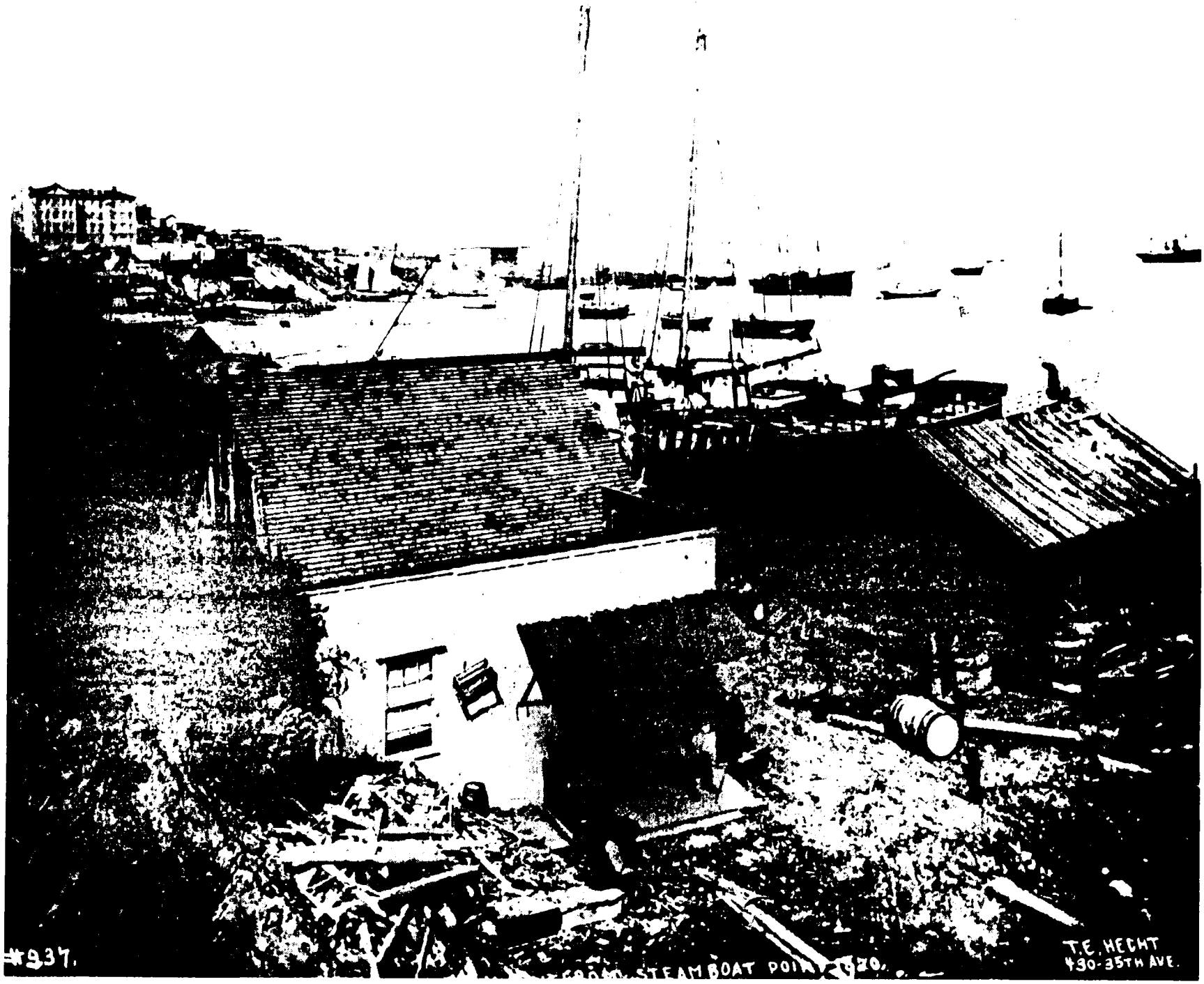


PLATE 2 -- View of Steamboat Point (courtesy, The Bancroft Library)

Coast Survey Chart shows the word "China," and a wharf clearly marked at the same location. The presence of Chinese residents here is also confirmed by the 1860 census (Schwendinger 1984:91). Robert Schwendinger gives the following description of the boats and shipping craft used by the inhabitants of the Chinese fishing village:

> The painting (of Mathilda Mott) suggests a combination of sampans and junks. Sampans are a flat-bottom craft designed to work inshore and are quite easy to pull up onto the shore like any rowboat or canoe. They were built by the fishermen of the village using rough redwood, and they ranged from 14 to 25 feet long, 36 to 48 inches across, with identical narrow transoms at each end.
>
> Junks also varied in size and design, from the enormous ocean-going vessels in China that had room for 600 people, to the small coastwise and riverine junks used for fishing and trading and as houseboats (Schwendinger 1984:91).

The sampans would have been ideal for navigating Mission Bay, while the junks quite likely carried passengers and cargo from China. In view of this, one cannot rule out the possibility of finding Chinese maritime remains and, indeed, other artifacts in the Steamboat Point section of the Project Area. Further, Schwendinger states that one of the major San Francisco ship graveyards was "at the old China Basin near Third and Townsend Streets" (Schwendinger 1984:83). Schwendinger speculates that the Chinese began leaving their village in the late 1850s, "when their cove was no longer so isolated, and ambitious San Franciscans pressured villagers for their real estate of increasing value" (Schwendinger 1984:91). In assessing the possible Chinese presence south of the original village, it is appropriate to quote Olmsted et al; in discussing "the vanished Chinese community of Minnesota and Tennessee Streets," (outside the Project Area to the south) they stated that: "Earlier chapters on the Chinese in South San Francisco have traced their history as truck gardeners, shrimp fishermen, and factory workers as archival fragments could be pieced together from a variety of sources. The appearance of Chinese dwellings built in the line of unopened streets raises both historical and archaeological questions" (Olmsted et al. 1982:202-203).

The lack of any significant industrial development in the project area or its vicinity before the 1860s (with the exception of shipbuilding), did not represent a lack of interest or appreciation of its potential on the part of San

Francisco's entrepreneurs. In 1855, various manufacturers proposed that a parcel of land be set aside south of Mission Creek, where industry could locate "so remote from the inhabited part of the city that no legal question would likely arise as to what might constitute nuisances in the district..." (Lotchin 1974:13). The proposal was eventually voted down by the San Francisco aldermen, but it reflected the early interest of San Francisco businessmen in the south of Market area, as well as the obvious unpopularity of locating industry near the City center. The latter view was due primarily to the rash of fires that plagued San Francisco from its early years. Notwithstanding this fear and hostility on the part of the populace, San Francisco businessmen located their industry and commerce to the north of Mission Bay, near the City center, because of the proximity to deeper water and a large population that was both a market and a readily accessible labor force. Given these imperatives and the shortage of flat land for industrial and commercial development, filling of the Bay began at Yerba Buena Cove as early as 1849. While the precise chronology of the filling of Mission Bay is not clear from Dow's (1973) thesis on the subject, it is evident from his work and a host of maps, that with the exception of small amounts of filling of the mission marshes (probably outside the Project Area), little alteration occurred in Mission Bay and its immediate vicinity before the late 1850s.

If one compares the 1857 Coast Survey Map, and information gleaned from Langley's directories of San Francisco for the late 1850s, with accounts and records of development on King and Berry Streets, as well as at the intersections of Third and Fourth Streets, it would appear that some bay filling may have occurred around Mission Creek in the late 1850s and early 1860s. It is more definitely known, however, that by the early 1860s, development had begun to occur in the Project Area that foreshadowed its evolution into one of San Francisco's prime industrial sites by the 1880s. The following account, which appeared in an 1864 edition of the Daily Alta California, provides a general description of the changes that had taken place by the mid-1860s.

> This city is growing apace, southward. A year ago the waters of the southern bay dashed against a bleak and lonely front, stretching from a rocky, barren and forlorn ridge, for a distance of half a mile or more. Since then, what a change! The foot of Third street is now the terminus of the Omnibus Railway, and the hotel,

> whose enterprising proprietor, Farr, has done so much towards excavating that thoroughfare, to bring the cars to the bay waters, is reaping a rich reward for his exertions. Steamboat Point, which, but four years ago, was almost an uninhabited waste, is now covered with manufactories, shops, saloons and dwellings. The 'resurrected' Commanche lies in an adjoining yard and hundreds of loyal citizens visit the spot daily to see her (Daily Alta California 1864).

The article goes on to provide some evidence that a certain amount of bay filling had commenced on the fringes of Mission Bay in the Project Area and/or immediately adjacent to it. In regard to the construction of the Citizens Gas Plant in 1863-1864 (an industrial facility which was located on the Bay bounded by Townsend, King, Second and Third Streets outside but on the periphery of the northernmost point of the Project Area), the article stated that "the precipitous cliff overhanging the bay affords ample materials, in the way of stone and earth, for filling up the water lots" (Daily Alta California 1864).

At the same time that the bay filling process was beginning, transportation was improving. The growth of public transportation in the 1850s aided this development. Routes linked South Park -- an elite residential neighborhood lying only a few blocks to the north of the Project Area -- with Portsmouth Square, the Presidio and North Beach. It was common for San Franciscans to use boats to get around the City as well, and one rowboat line carried passengers from the downtown waterfront to Mission Dolores by way of Mission Bay and Mission Creek (Lockwood 1978:83). However, rowboats and horse-drawn omnibuses were becoming a rarity by the 1860s, with the founding of the first street railroads. Among these was the Omnibus Railroad, which opened in 1861. This railroad had a complicated route running between Mission Dolores and the end of Powell Street on the Bay. This route included a run down Third Street into the Project Area. The terminus of this branch of the Omnibus Railroad during the 1860s was near King Street and Third Street (Lockwood 1978:85; Gensoul n.d.; Britton and Company 1964).

The conjunction of three processes -- improvements in transportation, the beginnings of both serious bay filling and diversified industrial development

-- marked the end of the Gold Rush period in the Project Area. By the later years of the Civil War, outside forces were impinging on the Mission Bay region in a serious way, beginning a process which, over the next several decades, was to entirely change the face of this part of San Francisco.

Cultural Resources in the Project Area, 1770s to 1860s - Since the Project Area was almost entirely under water during the 1770s-1860s era, Steamboat Point is the only location that may have significant deposits of historic cultural resources dating to those years. The main part of Steamboat Point was between Third, Fourth, Townsend and King Street, but the tip of Steamboat Point extended past the line later formed by King Street and extended into the Berry, King, Third and Fourth Streets block. The Steamboat Point area consisted of shipyards during the 1850s and early 1860s, and early maps and City directories show various buildings, saloons and dwellings in the area during this period. Subsurface remains of Gold Rush period shipyards, building foundations, historic artifact cashes and trash dumps could be located in that area. Since shipping and shipbuilding were important activities, there is also the remote possibility of encountering undocumented buried ship remains. Also, the presence of a Chinese fishing village close to Steamboat Point at China Basin suggests the possibility of Chinese maritime remains and other artifacts in that section of the Project Area.

The Origins and Evolution of a Pioneer Industrial Area, Mid-1860 to 1900

Prior to the mid-1860s, in spite of harbingers of future industrial development, relatively little economic activity had taken place in the Project Area and the southern waterfront of the San Francisco Peninsula. Only a limited amount of filling had occurred in Mission Bay along the fringes of its northern shores. While the filling of Mission Bay was not complete even by the 1890s, the Project Area, the southern waterfront and the south of Market region had, by the late nineteenth century, become the sites of major industrial and commercial development that mirrored the progress and great industrial diversity of San Francisco's development during this period.

A host of factors contributed to full-fledged development of the City and in the Project Area itself in the last third of the nineteenth century. The growth of the population of San Francisco, and California as a whole, provided a substantial regional market and encouraged the establishment of commercial and industrial concerns. Because East Coast business had to absorb considerable transportation costs to compete, West Coast enterprises prospered. The Gold Rush and the mining boom in the Comstock provided ample indigenous capital for the expansion of San Francisco industry. The completion of the transcontinental railroad (1869) linking California with the rest of the United States enabled San Francisco entrepreneurs to compete in the national market and to import important raw materials at a lower cost. The rapid development of California, as one of the world's primary agricultural regions by the last quarter of the nineteenth century, also boosted the economy of San Francisco and California, as the profits provided further capital for City financiers to invest in industry. Also, the development of port-related agricultural industries -- such as food processing and warehousing -- led to an increase in the total volume of shipping into and out of San Francisco Bay. All of these factors had a direct bearing on the evolution and development of the Project Area.

The construction of Long Bridge across Mission Bay in the mid-1860s -- joining the Project Area and waterfront industries of Potrero and Hunters Point in the south, with the center of San Francisco -- reflected the beginning of full-scale industrialization. It also anticipated and encouraged the development of this area as one of the most important industrial centers in the City and, indeed, California. The construction of Long Bridge, out of the line of Fourth and Kentucky Streets to the Potrero and then to Hunters Point began the enclosure of Mission Bay. Construction started in February 1865 and was completed in 1868. The bridge is clearly visible in the 1868 birdseye-view map of San Francisco (see Plate 1). The building of the bridge required sixty-three "piles and caps" at the Fourth and King Streets intersection as well as planking (Wirth Associate 1979:80). It was a major engineering undertaking and feat, remnants of which could still be extant:

> In all likelihood, these piles (and perhaps other structural members as well) remain preserved under Mission Bay fill. In our view, while these remains probably lack the 'integrity' necessary

> for inclusion in the National Register, they formed part of Long Bridge, an important structure in the city's history, and would probably yield useful information concerning construction techniques (Wirth Associates 1979:80).

Plate 3 shows the southern half of Long Bridge in 1867.

By 1877, the portion of Mission Bay southwest from Steamboat Point to the mouth of Mission Creek had been filled. Two large triangular wharfs were built on the east side of Long Bridge just south of the present-day channel and new fill was added for wharfs on the north side of the channel, east of Fourth Street. The fill along Long Bridge was widened and substantial areas of fill were added on the northern and eastern sides of Point San Quentin.

Four Key Early Industrial Establishments in the Mid-1860s - The building of Long Bridge across Mission Bay both stimulated and reflected the accelerating development of the northern and southern fringes of Mission Bay. The bridge extended from the foot of Fourth Street at Steamboat Point along the present-day Third Street alignment, to the present-day intersection of Third and Sixteenth Streets at Point San Quentin. The mid-1860s saw the first appearance of early industrial establishments in the two blocks bounded by Second, Fourth, Townsend and King Streets, and also in one block near the southern boundary of the Project Area on Minnesota Street between Mariposa and Seventeenth Streets. Two of the major industrial enterprises were the Citizens Gas Works, established in 1863-1864 at the junction of Townsend, King and Second Streets and the Pacific Oil and Lead Works, established in 1866 near the center of the block bounded by Second, Third, Townsend and King Streets.

Two other pioneer industrial establishments from this era were the glass factories of the Pacific Glass Works and the San Francisco Glass Works. The Pacific Glass Works plant was located just outside the Project Area on Minnesota Street, just north of its intersection with Mariposa Street. This glass works lasted from 1863 until 1876 when it merged with its main competitor, the San Francisco Glass Works, located within the Project Area on the south side of Townsend Street, between Third and Fourth Streets.

PLATE 3 -- Southern Half of Long Bridge in 1867 (countesy, The Bancroft Library)

The development of Citizens Gas Company illustrates both the beginnings of serious bay filling and the huge scale of the pioneer industrial projects being developed adjacent to the Project Area by the mid-1860s. Citizens Gas Company was incorporated in late 1862 with a capital stock of $2 million. After contracting with a well-known East Coast builder of gas works, construction began in the fall of 1863 at the Townsend, King and Second Streets site (Langley 1864:38). The Daily Alta California reported as follows on the new plant:

> Just eastward of the foot of Third street the "Citizens Gas Company" are engaged in an immense enterprise, which, when fully carried out, must involve an expenditure of nearly a million dollars. This company's land is bounded by Townsend, Second and Berry streets. They have two lots of two hundred and seventy-five feet each, with a water front of two hundred and seventy-five feet. In the rear of this front is a precipitous bank of soft rock and dirt, presenting a face towards the bay of at least one hundred feet in height. From this cliff the earth is obtained for filling up the water lots below. At present some seventy-five hands are employed in working into this cliff and carting the rock and dirt to the beach below. Laborers are industriously engaged in "cribbing" the water front lot, and filling in from the bank.
>
> At the foot of the cliff, and in front of the main bank, a great gas-holder, one hundred and fifteen feet in diameter, is being built. This is some twenty-three feet deep below the surface, and of dimensions big enough for at least four gas-holders. This pit is on a lot between King and Townsend streets. The manufactory and coal stores are to be between Berry street and the water front. The largest vessels can come up to the wharf, where the coal is landed and passed through the manufactory, and then delivered into the gas-holders.
>
> The main manufactory building is in dimensions one hundred and seventy-one feet by sixty on King street -- a portion two stories, and the remainder one story high, to be built of brick. It is to have an iron-framed roof, covered with slate, iron doors and windows, and is to be, in every respect, fireproof. A large coal depot, capacious enough to contain six thousand tons of coal, is also to be built.
>
> Upwards of 1,500,000 (blocks) of brick, manufactured in Sacramento, have been contracted for by the company. The gas-holder, to be first constructed, will be able to furnish 500,000 (cubic) feet every twenty-four hours.
>
> At present about one hundred men are employed, which number may be increased as the work progresses. Nature seems to have done much for this enterprise. The precipitous cliff overhanging the bay affords ample materials, in the way of stone and earth,

> for filling up the water lots, whilst the shallowness of the water permits the powerful steam engine to keep the otherwise submerged lands dry (Daily Alta California 1864:1).

Plate 4 shows the Citizens Gas Works during the late 1860s, with Long Bridge in the background.

Citizens Gas began production in early 1866, burning coal to produce gas for San Francisco. That same year Pacific Oil and Lead Works was established in the same block to the southwest. Although this company was apparently initially involved only with extracting oil from flax to produce linseed oil, at some point during the period 1866-1867, it began to manufacture zinc and lead paints. The method of producing linseed oil was patented by P. B. Bruner, the plant superintendent, and the cake left over was ground up and shipped to England as high-quality cattle feed. The Pacific Oil and Lead Works occupied an area 275 feet by 275 feet between King and Townsend Streets. The main building was 125 feet by 100 feet, four stories high and made of brick. It was built over a basement where barrels of linseed oil were stored. The oil was cooled in three large iron vats in the basement after it had been refined on the first floor. Seed and meal were stored on the first and second floors as well. The seed was dried on the third floor and dropped into a larger hopper on the second floor, where it was sifted onto three five-ton grinding stones to be rolled and pounded into cake while the oil was extracted. Flax was imported from California hinterland and also from China and Chile (Olmsted et al. 1977:214).

The company produced about 60,000 gallons of castor oil a year and, by 1887, was producing coconut oil as well. In 1915, a small warehouse was added on a vacant site along King Street and coconut oil was its main product. By the 1970s, a two-story, reinforced concrete warehouse occupied the site of the pioneer Pacific Oil and Lead Works (Olmsted et al. 1977:215).

The Pacific Glass Works was incorporated in October of 1862, and the company commenced operations on June 16, 1863. In 1864 the superintendent of the plant was Carlton Newman. According to Langley's San Francisco Directories for the 1860s and 1870s, the plant was located near the southern boundary of the Project Area at Iowa and Mariposa Streets. Three different

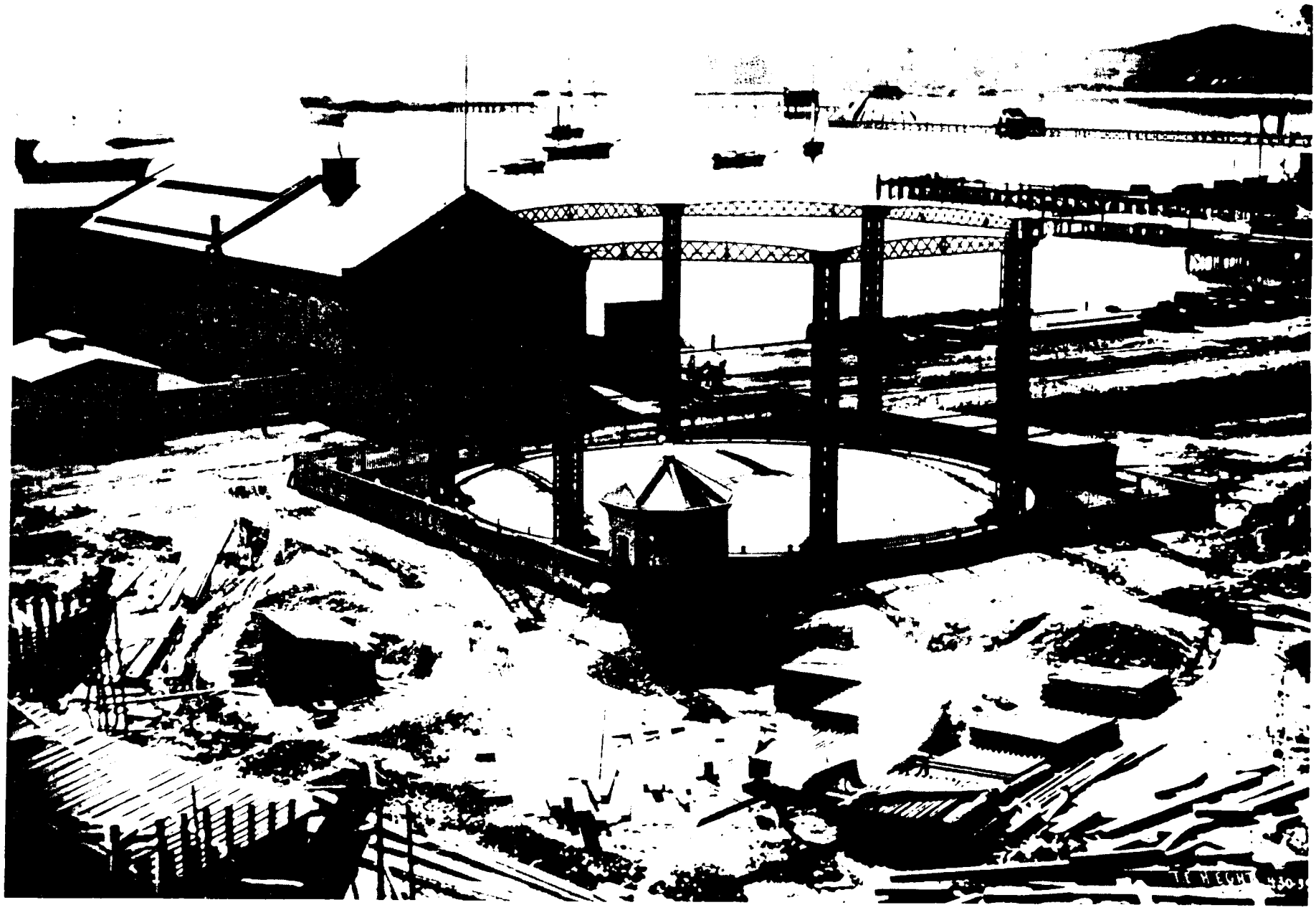


PLATE 4 -- Citizens Gas Works and Long Bridge, Late 1860s (courtesy, The Bancroft Library)

1860s maps, however, show this glass works as being located on Minnesota Street, just north of its intersection with Mariposa Street (Britton and Company 1863; Gensoul 1864; Britton and Rey 1868). The works employed thirteen glassblowers from the East and forty-five to fifty local men and boys. It was the first successful glass works on the Pacific Coast and its establishment was welcomed, since in the early 1860s San Francisco alone was importing between 125,000 and 150,000 bottles a year. Bottles were made for pickles, fresh fruits, catsup, mustard, beer, medicines and wines (Olmsted et al. 1977:85). The growth of the California wine industry, in particular, kept the plant busy: "The call for bottles for the wine-growing interests of the state is steadily increasing, and is now nearly, if not quite supplied by home manufacture, the large importations of former years from France and Germany have now almost ceased" (Langley 1875:52). The Pacific Glass Works lasted until 1876 when it merged with its main competitor.

Within two years of beginning its operation, the Pacific Glass Works had a serious rival, which was also located in the Project Area. On July 15, 1865 the San Francisco Glass Works opened on the south side of Townsend Street, between Third and Fourth Streets. The new plant was owned by Carlton Newman (formerly of the Pacific Glass Works) and Patrick Brannan. The plant consisted of "a frame building with an eight pot furnace making all variety of white, green or black glass.... Forty men turned out $6,500 worth of glass per month.... The varieties made at these works is endless including all kinds of glass except crystal" (Langley 1867:46). On July 24, 1868, the plant burned down and damage was estimated at $10,000. The two-story frame building was a complete loss, but the chimney and furnaces were left intact. The plant was probably reopened at the same site. In 1870, however, the San Francisco Glass Works opened a new factory on King Street, between Fourth and Fifth Streets, with Carlton Newman and Charles Duval the owners. Langley's San Francisco Directory for 1871 described this new factory as follows:

> The consumption of glass on the Pacific Coast is enormous, probably exceeding, in proportion to population, any other section of the globe.... The principal factory of the State is the San Francisco Glass Works of Messrs. Newman and Duval, South Beach, near the foot of Fourth Street, San Francisco. Here a large establishment has been erected, during the past season, the

> manufacture of the most common articles of glass used on this coast -- such as demijohns, carboys, window glass, etc. The building is constructed of wood and iron, on a brick basement, and has a front of seventy-eight feet by a depth of sixty-seven, and cost about $20,000. The arrangements are complete in every respect, and the factory is capable of turning out about $350 worth per day, giving employment to about forty workmen (Langley 1871:54).

The San Francisco Glass Works was a very successful enterprise. In 1876 they acquired

> The good-will, stock, and fixtures of the Pacific Glass Works and the two firms became one. The present company has two buildings, each containing seven pots, the combined capacity being 14 tons daily and are constructing flint glass works for the manufacture of druggist vials, lamp-chimneys, and press ware" (Hittell 1882:525).

The size and importance of the consolidated enterprise, called the San Francisco and Pacific Glass Works, was conveyed by Bancroft's description:

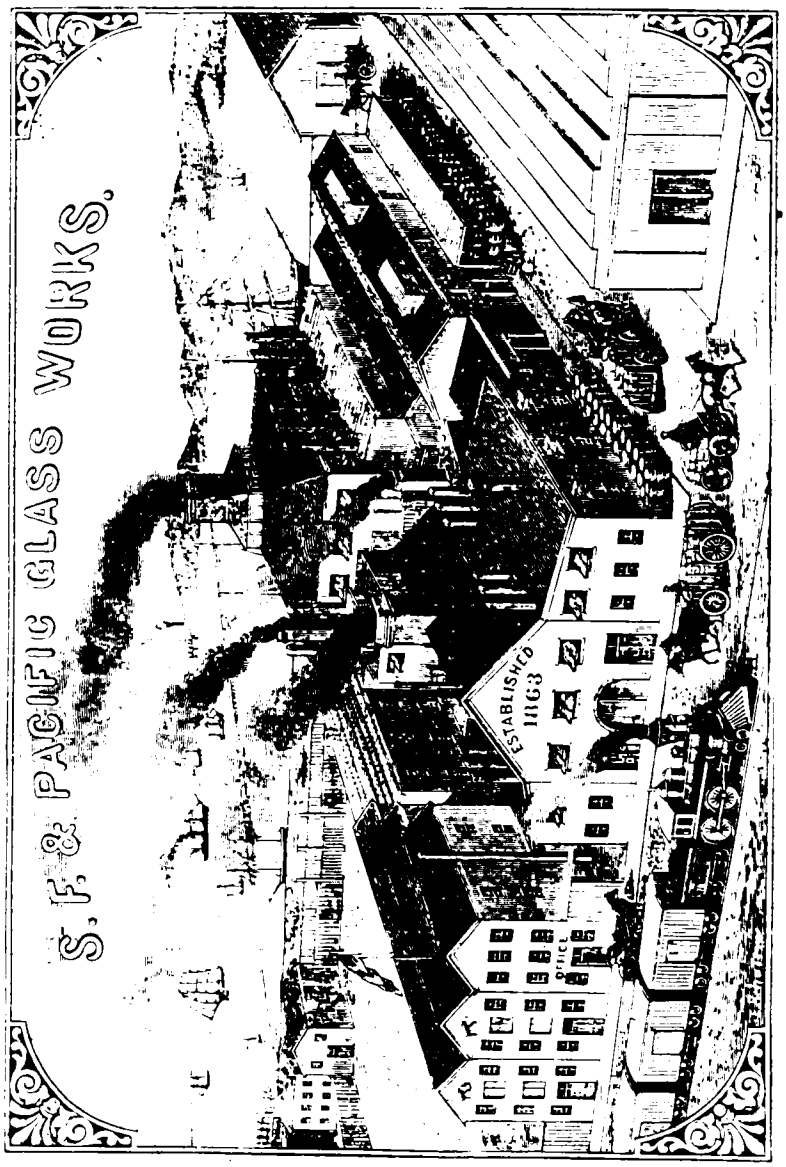
> The consolidated firm is the only one (for California) recorded in the U.S. Census of 1880, with a capital of $75,000 -- 2 furnaces, 7 pots, 125 hands, with wages of $46,000, material valued at $48,000 and an annual product of $140,000.... The sand is brought from Monterey, the lime from Auburn, the manganese and oxide from other places in California (Bancroft 1890:99).

Plate 5 is a reproduction of the only known view of the San Francisco and Pacific Glass Works (Olmsted et al. 1977:87).

The plant was in operation at the block bounded by King, Berry, Fourth and Fifth Streets until 1886. The 1887 Sanborn Maps shows the plant location to be vacant, although the King Street warehouse adjoining to the southwest was still extant. Newman had moved the San Francisco and Pacific Glass Works to the northeast corner of Townsend and Seventh Street, just outside the Project Area (Olmsted et al. 1977:89). The plant was 275 feet by 275 feet in dimensions and included a factory, a warehouse and an office. The furnace contained eight pots and the combined capacity was nine tons of glass daily. The output of the factory included vials, bottles, demijohns, carboys and fruit jars in a variety of colors. An engine of twenty

ESTABLISHED 1863. INCORPORATED JUNE 9, 1876.

CARLTON NEWMAN, President.



MANUFACTURERS OF

Green, Blue and Amber Glassware

Office and Works: King St., near Fourth,

SAN FRANCISCO.

PLATE 5 -- San Francisco and Pacific Glass Works. This ad, as it appeared in Langley's San Francisco Directory (1883:40), shows the works at the foot of Fourth Street with a ship on the other side of Berry Street. The only known view of the glass works is this early woodcut (Olmsted et al. 1977:87).

horsepower was used to drive the machinery. The factory employed one hundred and fifty workers and the weekly wage bill amounted to $2,000. The trade of the company extended throughout the United States, and South America, Australia and the Pacific Islands provided a substantial foreign market. By 1889, the company was selling about a quarter of a million dollars worth of products per year (Enterprise Publishing Company 1889:113). During the late nineteenth century, expansion took place in other areas South of Market Street, but well outside the Project Area (Olmsted et al. 1977:89).

The Southern Pacific Railroad After 1868 - In describing the maturation and development of the Project Area in the late nineteenth century, it is appropriate to stress the history of the Southern Pacific Railroad (SPRR) for several reasons. One cannot underestimate the broad economic significance and, indeed, the political power of the SPRR in the history of California and the nation as a whole during the late nineteenth and early twentieth centuries. The SPRR was by far the largest landholder in the Project Area for almost the entire post-Gold Rush era; it played the most important role in the filling of Mission Bay, and its 1870s building of a railroad terminus in the Project Area helped shape the pace and character of the area's economic development.

Prior to the completion of the SPRR in 1869, transcontinental transportation of bulky and heavy goods was costly and cumbersome. Goods could be sent to the East Coast directly by ship but the distance of the voyage around Cape Horn from San Francisco to New York was 19,000 miles, and in the mid-nineteenth century the journey took anywhere from three to four-and-a-half months (Hittell 1978:211). Virtually all freight went by this route until the opening of the Panama Railroad in 1855, which, in the words of Hittell, made the crossing of the Isthmus much easier by eliminating "the discomfort of riding 30 miles on a mule and travelling 35 miles in a canoe...and the danger of catching the virulent Panama fever, by...sleeping on the ground..." (Hittell 1878:234). With the completion of the Panama Railroad, most transcontinental passengers took this route in preference to Cape Horn or the equally arduous overland journey. Cargo was also carried by the Panama Railroad across the Isthmus. It was, however, costly to

unload bulky and heavy cargoes from ships at the railroad's western terminus, load it into freight trucks, unload it at the eastern terminus on the Atlantic and reload it onto a vessel destined for an East Coast port. Finally, transportation of even light cargoes on the overland route, combining existing railroads and primitive wagon roads, was cumbersome, unreliable and uneconomical.

It is little wonder then, that the completion of the transcontinental railroad was greeted with euphoria by the people of northern California. Many San Franciscans believed that their city, with a population of approximately 150,000 in 1869 would, as a result of the railroad, exceed a million people within a decade (Lewis 1980:124). Such predictions proved to be considerable overestimations, but there can be little doubt of the enormous impact that the SPRR had on the economy of California and San Francisco.

By the mid-1880s, the SPRR monopolized the railroad transportation of the Pacific Coast, with the transcontinental lines augmented by lines to Oregon and southern California, by control of the Oakland waterfront and a portion of the San Francisco waterfront, and by control or cooperative agreements with major carriers. One writer concluded that "From the middle '70s to 1910 the major share of the profit from virtually every business and industry on the Coast was diverted from its normal channel into the hands of the railroad and its controlling group" (cited in Cherny and Issel 1981:23). The political power of the SPRR in California was immense, with a large proportion of the State legislators literally at the beck and call of the railroad lobbyists. Frank Norris depicted this power in his famous and suggestively entitled novel, The Octopus. While Norris's book was published in 1901, the term "octopus" was already familiar to many Californians as early as 1882, when a cartoonist for a political journal caricatured the power of the SPRR with that image (Cherny and Issel 1981:23).

The building of a terminus by the SPRR in San Francisco had an important impact on both the City and the Project Area where it was located. San Franciscans were not exactly overjoyed when the SPRR decided that its rival Oakland would be the major terminus. Their morale was, however, boosted when the SPRR acquired a controlling interest in the San Francisco and San

Jose Railroad, for this gave the City a direct link to the transcontinental railroad and led, inevitably, to the building of a terminus in San Francisco. The City would be able to compete on equal terms with Bay Area rivals and, indeed, retain its position as the industrial center of both the Bay Area and California. Needless to say, the building of a major railroad terminus in the Project Area encouraged the location of numerous industries there which could benefit from a railroad connection, as well as from the existing port facilities nearby.

The story of how the SPRR acquired its property in the Project Area is an interesting and important one. By 1868 the SPRR anticipated building some kind of a railroad terminus in San Francisco. SPRR had relatively little difficulty in securing ownership and control of the bulk of the Oakland waterfront because it was able to acquire these lands directly from a very cooperative Oakland city government. However, unlike Oakland, San Francisco had never received title to all its tidelands from the State, and application had to be made directly to the California State Legislature. Early in 1868, the SPRR attempted to persuade the legislature to allow it to purchase approximately 6,620 acres of tide and waterfront land stretching from Mission Bay to Hunters Point. The citizens of San Francisco were, however, so indignant at the prospect of the railroads acquiring virtually the entire southern part of the City's waterfront that the legislature was forced to modify the bill. A compromise measure was reached granting sixty acres of land at Mission Bay to the SPRR and the Western Pacific Railroads on which to build a terminal. In addition, a 200-foot right-of-way was granted to allow access to the property. The provision for the grant read in part:

> That there is hereby granted and donated to the Southern Pacific Railroad Company and the Western Pacific Railroad Company, for a terminus in the City and County of San Francisco to each of said companies, thirty acres, exclusive of streets, basins, public squares and docks,...lying southwardly of Channel Street, and outside of the line known as the red line waterfront of Mission Bay (Dow 1973:18).

The "red line waterfront" refers to the Eddy Red Line, which was the official limit of the City's progressive fill into the Bay as established in the 1850s by the California State Legislature (Olmsted, et al. 1977:461).

The companies were empowered to select the property individually or together within ninety days of the passage of the act. The only restrictions being that the chosen land did not extend beyond twenty-four feet of water at low tide or within three hundred feet of the waterfront line. The companies were obligated to spend $100,000 each on the terminus within thirty months of the passage of the act or the property would revert to the State (Dow 1973:18-19; Daggett 1922:99). After the passage of the act on March 30, 1868, the SPRR embarked on expanding its landholdings by purchase in the Mission Bay region until they had acquired all the property north of Channel Street, between Third and Seventh Streets, and south of Channel Street to Sixteenth Street, between Fifth and Seventh Streets (Dow 1973:126 - map). The City cooperated with the railroad and, in 1871, the supervisors granted the SPRR and the Central Pacific Railroad rights on various streets in the City "in order that they might reach and enjoy their lands and depot grounds in Mission Bay" (Daggett 1922:99). Late in the same year, Leland Stanford, one of the owners of the SPRR, indicated his willingness to make Mission Bay the main terminus of both the Central Pacific and the SPRR, in consideration of a subsidy of $3,000,000 and some alterations in the terms of the Mission Bay grant, but nothing came of this proposal (Daggett 1922:99-100).

In regard to the lands lying inside the Eddy Red Line, which had been sold to the SPRR and other individuals prior to 1869, and the sixty acres granted to the railroads in 1868, little was left to be sold by the State Tide Land Commissioners. Indeed, only about twenty blocks remained. They were auctioned off, together with lands lying in Islais Creek, by Talbert and Leet on June 16, 1869, by order of the Board of State Tide Land Commissioners (Dow 1973:127). Before outlining the fill operations of the SPRR it should be noted that Channel Street remained unfilled from Seventh Street to China Basin since, at the time of the land acquisition, it was designated by the State as a navigable waterway. The 200-foot channel was set aside to allow the passage of ships as far inland as Seventh Street. Today this channel is the last remnant of Mission Bay.

Fill operation by the SPRR commenced with the relocation of its line from the San Francisco terminal, located at Valencia and Market Streets, to a new

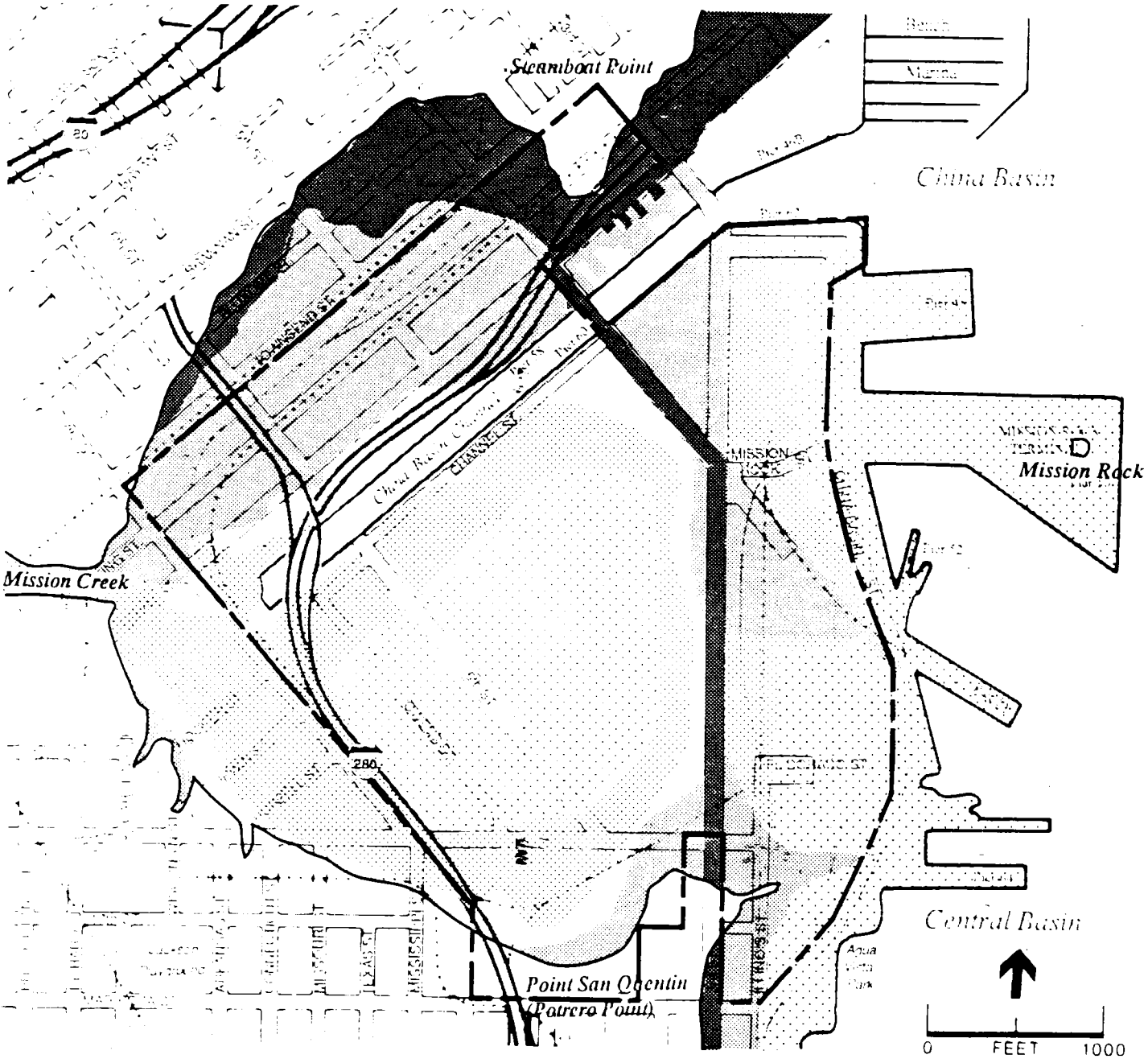
location at Third and Townsend Streets. This new right-of-way required considerable fill of the Mission marshes which were in that area. An account of the early filling activities of the SPRR appeared in Langley's 1872 San Francisco Directory:

> Among other noteworthy improvements is the filling up of the water channel now formed by what is termed Long Bridge, at the foot of Fourth Street. The Southern Pacific Railroad Company has for some years been employing a heavy force of laborers in this business, with the intention of erecting upon the made land large and commodious depots as the San Francisco terminus of the road (Dow 1973:129).

By 1884, substantial new areas of fill around the now-enclosed Mission Bay had been added, along with a long finger pier that extended southwest along the south side of the present-day channel, with a spur extending from the foot of Sixth Street southeast into the center of Mission Bay. Additional fill was also added along the north side of the present-day channel westerly from Fourth Street. In addition, fill was taking place on the southern shores of Mission Bay near Point San Quentin. By 1892 fill had been placed on both sides of Long Bridge from Potrero Point to Channel Street, thus signalling the virtual extinction of Mission Bay. In the last years of the nineteenth century, the SPRR continued filling its Mission Bay property, advancing the shoreline southward from Channel Street toward Sixteenth Street. By 1903 more than two-thirds of the SPRR's holdings inside Long Bridge had been reclaimed, as well as an additional eight acres on the east side of the bridge. Following the 1906 earthquake, the salt marshes along Mission Creek had disappeared because the earthquake rubble-fill had reduced the tidal flow of sea water that nourished the marshes (Dow 1973:129-130).

By 1913 the area east of Point San Quentin and Long Bridge (Third Street) was also filled to approximately its existing extend. Map 4 depicts the progression of Mission Bay fill from 1857 to 1913.

The Southern Pacific and the Central Pacific Railroad constructed a railroad terminus in San Francisco. E. G. Fitzhamon, in an article on the history of Fourth Street, quotes as follows from "Progress of the City" (1872):



MISSION BAY BOUNDARY

1857 MISSION BAY SHORELINE (COAST SURVEY)

1869 - LONG BRIDGE

1877

1884

1892

1902 - 1913

Mission Bay

SOURCE: David Chavez & Associates and ESA

MAP 4
PROGRESSION OF FILL

> The Central Pacific Railroad Company is erecting a magnificent building, pressed brick front and stone dressings on the lot (275 feet square) at north corner of Fourth and Townsend streets.
>
> The buildings will have a frontage on each street of 181 feet by a depth of sixty feet on the one and seventy feet on the other.
>
> The entrance on each street will have a portico, with stone columns and carved caps and molded pedestals.
>
> This building will be occupied by the general offices of the Central Pacific Railroad Company, which have heretofore located at the State capital.
>
> The total cost will be about $200,000. This building will be among the most substantial and ornamental in the city (Fitzhamon 1933: 54).

Collis Huntington, another SPRR owner, asserted that it was "the finest railroad office building west of New York." Commenting from his firsthand knowledge of the area, Fitzhamon could not resist editorializing in his article: "It was a swell building for San Francisco at that time, especially was it a swell building for the foot of Fourth street, which had been a swampy corner of Mission Bay but a few years earlier" (Fitzhamon 1933:54). Besides the main terminal building, other large structures were built in the early 1870s. "Three mammoth freight warehouses were...erected by the Central and Southern Pacific Railroad companies on Townsend and King streets, between Fourth and Fifth, and on Kentucky (present-day Third Street) near the Long Bridge...(measuring) 60 by 400 feet, 70 by 500 feet and 50 by 500 feet, respectively" (Langley 1873:17).

The Southern Pacific's actual station building (as seen in Plate 6) was, as Olmsted et al. (1977) somewhat despairingly put it, "an undistinguished shed on Townsend near Fourth"; however, Olmsted et al. dated the photograph as circa 1879, before the railroad had had time to create another impressive structure and before the tracks had been extended through the block to Third Street. The Plate 6 photograph shows the scene looking across King Street, over the terminal block to Fourth and Townsend Streets. The platform bordering King Street is in the foreground, and the much more imposing and palatial three-story general and main office building of the Southern Pacific at Fourth and Townsend Streets is in the background. The

PLATE 6 -- Southern Pacific Station Building, 1879 (courtesy, The Bancroft Library)

passenger tracks terminated just a little to the right of the view in the photograph, and a pair of freight tracks curved through to King Street and continued to the freight slip at Second and King Streets (Olmsted et al. 1977:202-205).

Using the 1887 Sanborn Maps, Olmsted et al. were able to reconstruct the expansion of the SPRR buildings and activities in the late nineteenth century. By 1887, there was a small group of frame shops on the east side of Fourth Street. The tracks that linked the railyard with the railroad ran out of the line on Long Bridge to Potrero and crossed King Street, fifty to one hundred and fifty feet east of Fourth Street. A single track traversed the entire length of King Street (Olmsted et al. 1977:205).

The SPRR gradually developed more and more of its property in the Project Area during the 1890s and increased the number of spurs and sidings to accommodate their booming freight business in the days when the railroad was still king.

> By 1891, they had extended their tracks across Ritch Street to a new and more suitable passenger terminal at Third and Townsend. The 1915 Sanborn block map shows all of the 1887 structures gone from both sides of King Street between Third and Fourth. The Mission style passenger station (finally demolished in 1977) was at the Third Street end of a huge complex of tracks and rain shelters for the passengers. The passenger station that appeared on the 1891 block map had been moved to the southeast corner of Third and King, where it served as a freight station. The freight tracks took up most of the block between Third and Fourth on the south side of King Street. By spring of 1977 both blocks, north and south of King between Third and Fourth had been razed (Olmsted et al. 1977:205).

Wirth Associates (1979:83) discussed Southern Pacific warehouses and freight sheds on King Street, between Fourth and Sixth Streets. Snyder (1983:4) evaluated Southern Pacific freight sheds on King and Berry Streets and found them to be much modified and undistinguished as historically significant properties. Currently, no freight sheds or other historical structures are located on King or Berry Streets.

The Nineteenth Century Lumber Industry - Some of the most important businesses that developed in the late nineteenth century were associated with California's booming lumber industry. Lumber was either stored, shipped or made into finished products at a host of different facilities in the Project Area. California, it must be remembered, was one of the nation's most important lumber-producing states from the mid-nineteenth century far into the twentieth century. There were massive tracts of coast redwood timber stretching in a belt roughly paralleling the coast from Monterey to the Oregon border, in addition to the pine forests of California's hinterland counties. While even coastal lumbering port towns such as Eureka had the means to export lumber directly to the East Coast and foreign markets, most lumber cut in northern California was shipped first to San Francisco. The bulk of it was, at least until the end of the nineteenth century, consumed by the San Francisco Bay Area market, primarily because wood was used extensively in the construction of homes, and the massive growth of the City's population created an almost insatiable demand. Such burgeoning industries as shipbuilding and the railroads also demanded large supplies of lumber. Furthermore, wood remained the primary source of energy in America until very late in the nineteenth century, when it was replaced by coal, oil and electric power. The lumber which was not absorbed by the San Francisco area market was shipped by rail to southern California and the East Coast and by ship to many foreign countries. Not surprisingly, most medium to large size lumber concerns had an office in the City or at least an agent to manage marketing and transportation.

The Project Area was ideally situated to capitalize on the lumber trade. It could receive ships engaged in coastal lumber trade, while railroads brought in the lumber produced by California's inland counties. And, of course, its shipping and railroad facilities made it an excellent place from which to transport freshly milled lumber or finished lumber products. Some companies preferred to convert their lumber into finished products at factories or workshops in the Project Area. Several San Francisco entrepreneurs with no connection to the lumber producing centers of northern California decided to take advantage of the accessible supply of timber and the excellent transportation facilities and established factories to produce finished lumber products of one kind or another.

The first lumber entrepreneur to locate in the Project Area was Charles Hooper. In 1865 Hooper established a facility on the south side of Townsend Street, between Third and Fourth Streets. Two years later he moved to a more permanent location on the south side of China Basin Channel on Channel Street, between Third and Fourth Streets. Here he established a large lumberyard and soon became one of San Francisco's most important dealers. His yard was, as the 1887 Sanborn Maps show, soon surrounded by other large lumberyards, such as the Pacific Pine Lumber Company, immediately south of his yard. These companies, like Hooper's, took advantage of the long shipping wharf on the south side of the China Basin Channel to receive their timber from California's forests and, by the late nineteenth century, timber harvested from the equally abundant forests of the Pacific Northwest.

There is little information on Hooper's background before he established himself as a businessman; it is known that beginning in the 1860s he and his brother, George Hooper, invested quite heavily in the Humboldt County redwood lumber industry. Hooper was also a substantial landowner in other parts of the Project Area and he owned most of the land on the south side of King Street, between Third and Fourth Streets. By the 1880s, almost all the businesses at this location were wood-related -- the California Cigar Box factory, J. R. Fairweather's Sash, Door and Blind Company, George Windeler's Cooperage and Andrew Frei's Furniture Company (Olmsted et al. 1977:197). Hooper's own business on Channel Street between Third and Fourth Streets was still in existence in 1913 and probably continued for some years thereafter.

Mention should also be made of some of the other major lumber companies that established facilities in the Project Area. By the late 1880s the Truckee Lumber Company established extensive lumberyards and a box factory on the south side of Berry Street, between Fourth and Fifth Streets. The company had previously been located nearby at 321 King Street, a property it had occupied from at least the early 1870s, according to Langley's San Francisco Directories. The Truckee Lumber Company had originally been founded in 1867 by E. J. Brickett in the town of Truckee, in the heart of the Sierra Nevada timber belt. The company's building on Berry Street measured 240 feet by 260 feet and ran through to Channel Street "with a commodious

wharf on the premises" (Hackett 1884:189). The yard could hold one million feet of lumber and stocked not only pine but spruce and redwood. In addition to boxes, the factory also turned out doors, sashes and blinds and catered to a market that extended from Alaska to Central American and as far east as Colorado and Montana. The company employed over 1,000 workers (Hackett 1884:189-190).

At Fourth and Berry Streets, on the opposite side of China Basin Channel from the Hooper yards, was a large, two-story frame warehouse owned by the Sierra Lumber Company. It measured 200 feet along Fourth Street to the drawbridge and 100 feet across to a slip built alongside the warehouse and up to Berry Street to accommodate lumber vessels. The construction date of this building is uncertain, but apparently it was built before 1878 and, perhaps, as early as 1867 (Olmsted et al. 1977:99). The Sierra Lumber Company was one of the earliest and largest of California's lumber companies, with vast tracts of timber in Butte and Tehama Counties. By the early 1880s, the company operated a sash and door factory in Red Bluff and planing mills in Chico (Hackett 1884:115). Planing and finishing of its lumber also took place at the company's facility on Berry Street. While the Sierra Lumber Company continued in business after 1910, Olmsted et al. could find no evidence of the large warehouse by that date, although they did find evidence to show that the lumberyards were in use as late as 1919 (Olmsted et al. 1977:100).

The Kennedy and Shaw Lumber Company was located on Fourth Street, between the Channel and Berry Street, and commenced business in 1875. The company had a large yard that encompassed over half the block bounded by Fourth, Fifth and Berry Streets and the China Basin Channel and it was estimated that the 350-foot-long yard could hold 5 million board feet of lumber. Later J. F. Kennedy, one of the founders, purchased an interest in the Central California Lumber Company, which retained its name but was owned by Kennedy and his partner George Shaw (Olmsted et al. 1977:77).

By 1891 two of the West Coast's most famous lumber companies had facilities on the immediate periphery of the Project Area on King Street, between Second and Third Streets. The Pacific Pine Lumber Company had acquired a

vast storage area from the San Francisco Lumber Company yards which occupied 525 feet along King Street on the south side all the way through to the Berry Street Lumber Wharf with lumber stacked 275 feet deep (Olmsted et al. 1977:206-208). Pope and Talbot Lumber Company, a giant of the industry, had established itself at the foot of Third Street as early as 1874 and was still there in 1919. The owners were among the first entrepreneurs to exploit the forest resources of Washington by establishing a large mill at Port Gamble, as well as at other locations in that territory. The Pope and Talbot Company was capable of producing 100 million feet of lumber annually.

A comprehensive description of all the wood-related industries and businesses that had mushroomed in the Project Area by the 1880s will not be attempted here. However, the following select descriptions give some idea of both their scope and nature. The California Cigar Box Company, located on Berry Street, between Third and Fourth Streets, was described as "perhaps the largest factory of its kind on the Pacific Coast" (Hackett 1884:193). Charles and George Hooper were among the proprietors of the concern which manufactured cigar boxes of all shapes and sizes. Seventy workers were employed in the factory which measured 250 feet by 250 feet and was two-stories high (Thompson and Company 1887:164).

A. M. Jewell and Company, South Point Mills, was also located on Berry Street, between Third and Fourth Streets. Established in 1870, the plant specialized in the manufacture of wooden tanks, mouldings, sash blinds, doors, frames and shutters. Jewell, who had migrated from Maine in 1862, was the manager and one of the owners. Also among the owners were the ubiquitous Hooper brothers. The building was described as "ample" and the company employed thirty men (Thompson and Company 1887:137).

Berry Street, between Fifth and Sixth Streets, had a particularly high concentration of wood-related businesses. Perhaps the most notable of these was the Pacific Woodenware and Cooperage Company on the south side of Berry Street at the corner of Sixth Street. This corner contained a complex of frame buildings extending 140 feet along Berry Street and over 200 feet to the China Basin Channel. A three-story building (50 feet by 100 feet) contained the woodworking machinery and a machine shop. Stacks of lumber

were piled in yards and, facing the Channel, were long, low-covered sheds built to receive the lumber from incoming ships (Olmsted et al. 1977:67). This facility had previously been operated by the Coos Bay Stove and Lumber Company. Adjoining the Pacific Woodenware and Cooperage was the Pacific Planing Mill, a three-story building with iron shutters, extending 60 feet along Berry Street and 100 feet in depth. The mill employed forty men in the mid-1880s and the major products turned out by the mill were turning brackets, doors, mouldings and sashes (Hackett 1884:191).

One of the most important wood product plants in the project area was Andrew Frei's Furniture Manufactory. It was located on the south side of King Street, between Third and Fourth Streets, and the three buildings that made up the factory fronted for 150 feet on King Street. The first building was a 28-foot, two-story building that Frei shared with George Windeler's Cooperage which manufactured wine casks, barrels, kegs and tanks. The other two buildings were three-story frame buildings that housed the planing mill, varnishing sheds and finishing tools for cabinet work. Andrew Frei was a Swiss-born woodworker who emigrated to California in 1859, and who was living in San Francisco by 1867. He made bedsteads and furniture at the Mechanic's Mill at the corner of Mission and Fremont Streets before establishing himself in business in 1873, with partner George Field. By 1887 he had expanded and added a furniture warehouse up the road on King Street towards Third Street. Hittell described the business "as the oldest and most successful furniture factory in San Francisco," occupying more than 43,500 square feet, "more than an acre of factory, warehouses, drying room and an engine house, exclusive of the lumber yard 125 feet by 100 feet" (Hittell 1882:608). In 1882, the factory employed two hundred men and manufactured bedroom sets and bedsteads catering to the entire Pacific Coast market. Evidently, by 1895, Frei had retired from the business and was listed simply as a "farmer" on Rincon Place (Hittell 1882:608).

The foregoing account has only touched on some of the major wood product businesses in the Project Area. It is quite evident, though, from the descriptions of the size of the plants and the number of workers employed, that these concerns were not small-scale "spin-off" workshops capitalizing on the accessibility of cheap lumber, but major factories in their own right.

The Nineteenth Century Agriculture Products Industry - The rapid development and diversification of California agriculture in the late nineteenth century had a significant impact on the Project Area. In particular, it created the need for facilities and factories that could store large quantities of produce and preserve and/or containerize agricultural products such as meat, fruit and vegetables. The preservation of such perishable foods was a major problem for California farmers, especially as they sought to exploit a growing national and world market. Transportation of produce, even with good rail connections, could take weeks and even months, in the case of foreign exportation. While refrigerated freight railroad cars would eventually go far toward solving this problem, the use of such cars did not commence in the West until the late 1880s (Pomeroy 1965:110). Thus, the majority of California's rapidly expanding citrus crop was preserved by canning. The importance of canning in California's citrus industry can be gauged from the fact that in 1872 a mere 182,090 pounds of canned fruit were shipped East, however by 1888 the total shipped beyond the Sierra was more than 39 million pounds (Scott 1985:71).

The Pacific Can Company was one of the most important can-producing plants in California. The company was organized in July 1883 and located its plants just outside the Project Area on the north side of Townsend Street, between Sixth and Seventh Streets. John Lee, Sidney M. Smith and A. D. Cutler were the men in charge of the enterprise. They erected large buildings measuring 275 feet by 275 feet that included a factory with a one hundred horsepower engine, two warehouses and storerooms. The plant was operational at least by 1887 and probably earlier. Two hundred men were employed and 250,000 cans of all shapes and sizes were turned out daily. Orders for cans were received regularly "from the entire sections west of the Rocky Mountains, Alaska, Mexico, British America (Canada), and elsewhere" (Enterprise Publishing Company 1889:129). City directories indicate that the plant operated at least until 1902.

Several large plants in the project area concentrated on producing, obtaining and distributing ice exclusively for food preservation, and often they combined this activity with refrigerating a particular line of produce. On the east side of Fourth Street, between Berry and King Streets, was the Union

Ice Company which owned an L-shaped group of frame sheds for wagons, box storage and ice storage. The company first appeared in Langley's Directory for San Francisco in 1882 and it continued to operate at the same location until 1907. A large part of the company's business was storing and delivering cold beer and ice by wagons. The source of ice for this and many other "ice companies" is not entirely clear. "Whether the ice came from the mountain lakes of California via the Southern Pacific or was produced by refrigeration from the Brown Ice House and Meat Packing Center next door is a matter of conjecture" (Olmsted et al. 1977:95). Ice was evidently shipped to San Francisco at a cost of $2 per ton in the early 1880s (Hittell 1882:568).

The Brown Ice House and Meat Packing Plant lay adjacent to the Union Ice Company on Fourth Street. It commenced business as the Mutual Ice Company in 1879, and by 1883 was the Mountain Ice Company. The plant was 60 feet by 75 feet and contained a smoke house in back, a curing room to one side and a refrigerated storage house. By 1891 this company was no longer in business (Olmsted et al. 1977:95). There were several other smaller ice plant facilities in the Project Area, as well as the large works of the Artic Ice Company located, just outside the Project Area on the north side of Townsend Street, between Second and Third Streets.

Another major enterprise involved in food preservation was the National Vinegar Works. Vinegar was important in California's early canning business, as it was needed for pickling. The National Vinegar Works was located on the south side of Berry Street, between Fourth and Fifth Streets, and was in operation between 1884 and 1896. This company was located at the corner of Berry and Fourth Streets and stretched 65 feet south on Fourth Street and back for 80 feet. The plant consisted of six large fermenting vats on a stone floor, yeast tubs, hand-operated yeast presses, as well as a furnace, generator and vats for storing mash (Olmsted et al. 1977:77).

In connection with California's agricultural economy, mention should be made of two important plants that were involved in the distribution of agricultural machinery and implements. Located on the north side of Berry Street, between Fifth and Sixth Streets, was Truman, Isham and Hooker Agricultural

Implements. The company had a substantial warehouse that fronted Berry Street for 70 feet and ran 125 feet back toward King Street where it nestled against the back of the Napa Valley Wine Company Warehouse, which fronted on King Street. In 1879 Irwin Truman took the initiative in forming a partnership with Alfred Isham and Osgood Hooker to make "hay-presses, all kinds of baling presses, wagons, buggies, steam engines and hardware" at their plant in San Leandro. Their facility on Berry Street was designed for storing and distributing the finished products (Olmsted et al. 1977:78). Just outside the Project Area, on the north side of King Street between Second and Third Streets was the Oliver Chilled Plow Works Warehouse which was a brick building measuring 50 feet by 150 feet. The company was operational at this site from 1886 to 1907 and from its warehouse distributed the Casady sulky plows and gang plows, which were manufactured at the companies headquarters in South Bend, Indiana (Olmsted et al. 1977:215).

The availability of space and the excellent means for the transportation of large and bulky goods resulted in the establishment of numerous warehouses in the Project Area by the 1880s, which stored a great variety of products. Adjacent to the Truman, Isham and Hooker Agricultural Implements Company and the Napa Valley Wine Company Warehouse, on the north side of Berry Street, between Fifth and Sixth Street, were the Studebaker Brothers, who specializing in manufacturing carriages and wagons and who also had a large warehouse. On the north side of King Street at the corner of Ritch and King Streets, between Third and Fourth Streets, was the Arizona Warehouse which measured 125 feet by 140 feet. It received freight from the Southern Pacific spur track that ran directly in front of the building and operated from 1886 to at least 1898, but no later than 1919 when the site had been covered by a Southern Pacific freight shed.

Other Industries During the Late Nineteenth Century - The nature of manufacturing in the Project Area in the late nineteenth century mirrored that of San Francisco as a whole, in that it was characterized by great diversity and not dominated by one or a few industries. Although wood-product industries were the most important general category of manufacturing, discussed below are some of the other industries that existed.

By the 1880s the brick industry flourished and several large such enterprises were well-established in the project area. Bricks were in great demand from as early as the Gold Rush years. While the supply of wood was relatively abundant, wood structures were highly vulnerable to the rash of fires that plagued the City in the Gold Rush era. Between late 1849 and mid-1851, for example, no fewer than six fires destroyed large parts of San Francisco (Lockwood 1878:43), and major fires occurred throughout the 1850s and afterwards. Industrialists were particularly anxious to protect their large investments in plant and capital equipment by using more fire-resistant materials and, in the City's early years, all bricks had to be imported at great cost -- at one time retailing for as much as a dollar a brick. In 1851 the first brick works was established in San Francisco. According to Charles Lockwood, among the first to open were several "near the clay deposits where Mission Creek emptied into the Bay" (Lockwood 1878:51); however, little is known about the precise location and nature of these early brickworks, and the industry did not firmly establish itself in the area until the 1880s.

The natural and comparative advantages afforded by the Project Area to the brick industry were considerable. Any needed raw materials could be cheaply imported by ship or rail and the finished product not consumed by the local market could be exported with equal ease. Finally, most plants had a large amount of space for the storage of raw materials and finished bricks -- a virtual necessity in such an industry.

The Cement Brick Company was established in the early to mid-1880s on the south side of Berry Street, between Sixth and Seventh Streets. It encompassed an area 50 feet wide along Berry Street and extended over 200 feet back to the China Basin Channel. A frame building contained a mixing yard, brick beds, a water tank and a kiln. The company had offices on Montgomery Street. By 1891 the brickworks were occupied by a haybarn owned by Scott and McCord (Olmsted et al. 1977:52-57). That same year, a few yards down the south side of Berry Street toward Sixth Street, the Pacific Brick Company established a plant (Olmsted et al. 1977:58). On the south side of Berry Street, between Fifth and Sixth Streets, were two other brickworks. The Point San Pedro Brick Company commenced operations in

1888 on a lot that extended back to China Basin Channel. The Remillard Brick Company had, by the 1880s, an equally large facility, measuring 100 feet along Berry Street and extending 250 feet back to the Channel. The company operated in the project area from at least 1882, when over half of the laborers employed were Chinese. The company maintained extensive yards and kilns all over the Bay Area (Langley 1868) and Peter Remillard and Edward Hillaire directed the company from their offices in Oakland. Furnaces were established as near as possible to deposits of clay and the remains of one Remillard kiln still exists near San Quentin in Marin County. The yard on Berry Street was set up to receive bricks from the company scows that could berth along the Channel. By 1916, although the company was still in business, the Berry Street yard was no longer used and had been taken over by the Wilson Brothers lumberyard (Olmsted et al. 1977:72).

Two other important brick companies operating in the area are worthy of note. The Mallon Patrick Cement Brick Company of California was situated on the south side of Berry Street, between Third and Fourth Streets, and was operational at that location from 1885 until 1889. Nearby, at Third and Berry Streets, was the Sacramento Brick Company, which was operational in 1887 but little is known about when the plant opened and when it ceased production.

There were several plants in the Project Area devoted to iron processing and manufacturing. Like the brick industry, the iron industry derived its initial impetus from the fact that San Franciscans were anxious to construct buildings out of more fire resistant materials than wood. The industry also met the constant and ever-expanding demand from the western mining industry for iron products and from the farmers for agricultural machinery such as plows, threshers and pumps. In the early 1850s it became the City's most important industry, with six foundries established by 1853 (Lockwood 1978: 78). A constant problem for the region's iron industry was the shortage of raw iron, most of which had to be imported from great distances. Curiously, it was the grain trade (grain was the State's principal export crop between the 1860s and 1890s) that led to the full-fledged development of the California iron industry. The grain ships which exported California's abundant grain crop to the East Coast and foreign markets returned with tons of

pig iron and scrap iron, as well as coal and coke which supplied the energy for manufacturing during this period (Scott 1985:73).

In the 1880s the most important iron-related plant in the Project Area was the Antimony Works of A. M. Starr and Thomas Mathison. The facility was located on the north side of Berry Street, between Fourth and Fifth Streets, and operated from 1873 to 1887. The factory was a narrow building, 50 feet in the front and extending 100 feet back to the King Street grain warehouse. In 1887 it contained two furnaces and twenty refining casks on an unimproved earth floor. Antimony was a water insoluble sulphate used in making both alloys and explosives and, in 1882, there was only one other antimony plant in the nation. The entire output of two mining veins in Humboldt County, Nevada, was shipped to San Francisco and refined at the works. The factory was the oldest one established along Berry Street, having been built in 1873. Olmsted et al. believe that the ore was shipped by rail to Oakland and brought over by scows to the doorstep of the Berry Street refinery. By 1889 the factory had moved outside the Project Area to 210 Harrison Street (Olmsted et al. 1977:82).

While the center of the San Francisco shipbuilding industry had moved to the south by the 1880s, some shipbuilding activity continued in the area. Patrick H. Tiernan, the shipbuilder who had moved away from Steamboat Point in the mid-1860s, relocated near the southern tip of the Project Area around the foot of Seventeenth Street, on the east side of present-day Third Street. This shipyard was later occupied by the Dickie Brothers, who built large ocean-going vessels (Olmsted et al. 1982:191).

Adjacent to each other on the south side of Berry Street, between Sixth and Seventh Streets, were the well-known shipyards of Boole and Beaton and Alexander Hay. One block to the northeast, Hay had another large shipbuilding yard on the south side of Berry Street. At their locations between Sixth and Seventh Streets on Berry Street, the two shipyards occupied 325 feet along the front of Berry Street, with yards that extended 220 feet to China Basin Channel. In the late 1880s these two builders were the largest constructors of steam schooners on the coast, and they revolutionized the lumber and other trades because their vessels were no longer dependent on

the vagaries of the wind (Olmsted et al. 1977:62). In addition, the steam schooners could hold a much greater volume of cargo than even the largest sailing schooners. Pinning down the precise dates of these shipbuilders' operations is a surprisingly elusive task. All that can be said with certainty is that they began operations in the Project Area in the early 1880s, but by the end of the decade both concerns had left the area. By 1891 Boole and Beaton had moved their shipbuilding operations to Oakland. At that date, Hay's shipbuilding yard on the south side of Berry, between Fifth and Sixth Streets, was occupied by a lumberyard belonging to the Pacific Lumber Company and a Standard Oil Company storage tank (Olmsted et al. 1977:57, 62, 72). By 1887 Standard Oil Company had erected six large storage tanks on Sixth Street between King and Berry Streets.

By the mid-1800s two other oil companies were operating in the Project Area. Next to Alexander Hay's shipyard on the south side of Berry Street, between Sixth and Seventh Streets, was the American Oil Company. The plant fronted 50 feet of Berry Street and extended back 100 feet. The petroleum oil-producing firm was established sometime in the mid-1880s and was still at that location in 1890, but by 1891 the space was occupied by the Pacific Brick Company. The factory contained steam oil-boiling tanks, three steam chemical mixing tanks, a barrel yard and boiling kettles (Olmsted et al. 1977:58). Far removed from the American Oil Company, in the southern part of the Project Area, was the Arctic Oil Works located in the vicinity of Illinois and Sixteenth Streets. The principal product of that plant was whale oil and it operated at that location from 1884 until 1902. Its machinery was steam powered and it contained a wide range of facilities including oil tanks, oil freezing pits and oil storage tanks. Plate 7 illustrates the layout and operating facilities of the Arctic Oil Works sometime during its years of operation.

Several wool manufactories and a few chemical plants also contributed to the industrial diversity of the area in the late nineteenth century. Calton Bell and Company was the most prominent of the wool manufactories. It was located on the north side of Townsend Street, between Sixth and Seventh Streets, and operated at that location from 1876 until 1905. Also located on the north side of this block was the Golden City Chemical Works which was

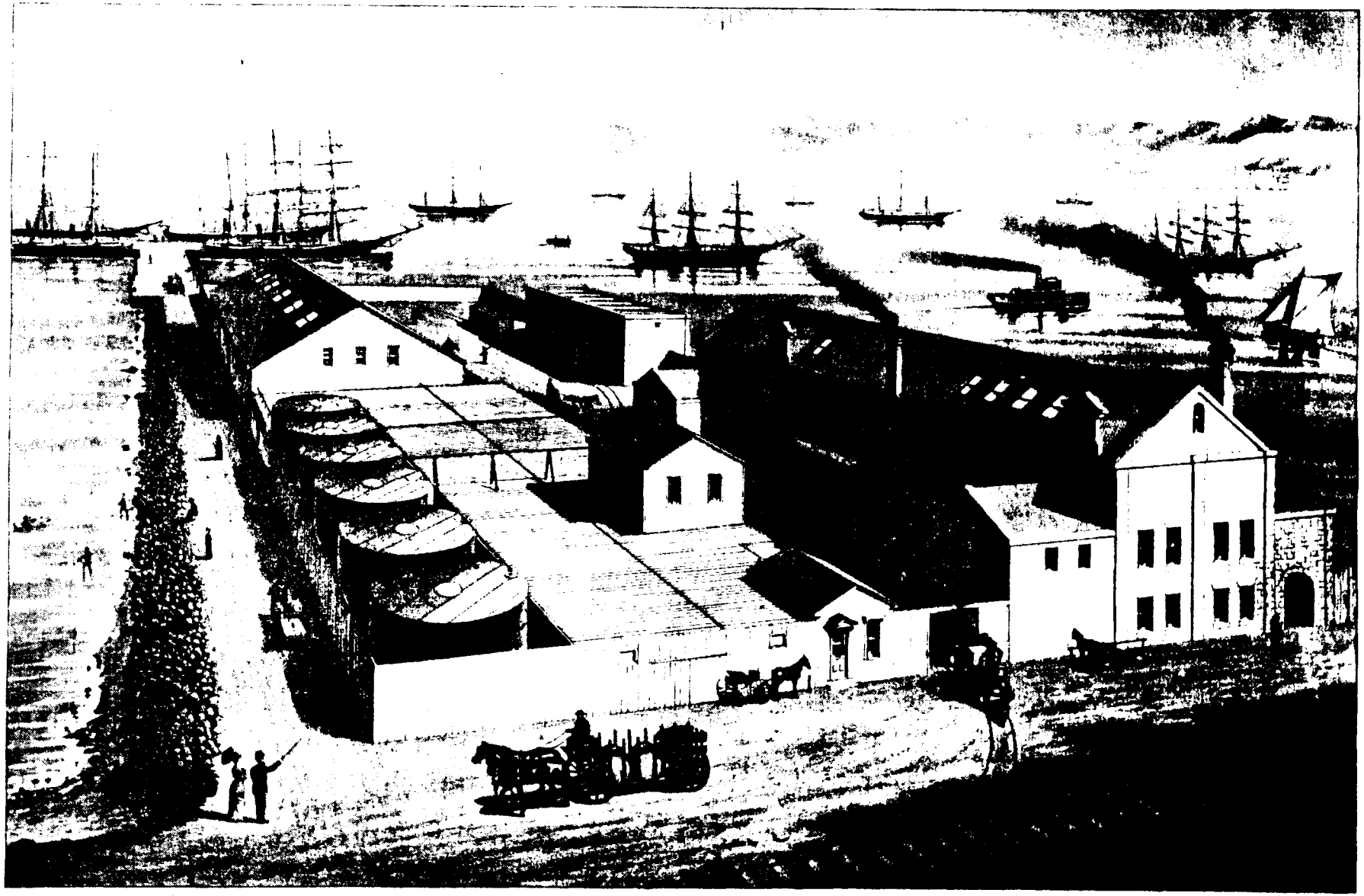


PLATE 7 -- Arctic Oil Works (courtesy, The Bancroft Library)

founded in 1867 and operated there until 1894. The facilities at the plant included acid receiving jars, sulphur burners, platina stills and a leaden condensing chamber for treating sulfuric acid.

Finally, two "Birdseye views" of eastern San Francisco (Plates 8 and 9) illustrate how the Project Area appeared during the late nineteenth century. The 1878 view (Plate 8) is looking south and by that point in time most of Mission Bay was still intact; the filling process was undoubtedly progressing, especially adjacent to Long Bridge, where substantial buildings were beginning to appear. A number of factories with their characteristic smoke plumes are shown along the northern fringe of Mission Bay. None are distinguishable as specific sites of industrial facilities discussed in this report. More clearly identifiable are the long, shed-type buildings near the western shore of Mission Bay. Those are certainly part of the complex of railroad-related facilities belonging to the Southern Pacific Railroad.

The 1892 view of the area (Plate 9) is looking north and by that point in time most of Mission Bay had been filled in. Only a relatively small lake-like feature was present in the center of where Mission Bay once existed. In 1892 that feature was bounded by Kentucky (Third Street), Seventh, Sixteenth and Channel Streets with Sixth Street running through its center. The view indicates that the southeastern section of the Mission Bay location along the waterfront near Sixteenth Street was being developed by 1892. Later this region would house lumberyards, a planning mills and oil storage facilities, all of which are discussed as twentieth-century industries.

Social History in the Late Nineteenth Century - Thus far we have discussed the principal industries and representative businesses located in the area during the late nineteenth century. The social history of the area is also of interest and was, of course, closely related to economic activities and trends. It is difficult to uncover and summarize the detailed history of the many thousands of people that lived and worked in the area and its vicinity; much more so than it is to meticulously reconstruct the economic history. There are, however, some sources on the social history of the neighborhood that give us glimpses into this aspect of the Project Area's past.

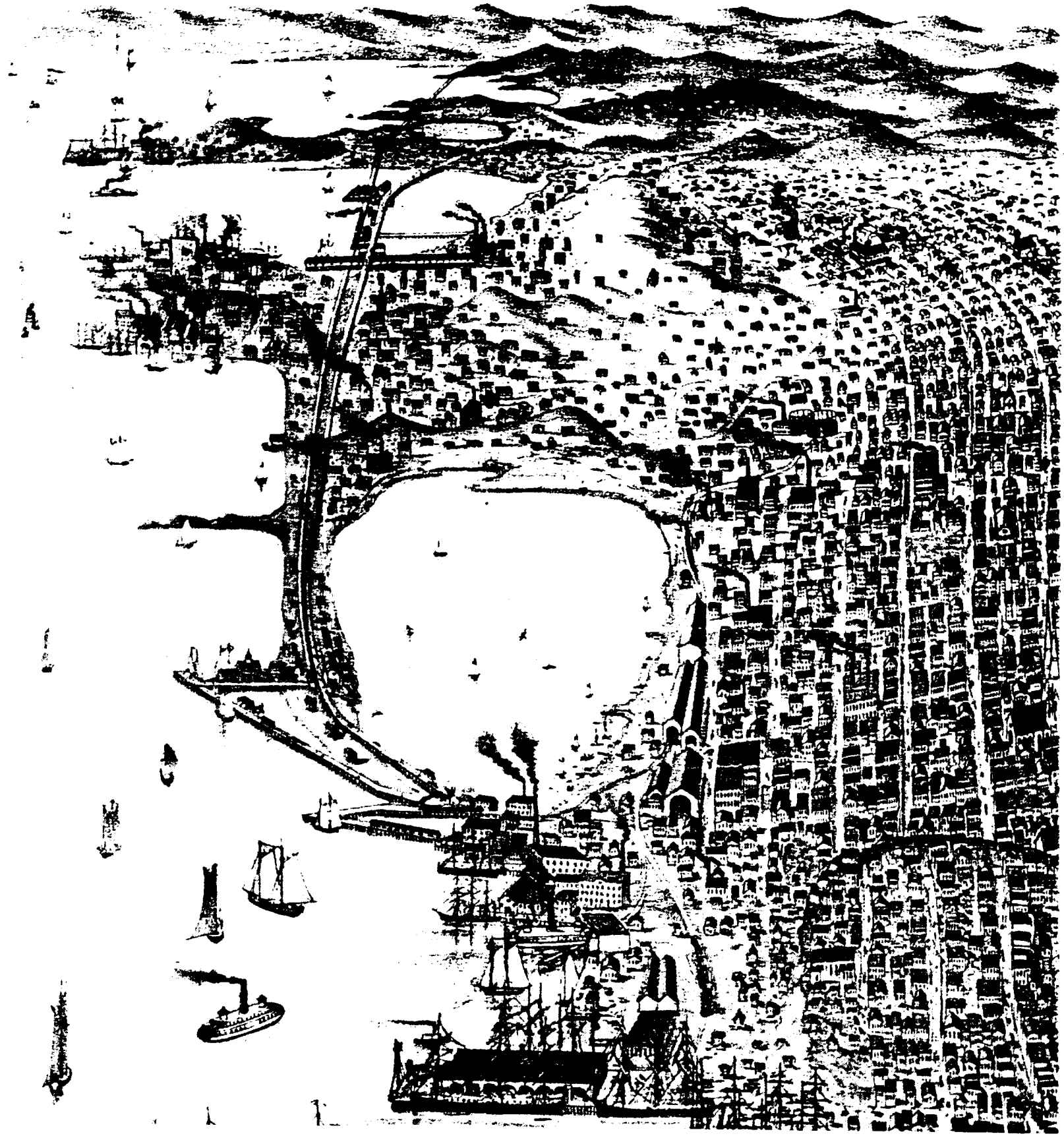


PLATE 8 -- 1878 Birdseye View of Eastern San Francisco (courtesy, The Bancroft Library)

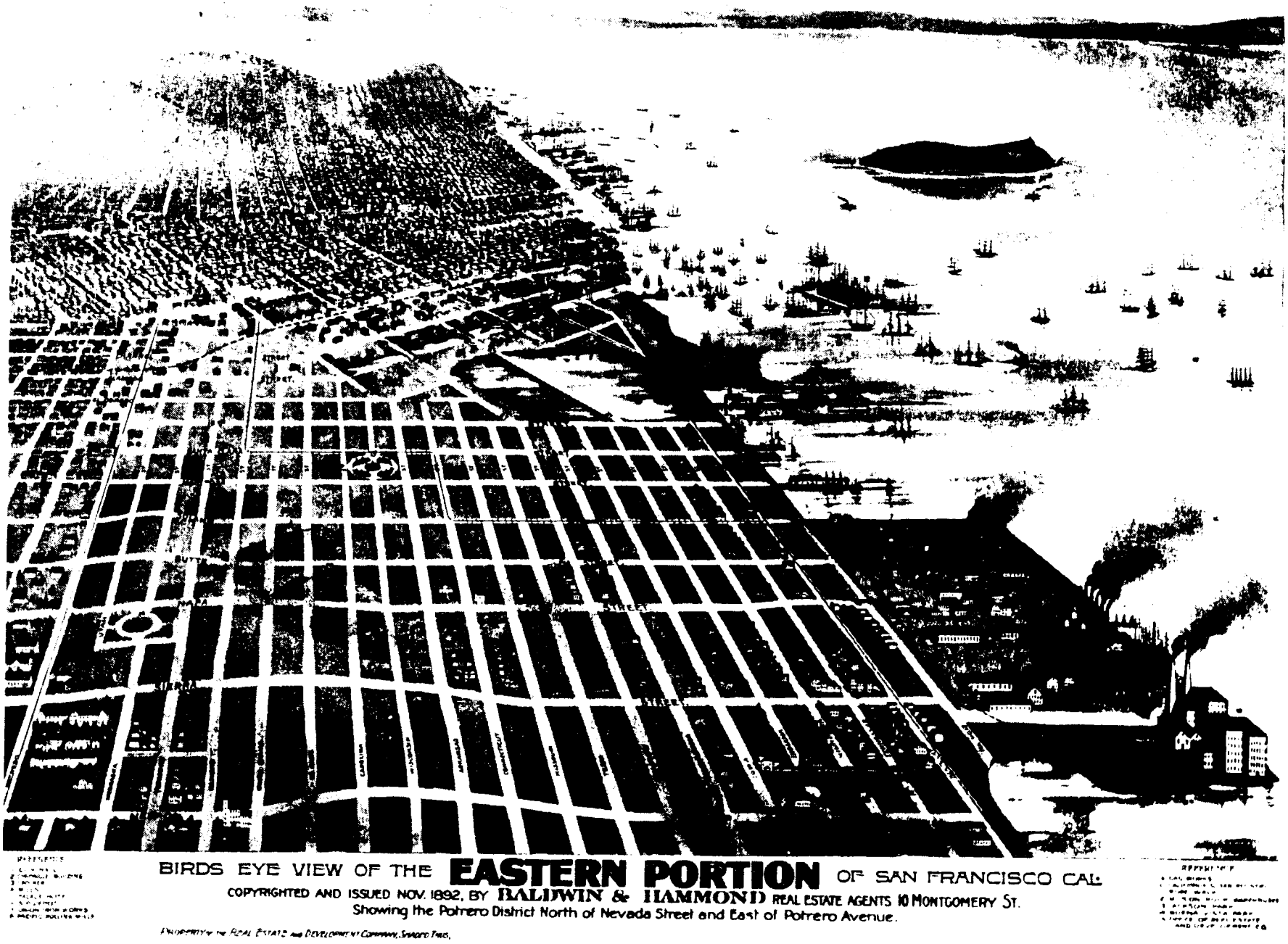


PLATE 9 -- 1892 Birdseye View of San Francisco (courtesy, The Bancroft Library)

At the outset it should be noted that South Park and Rincon Hill, both located nearby, were (until at least the 1870s) neighborhoods in which some of the City's most affluent people lived (Lewis 1980:79). Ironically, many had moved there in the 1850s to escape the grime and noise of the industries they had established close to Market Street and to seek respectability and social distance by segregating themselves from the workers of the area (Issel and Cherny 1986:16). The spread of industrialization to the South of Market area in the last quarter of the nineteenth century caused many of San Francisco's elite to move out of the South Park-Rincon Hill neighborhood and establish mansions on Nob and Telegraph Hills.

Undoubtedly, many of the workers employed in the Project Area lived close to their place of work. This was true of the industrial areas of most American cities at this time, though the full-fledged development of street car systems was beginning to lead to the demise of the "walking city" and the emergence of what urban historian Sam Bass Warner has called "Streetcar Suburbs," which began the separation of the upper echelons of the working class from their place of work. But this development occurred slowly in San Francisco, and up until the early years of the twentieth century, many workers lived with their families in the South of Market region. The better-off workers lived in two- or three-story wooden rowhouses packed tightly together, while the less skilled, less well paid and often single workers, lived in boarding houses (Issel and Cherny 1986:61).

The following description of the South of Market area in 1878 by kindergarten teacher Kate Douglas Wiggin, conveys something of the texture of life in that region:

> Innumerable small shops lined it from north to south; horse (drawn street) cars, always crowded with passengers, hurried to and fro; narrow streets intersected the broader one, these built up with small dwellings, most of them rather neglected by their owners. In the middle distance were other narrow streets and alleys where taller houses stood, and the windows, fire escapes, and balconies of these added great variety to the landscape, as the families housed there kept most of their effects on the outside during the long dry season.
>
> Still further away were the roofs, chimneys, and smokestacks of mammoth buildings -- railroad sheds, freight depots, power-

> houses, and the like -- with finally a glimpse of the docks and wharves and shipping (cited in Issel and Cherny 1986:61).

The 1887 Sanborn Maps record the existence of numerous boarding houses, saloons and restaurants catering to the workers in the Project Area. Representative of these facilities was the Crystal Hotel located on the northeast corner of Fourth and Berry Streets. This hotel was established in 1887 by Herman Schaffee. On the first floor was a restaurant and saloon and on the second were sleeping quarters. By 1891 Peter Hansen owned the property and it evidently survived the 1906 earthquake, since it was still in business in 1907 (Olmsted et al. 1977:92-95). The Cuckoo's Nest, at the southeast corner of Fourth Street near the China Basin Channel, fed the numerous workers that labored in and about the lumberyards, brickyards, refineries, haybarns and planing mills in the Berry and Channel Streets area:

> Lunch at the corner saloon was an occasion for exchanging political views as well, and Senator Thomas Maloney recalls the frequent and explosive fights that regularly took place in his father's saloon, the Cuckoo's Nest, which properly escorted the combatants out into the street to settle their differences, with wagers laid all around (cited in Olmsted et al. 1977:99).

There were many workers who could not afford a lunch at the Cuckoo's Nest and similar establishments and were forced to eke out an existence by more painstaking means. Some time between 1869 and 1877 the City established a major dump on Berry Street between Fifth and Sixth Streets, shortly after that location had been reclaimed from Mission Bay. By the 1870s, so many indigent men lived in shanties or "filth hotels" on the edges of the dump that it was called "Ragtown" (Lockwood 1978:148). The dump attracted considerable interest in the San Francisco press. In 1878, for example, the San Francisco Daily Evening Post ran a series of articles on the dump by a reporter who disguised himself as a tramp. In his ten-part series of articles, the reporter provided some graphic accounts of life at the dump:

> There could be found penniless humanity engaged in its daily struggle with want and privation. There could be seen the tramps, seeking to wrest (from) lands of garbage continually arriving that sustenance which other and more agreeable means failed to provide.

> Here were congregated many people of all nationalities, their wan and pinches countenances plainly showing the inroads that want had made there. Their clothes ragged and soiled, and their faces and hair, unwashed and unkempt, were in keeping with their general air of dejected doggedness.
>
> Many were busily engaged with pitchfork, shovel or stick, poling, sifting each load as it was dumped from the reeking, overflowing carts. Nothing was too small for their quick, sharp eyes to discover, or (of) too little valuable for their wits to utilize. Rags of any and every description, old bottles, cans, scraps of iron, glass, old sacks, corks, pieces of wood, brick, oystershells -- all were preserved with an eye single to the future dimes their accumulated store would yield (cited in Archeo-Tec 1981:94-97).

The reporter described the houses of the residents of "Dumpville" as follows:

> (They) were uniform in their squatter style of architecture, in sizes about ten feet square and six in height, and the material used in their construction was of every variety and substance known to the building world. The frames had been constructed out of fence posts, pieces of scantling, old gas pipes, etc., foraged from some neighboring lumber yard, the whole covered with old matting, pieces of carpet, blankets, tin roofing, etc. (cited in Archeo-Tec 1981:94-97).

The City dump grew inexorably southwards from Channel Street, between Sixth and Seventh Streets, until it is said to have covered an area of twenty acres of land, most of which was owned by Southern Pacific. Foraging and gleaning through the dump's refuse developed into an industry in itself. As early as 1878 an "Old Italian" acquired "scavenger control" of part of the dump, charging people for the right to scavenge on his terrain (Archeo-Tec 1981:96-97). By 1889 a large part of the dump, if not all of it, was controlled by a "dump trust" that consisted of six people, who employed "6 men at $9 per week" as scavengers. The fact that garbage was hauled to the dump by as many as 300 teams of horse-drawn drays daily from the industrial sites of the South of Market area and many of the City's prosperous residential neighborhoods, contributed to making the industry a profitable one. By 1889 even broken glass was being sent back to China and discarded cans were collected and smelted at the corner of Channel and Sixth Streets.

"Dumpville" persisted until 1895 when the police raided the area and removed one hundred and fifty vagrant scavengers and hobos who called the place home. As the San Francisco Call reported: "The great trouble with Dumpville was that it happened to have been located on land belonging to the Southern Pacific and its citizens had no real resources of their own." The railroads complained about the theft of lumber and freight from their yards and warehouses and thus the pressure to evict the scavengers and hobos became inevitable (Olmsted et al. 1982:224).

Cultural Resources in the Project Area, 1860 to 1900 - The preceding discussions have reviewed in some detail how during the last four decades of the nineteenth century the Project Area developed into a diversified industrial locale populated by numerous and varied enterprises, as well as by a major dump. The majority of the described areas probably would not contain associated cultural deposits, features or artifacts and it is likely that few of those areas that do contain cultural remains would prove to be significant historical resources; further discussion in this regard is presented in the Impacts Section. Three types of industries and six specific locations do, however, stand out as potentially significant historic archaeological areas. The industries are glass making, shipbuilding and the city dump and the locations are as follows:

1. The area around and north of the old Pacific Glass Works (operated 1863 to 1876). While previous researchers locate this glass works at Iowa and Mariposa Streets, research conducted for this project located three different maps showing this glass works to be on Minnesota Street, between Mariposa and Seventeenth Streets. Interestingly enough, a bottle dump in this immediate vicinity reportedly yielded to bottle hunters items from the 1850s and 1860s "...and even a Spanish jug dating to 1835..." (Olmsted et al. 1982:209).

2. The area around the first site of the old San Francisco Glass Works (operated 1865 to 1870). This enterprise was located on the south side of Townsend Street, between Third and Fourth Streets.

3. The area around the second site of the old San Francisco Glass Works (operated 1870 to 1886). This glass works was located in the block bounded by King, Berry, Fourth and Fifth Streets.

4. The region around the old shipbuilding yard of Patrick Henry Tiernan and the Dickie Brothers (operated 1860s to 1880s). This yard was located in the vicinity of Third and Mariposa Streets, north to Third and Seventeenth Streets.

5. The region around the old shipbuilding yards of Alex Hay and Boole and Beaton (operated in 1880s). These yards were located on the south side of Berry Street, between Fifth and Seventh Streets.

6. The old City dumping ground (active mid-1870s to 1895), which extended south from Channel Street, between Fifth and Seventh Streets. While scavenging at this dumping ground was reportedly ubiquitous, and probably negatively affected the archaeological value of the site, this area was the main dump for the most important city in the western United States during that era and may still contain important historical artifacts.

The Decline of Industrial Diversity: the Twentieth Century

By the early twentieth century, a significant qualitative change had taken place in the character of the Mission Bay area. The most notable feature of the change, which is apparent on the 1913 Sanborn Maps, was the decline in the industrial diversity of the region. To be sure, some small factories and enterprises survived well into the twentieth century; however, even a cursory glance at the 1913 Sanborn Maps reveals that fewer industries dominated the region by this time, and most of these were enterprises that had strong roots there in the last quarter of the nineteenth century.

By 1913 the SPRR had started to use its substantial land holdings and expand its facilities in the area to an extent that it had never done in the previous century. Lumber companies, while they had been an important element in the economy of the late nineteenth century, greatly increased

their presence in numbers as well as in spatial expansion. Warehouse facilities also continued to be a conspicuous presence. Further, a new industry had established a strong foothold by 1913 -- the petroleum industry.

The decline of industrial diversity in the area that took place between the late 1880s and 1910 requires some explanation. It should be observed that in the late 1880s and early 1890s there was a slight, but discernible tendency for businesses to either cease operations or to relocate (though it should be noted that it is much easier for the historian to register the fact that a business stopped operating at a particular location than to determine whether it relocated elsewhere). The competition in the wood-product, brick, food processing and wool industries was intense, causing a high turnover of businesses even in the best of times. It may reasonably be conjectured that the depression of the mid-1890s (the second most severe in American history after the Great Depression of the 1930s), coinciding with a decline in the rate of San Francisco's population growth, drove some of the more marginal concerns out of business.

Other outside forces were at work as well. Besides the competition from Los Angeles, San Francisco had to contend with rival manufacturers elsewhere in the Bay Area. The early years of the twentieth century witnessed the dawn of the decentralization of industry in the Bay Area and a relative decline in San Francisco's position, much to the consternation of City business and civic leaders.

Oakland, especially, was beginning to emerge as a serious competitor. Its population had increased by one hundred and twenty-four percent between 1900 and 1910, amounting to 150,000 people by the latter year. Over the same period, San Francisco's population had increased by a modest twenty-two percent from 343,000 to 417,000. More ominous still were the manufacturing statistics for San Francisco and other U.S. cities. In 1904, San Francisco ranked thirteenth among the manufacturing cities of the United States by value of product. By 1909 it had dropped to sixteenth place, and six of its fifteen leading industries had shown sharp declines in output since the 1906 earthquake. The actual number of manufacturing establishments dropped from 2,251 in 1904 to 1,796 in 1909 -- the latter year recording only

a few more businesses than in 1899 (Scott 1985:136). Oakland manufacturing, on the other hand, was flourishing during this period. Between 1904 and 1909, data from the Census Bureau revealed that the value of Oakland's manufactured products had risen almost fifty percent, or more than $13 million, thanks to the growth of the brewery, lumber, foundry and machine shop, bakery, printing and publishing, and canning and preserving industries -- several of which, it should be noted, had flourished in the Mission Bay area since the 1880s. Value of the output of canning alone increased more than fifteen fold. All together, Oakland had four hundred and fifty factories in 1909, not including another one hundred and thirty located in nearby Alameda and Berkeley (Scott 1985:137). Furthermore, even with its limited harbor facilities, in 1910 Oakland's port handled thirty percent of the freight tonnage passing through the Golden Gate and nearly twenty percent of the total ship tonnage (Scott 1985:140).

The decline of smaller industries cannot be explained by the San Francisco earthquake and fire of 1906 for the simple reason that this event did minimal damage in the area. Indeed, with the destruction of other businesses in the City, the aftermath of the earthquake should have acted as a stimulus to the smaller businesses. The fact that it did not suggests that the trend toward the disappearance of many smaller industries was well under way.

The principal reasons for the ascendancy of major industries such as railroads, lumber and oil, at the expense of smaller industries, were related to general trends in California industry in the early twentieth century and to the nature of the Project Area itself. The area's prime natural advantage had always been its accessibility to railroad and shipping facilities. In the late nineteenth century, there had been sufficient space for small industries to coexist with larger ones, such as lumbering and warehousing, that were the principal beneficiaries of the excellent transportation links. However, as the availability of open space declined, there was a tendency for the smaller industries -- which had been able to exploit their proximity to the lumber industry and transportation and warehousing facilities -- to be squeezed out. The major industries needed the space to accommodate increasing volume and if they did not actually own their land, as SPRR did, they could afford to pay the high rents that the pressure on space generated. Consequently,

many of the smaller industries were forced to move to less developed areas to the south or to the East Bay where rents were cheaper. Here they could still find a large labor force and greatly improved street car and ferry services for workers.

While many of the small industries were "pushed" out of the area by these dynamics, the larger ones were increasingly forced to expand their operations because of the nature of their business. The case of the lumber industry is instructive. The Pacific Coast was, by the early twentieth century, becoming the major lumbering region in the United States. Humboldt County, California's leading lumber-producing county, cut 122 million feet of lumber in 1889, while by 1912, 416 million feet were being cut annually (Irvine 1915:113). In the other California lumber-producing counties, production increased by roughly equivalent amounts. At the same time, the lumber industry of Oregon and Washington was developing rapidly, with lumber production in these two states increasing ten times between 1880 and 1905 (Pomeroy 1965:118). In the seven years from 1899 to 1906, lumber production in the Pacific Coast states increased from 2.9 million feet to 7 million feet, which amounted to about a fifth of the nation's total lumber production (Bureau of the Census 1975:542). While San Francisco no longer had as voracious an appetite for lumber as before, it still served as a lumbering entrepot of ever-increasing importance; mainly because of its railroad and port connections. Vast lumberyards were needed for storage (and sometimes the drying) of lumber, and these were created in the Project Area at the turn of the century.

By 1913 the petroleum oil industry had established major facilities in the Mission Bay area. This new industry was represented by the Union Oil and the Associated Oil Companies, two of the giants of the California petroleum business. California's first oil well had been drilled in Petrolia (Humboldt County) in 1865, but the yields from this and the other small wells that were drilled in the State did not threaten the Eastern oilmen until the 1890s. Until then, California's major source of oil derived from the whaling industry. However, the amount of oil produced from this source was relatively small and certainly not sufficient to keep up with the State's escalating energy needs, nor was whale oil as versatile a source of energy as petroleum

oil. Until the late years of the nineteenth century, much of California's energy needs had to be met by the costly importation of vast quantities of coal from the East. The emergence of the California oil industry in the 1890s and the development of hydroelectric power at the same time made the State energy self-sufficient by the early twentieth century.

In 1888 California produced only 690,000 barrels of oil annually. The discovery and exploitation of new oil fields in Los Angeles, Coalinga, McKittrick, Midway-Sunset and Kern County, increased State production to four million barrels in 1900. By 1914 oil production in California had reached 104 million barrels, rising to 285 millions barrels by 1926 (Caughey 1982:255; Nash 1964:317). Oil fuel began to replace coal on the western railroads in the 1890s and, by the early twentieth century, oil fuel became the primary source of energy in many industries.

Most oil was shipped to and refined in the San Francisco Bay region until 1920. After this date, with the discovery of major oil fields in the Los Angeles basin, Los Angeles supplanted San Francisco and, indeed, became the largest oil port in the world (Bean 1973:373). While most of the oil in the Bay Area was refined in the East Bay, mainly in Richmond, large storage facilities were established in San Francisco, in the Project Area itself. This was, of course, due to the area's excellent transportation links, and the fact that there were still large stretches of undeveloped land south of the China Basin Channel.

Another factor determining the location of oil storage facilities in the Project Area was the connection between the SPRR and early oil development in California. From its land grants dating back to the 1870s, the SPRR owned a vast amount of land in the western San Joaquin Valley, in the very region where some of the richest oil discoveries were made. In 1919 the Southern Pacific Land Company owned more than nineteen percent of the proven oil land in California and through its controlling interest in Associated Oil, the SPRR produced about eighteen percent of the State's oil (Bean 1973:372-373). Consequently, the Associated Oil Company had a large storage facility in the Project Area where SPRR was the principal land holder.

The expanding lumber and oil industries encouraged the SPRR to use its land in the Project Area much more intensively than it had in the late nineteenth century. A review of the Sanborn Maps for 1913 reveals that many blocks of the area are so crisscrossed with sidings and spurs that the maps resemble a spider's web, with one or more of the railroad's ancillary facilities situated at the hub or periphery of the web.

A Spatial Overview of Patterns of Economic Development to 1913 - The 1913 Sanborn Maps provide a picture of the general trends in the economic development of the Mission Bay area from the late nineteenth century. In the following account, the location of companies and businesses have been determined from these maps. Where the data is available, information on the incorporation and dissolution of companies is also given.

The northern sector of the Project Area, defined by Townsend Street, China Basin Channel, Third Street and Seventh Street, developed earliest, as we have seen, and little vacant land remained for new development by the dawn of the twentieth century. This was due to its close proximity to the City center, the fact that the China Basin Channel was an excellent means to import heavy and bulky goods by ship to factory gates and the development of the SPRR terminus which greatly enhanced the capacity to import and export goods.

An early 1921 view of the Channel Creek/China Basin area is shown in Plate 10. The view is to the northwest and the top of the Southern Pacific Depot is visible in the background at the left of the photograph. Pope and Talbot's lumberyard, Pacific Oil and Lead Works and the channel all appear in the center of the photo.

The strip between Townsend and King Streets, from Third to Seventh Streets, was dominated by SPRR tracks with a series of large, rectangular freight sheds spread out along this alignment. The SPRR tracks and storage sheds encroached on only two of the blocks to the south between King and Berry Streets, and were bounded respectively by Sixth and Seventh Streets and Fourth and Fifth Streets. A large part of the remainder of the northern section of the Project Area, not used by the SPRR, was (as in the

PLATE 10 -- 1921 View of China Basin Channel (courtesy, The Bancroft Library)

1880s) occupied by lumber companies. In fact, their presence by 1913 was even more imposing and seems to have been a major factor in the displacement of many smaller businesses. It continued to be a prime area for the lumber industry because lumber could be imported or exported via the SPRR, one or two blocks to the north, or via the China Basin Channel, which bounded the premises of many lumber companies. Most companies used their facilities for the storage of lumber and not for manufacturing finished products. Even the smaller companies had space to stack about one million board feet of lumber, while the larger ones boasted yards that could hold three million feet.

Almost without exception, lumber companies operating in the area in 1913 had not been present in 1887; in fact, most of those for which information is available were newcomers in 1913. The largest lumber companies operating in the northern sector of the area were Wilson Bros. and Company, located between Fifth, Sixth and King Streets and the China Basin Channel, and Hart-Wood Lumber Company (incorporated in 1910 and dissolved in 1941) which operated on the same block. The MacDonald Lumber Company (incorporated in 1907 and dissolved in 1924) occupied the majority of the block bounded by Third, Fourth, King and Berry Streets and the Hauptmann Lumber Company (incorporated in 1909 and forfeited in 1917) lay immediately to the south on the block bounded by the south side of Berry Street, China Basin Channel and Third and Fourth Streets. In the block immediately to the west, the Humboldt Lumber Company, the Mercantile Box Company (incorporated in 1902 and dissolved in 1924), the Hart-Wood Company and the J. W. Shouten Lumber Company (incorporated in 1904 and suspended in 1917) all had large lumberyards. In the same general locale was the Pope and Talbot Lumber Company yard, which was one of the few carry-over businesses from the 1870s and 1880s.

Squeezed in among the vast lumberyards were a few lumber-finishing plants such as the Western Planing Mills on the south side of Berry Street, between Fifth and Sixth Streets and the Pacific Tank Company and Mercantile Box Company located one block to the east. On the north side of China Basin Channel were several other concerns with large yards or warehouse facilities. Scott, Magner and Miller had survived into the twentieth century and

had several premises along the China Basin Channel, and the Occidental Warehouse Company had a large storage building on Berry Street, between Third and Fourth Streets. There were also several brick yards on the north boundary of the Channel.

The south side of China Basin Channel, in the block alignment between Fifth and Seventh Streets, was also dominated by large lumberyards belonging to three major lumber companies: the Pacific Lumber Company (incorporated in 1869), the Acme Lumber Company (incorporated in 1911 and dissolved in 1942), and the Olson-Mahoney Lumber Company (incorporated in 1906 and dissolved in 1941).

Toward the western reaches of the Project Area area, on the west side of Sixth Street, stretching a few blocks south from Irwin to Yuma Streets, were some small businesses such as the Reliable Box Factory, Charles Haley Company, Baled Paper Warehouse Company and the Wisconsin Furniture Company.

There were two salient features in the central part of the Project Area, defined as the terrain stretching south from the two blocks immediately bordering the south side of the China Basin Channel, between Sixth Street to the west and Illinois Street to the east. The first feature was a substantial amount of vacant land extending all the way southward to the north side of Mariposa Street (where there was considerable use of the land, most notably by the SPRR and the Christenson Lumber Company [incorporated in 1905]). The other feature of this large central belt of land was the presence of rows and rows of railroad tracks (in some places as many as twenty-six lines paralleled each other, separated by only a few yards) running in a southwesterly-northeasterly direction to the SPRR freight yards in the northeastern section of the Project Area. In the south-central extremity of the area, on a large rectangular block of land bounded by Mariposa, Tennessee, Sixteenth Streets and Pennsylvania Avenue, was a gigantic facility bearing the title "Round House Shops of the Southern Pacific Company." On the premises were a large railroad turntable, an extensive machine shop and a host of smaller ancillary plants and buildings such as boiler works and electrical powerhouses.

It was on the eastern periphery of the Project Area, between the San Francisco Bay and the east side of Illinois Street, that the most significant new development and land use occurred between the late nineteenth century and 1913. A great deal of filling activity occurred during that period and it seems safe to say that the whole of Mission Bay had been filled by 1913. Sufficient fill had taken place east of Illinois Street to provide many businesses with access to deep water and, where this was not the case, wharves had been built out further into the Bay (see Plate 9).

The main new business in this area was the Santa Fe Railroad. Active in Southern California since the 1880s, the Santa Fe decided in the 1890s to expand into Central California -- the stronghold of a key competitor, the Southern Pacific Railroad. This decision presented a problem since the logical terminus for the Santa Fe's northern branch was San Francisco, a city where the large land area required for an engine terminal and yards was unavailable at an acceptable price. The Santa Fe solved this problem by establishing its main engine terminal and yards at Richmond, across the Bay from San Francisco, and leasing Mission Bay land in the eastern part of the Project Area for a freight terminal (Bryant 1974:180; Duke and Kistler 1963:161). Consequently, during the turn-of-the-century period, Santa Fe built a seawall around a 24-acre parcel in the China Basin area. This parcel was mostly east of Illinois Street, but also was east of Kentucky (Third) Street and north of where Fourth Street met Kentucky Street. The company then filled the area with about four-million cubic feet of rock and other fill. Yards, tracks, freight warehouses, a small roundhouse and a freight ferry slip were then constructed and service began in July 1900 (Bryant 1974:180; Sanborn Map Company 1912).

In addition to the Santa Fe development in this area, a number of warehouses for storing oil, agricultural implements, machinery, lime and other items, were built adjacent to the Santa Fe spur tracks along Illinois, Michigan, Georgia, Fourth and Alameda Streets (Sanborn Map Company 1913).

In the southeastern corner of the Project Area, east of the intersection of Mariposa and Illinois Streets and fronting the Bay, the Hooper Lumber Company had large lumberyards. Immediately to the north, also fronting the

Bay, the Loop Lumber Company (incorporated in 1905) had even larger lumberyards and wharfs protruding into the Bay. Not surprisingly, these yards were served by several spurs of the SPRR. The Braneson-Hibbard Warehouse Company (incorporated in 1904 and dissolved in 1923) occupied a large segment of Bay frontage to the north, just south of Pier 54.

The Petroleum Oil Industry and Other Twentieth Century Developments - Located east of Illinois Street, between Seventeenth and El Dorado Streets, were the Union Oil Company and the Associated Oil Company. The Union Oil Company had been founded by some of the leading pioneers of the California petroleum industry. In the summer of 1865, Thomas R. Bard, acting at the behest of Thomas A. Scott, vice president of the Pennsylvania Railroad, began drilling wells at Ojai in southern California. Despite a series of disappointments, Bard persisted with oil exploration and in 1890 joined with Wallace Hardison and Lyman Stewart, who had been struggling for years as small operators, to form the Union Oil Company of California. Bard had switched from oil prospecting to land management in Ventura County by buying critical oil lands, leasing others and selling vast expanses of ranch land to farmers. Bard served as first president of the company but withdrew when he was elected to the U.S. Senate in 1900. Between 1895 and 1920, the Union Oil Company discovered a whole series of rich oil fields in southern California and the San Joaquin Valley that made it one of the giants of the industry by the 1910s (Bean 1973:369-372). In 1913 the Union Oil Company facilities occupied more than a block and fronted the San Francisco Bay. Most of the operation consisted of storage facilities with a small ancillary building on the premises.

The Associated Oil Company was originally founded, in 1901, by a number of small producers in the San Joaquin Valley. The SPRR acquired control of the company in 1909 in order to develop its burgeoning oil interests. The SPRR was very successful in doing this, despite long periods of litigation with the Federal Government over its titles to oil-bearing lands (Bean 1973: 372). By 1925 Associated Oil owned 42,190 acres in California, Texas and Alaska, refineries in Avon and Los Angeles, pipelines from oil fields to port facilities, as well as railway tank cars and seagoing tankers. In 1924 the company boasted a net profit of over $14 million (Issel and Cherny 1986:46).

During the early 1920s the SPRR gradually began to divest itself of direct interests in oil production and refining and, by 1928, the control of Associated had passed to the Tidewater Oil Company of New Jersey. It was later bought by the Phillips 66 Company (Bean 1973:373).

The Associated Oil Company, which lay adjacent to and one block north of the Union Oil Company, did not have frontage directly on the Bay because it was hemmed in by the Union Oil Company and the large lumberyards and wharves of the Loop Lumber Company. However, most conveniently, the tracks leading to the SPRR freight slip on the Bay ran immediately along the northern perimeter of the company's property. Like Union Oil, Associated Oil used almost all its space for oil storage.

In connection with oil-related development in the Project Area, it should be noted that another of the giants of the California oil industry was present between Irwin and Hubbell Streets on the west side of Seventh Street. The Standard Oil Company possessed oil warehouses and supply tanks at that location. The titan of the nation's oil industry in the last third of the nineteenth century, Standard began producing and refining operations in the Far West, in 1900, when it acquired control of the Pacific Coast Oil Company. Despite an important antitrust decision against it in 1911, it remained effectively in control of its constituent companies and, by the 1910s, was the largest refiner of oil on the Pacific Coast.

The foregoing account has stressed the decline in the Mission Bay area industrial diversity that had taken place by 1913, as well as the imposing presence of the SPRR, the lumber industry, the oil industry and, to a slightly lesser extent, the warehousing business. In spite of these circumstances, smaller industries and businesses were not totally excluded from the area. Some of the other firms and industries that had a significant presence in 1913 are as follows.

The Pacific Rolling Mill Company was one of the oldest industries. It began operations in 1868 (Hackett 1884:57) and was still a flourishing iron and steel factory in 1913. It was located outside but near the Project Area on the block bounded by Seventeenth, Mariposa, Mississippi and Texas Streets.

The works were so large that they not only took up this block but half of the block to the immediate north where the company fronted on Seventeenth Street.

The Pacific Refining and Roofing Company, located outside but near the area, shared the block bounded by Seventeenth, Sixteenth, Texas and Mississippi Streets with the Pacific Rolling Mill Company. While not as large as the Pacific Rolling Mill Company, it occupied premises covering an area of roughly 200 feet by 150 feet.

George Widneler's Cooperage, which specialized in manufacturing wine casks, barrels, kegs, tanks and clarifiers for brewers, was located on the north side of Berry Street, between Third and Fourth Streets. It was one of the few businesses of any kind that survived from the late 1880s until 1913.

The Roche Harbor Lime Warehouse Company was located on the south side of Berry Street, between Third and Fourth Streets. The California Lime and Hydrate Company was located on what is now China Basin Street at the point where El Dorado Street would intersect it if it was continued.

The Municipal Pipeyard was located on the east side of Sixth Street about two blocks south of the China Basin Channel and stretched from where Irwin dead-ended into Sixth Street southward to where Daggett Street dead-ended into Sixth Street.

The Pacific Coast Glass Works lay just outside the Project Area, west of Seventh Street, between Hooper and Irwin Streets. The company was incorporated in 1902 and dissolved in 1930.

The Pacific Oil and Lead Works (see Plate 10), an industrial pioneer of the area, continued its operation into the 1920s.

The Third Street and Fourth Street Bridges: Development During the 1930s - During the Depression decade of the 1930s, Federal Government-funded public works became an important source of both development and employment in California and the Bay Area. In the Project Area, under these

programs, two new drawbridges were built across China Basin Channel, which are still standing at Third Street and Fourth Street. The Third Street Bridge is a heel trunnion bascule iron drawbridge; the floor of this type of bridge is raised by a descending, counter-balancing weight. Built in 1933 by the Strauss Engineering Company, it is known today as the Lefty O'Doul Bridge (Banks 1983b:14). A 1985 historical evaluation of the bridge included the following statement:

> The bridge over the Mission Channel Waterway on Third Street... has integrity of location, design, setting, materials, workmanship, feeling and association. Rehabilitation work done over the years has had insignificant impact on this integrity.
>
> It is closely associated with the life of a renowned bridge designer, Joseph B. Strauss, who was heavily involved with the planning of the Golden Gate Bridge at the very time that the Third Street Bridge was being built. The bridge is of (a) type...that first brought fame to Strauss and is the only bridge of this type in the immediate vicinity of San Francisco. Strauss is a popular figure among San Franciscans and better known locally than either Purcell (Bay Bridge) or Steinman (Carquinez Bridge).
>
> Based on the foregoing, the Third Street Bridge appears to meet the National Register criteria B and C, at the local level, for listing on the National Register of Historic Places (Alden 1985: 13-14).

The Fourth Street Bridge, which also dates to the 1930s, is known as the Peter Maloney Bridge (Banks 1983b:14). A recent Caltrans evaluation of this structure (Mikesell 1985) includes the following summation:

> The Fourth Street Bridge is the only California example of the Strauss Overhead Counterweight Bascule Bridge, an early design by master bridge designer, J. B. Strauss. It is also the only extant bridge in California constructed by the Thomson Bridge Company, a pioneer San Francisco bridge builder. Historically, the bridge was a key link in the transportation network of the Port of San Francisco.

Both the Third Street and Fourth Street Bridges have been determined eligible for the National Register of Historic Places (Mikesell 1986).

The Mission Bay Area by 1949-1950 - The Sanborn Maps for 1949-1950 reveal interesting continuities and discontinuities in the development of the Project

Area after 1913. Overall one is struck most by the continuities. Certainly far greater changes took place in the development and character of the area in the twenty-six year period from 1887 to 1913 than in the thirty-six year period from 1913 to 1949.

The SPRR, with its rows of tracks and sheds, continued to occupy the area north of Berry Street into the twentieth century. The area south of China Basin Channel, between Sixth and Illinois Streets almost to Mariposa Street, was still crisscrossed with SPRR tracks; relatively few new tracks or facilities have been built since 1913. A notable exception was the construction of the China Basin Building bordering the north side of China Basin Channel. Almost the entire block had been previously occupied by the Hauptmann Lumber Company. One block to the north, SPRR displaced the MacDonald Lumber Company with a row of block-long concrete sheds.

Lumber companies were still present near China Basin Channel and steam schooners continued to serve the lumberyards into the 1920s (Olmsted 1986:59). The Rolando Lumber Company owned most of the block on the north side of the Channel, between Fourth and Fifth Streets. Rectangular blocks marked off large areas on the north and south sides of the Channel where lumber was stored, but it is not evident who owned these lumberyards or whether they belonged to the remaining lumber companies in the area. In almost all other instances the 1913 Sanborn Maps make it clear which companies in the area owned the lumberyards. On the south side of the Channel three lumber companies were present. The Acme Lumber Company and the Holmes Planing Mill Company were located between Sixth and Seventh Streets and the Smith Lumber Company had a modest facility between Fourth and Fifth Streets. One block eastward an important newcomer to the area, the United Fruit Company, had erected a large L-shaped building.

Along the northwest periphery of the Project Area boundary, just west of Seventh Street, were three large plants. At the extreme north, fronting on Hooper Street, was W. R. Ames Sheet Metal Works which encompassed almost an entire block. The block immediately to the south contained several firms including the Pacific Glass Works and the Holmes Lime Company, but the largest enterprise by far was the Whittier-Coburn Companies Paint and Oil

Works. The whole of the block directly to the south (west of Seventh Street, between Irwin and Hubbell Streets) was occupied by the Standard Oil Company of California's warehouse and supply tanks building.

As in 1913, the land to the east of Seventh Street, two blocks south of China Basin Channel (all the way to Illinois Street), remained relatively undeveloped (with the exception of some sections that were crisscrossed by the SPRR's tracks). On the southern boundary there was more development. The SPRR's large "roundhouse" facility was still present on the north side of Mariposa Street, between Tennessee Street and Pennsylvania Avenue. One block to the east, the Bethlehelm Steel Company had established a depot for steel from its mill that encompassed the whole block.

South of Mariposa Street, between Iowa and Illinois Streets and just outside the Project Area, were several important new businesses, including the Norwalk Company's oil distribution plant, the Cresent Pacific Oil Company, the General Petroleum Company and the Hockwald Chemical Company.

In the southeastern section of the Project Area, east of Illinois Street (roughly between where Seventeenth and El Dorado Streets intersected Illinois), the Associated and the Union Oil Companies occupied the same premises they had in 1913. To their immediate north, on the block bounded by El Dorado, Illinois, Alameda Streets and the Bay, large warehouse facilities had been built with the China Basin Warehouses occupying the Bay front.

In comparison to the 1860s to 1913 period, the relative lack of new development in the Project Area during the 1913 to 1949 period is quite noticeable. It is possible that some temporary development associated with war-related industries, such as shipbuilding and warehousing, may have taken place in the area between Illinois Street and the Bay, however, evidence of these enterprises was gone before the 1949 Sanborn Maps were made. War-related industries found excellent sites for their development in many parts of the San Francisco Bay region, and in the City they tended to locate on the waterfront south of the Project Area. Thus, while the impact of World War II was enormous on the development of the Bay Area as a whole, it was relatively minimal on the Project Area. It should also be kept in mind that

in the wake of the completion of the Bay Bridge (1936) and the war economy of the early 1940s, the decentralization of industry away from San Francisco was accelerated.

To some extent, the SPRR's dominating presence (and to a lesser degree that of the Santa Fe Railroad) and the resulting sprawl of tracks through large areas of undeveloped land probably preempted and discouraged further development. The fact that the SPRR and Santa Fe did not significantly expand their facilities in the Mission Bay area after 1913 probably reflected the "automobilization" of American society that occurred between the 1920s and 1940s and, especially, the competition of a full-fledged trucking industry by the 1940s. This loss of business can only have been partially offset by the SPRR's increasing role as a carrier of commuters from the southern peninsula. Dusk was slowly beginning to descend on the SPRR, the Santa Fe and many of the nation's other major railroads by the late 1940s, as they no longer dominated the economic and, sometimes, political fabric of many localities and states as they had for decades earlier. On the other hand, in recent years both the SPRR and Santa Fe have diversified into other sectors of the economy, which has contributed to the revitalization of both companies.

Cultural Resources in the Project Area, the Twentieth Century - By the early part of this century, Mission Bay had been completely filled in. That effectively closed off the bay filling process which was one of the key modes by which potentially significant historic archaeological resources had been deposited during the nineteenth century. At the same time the industrial diversity of the area was significantly reduced during this century. The industries which were prominent in the area during the twentieth century -- such as oil, lumber and railroads -- have not left significant cultural remains. The end of bay filling and the domination of the region by a few industries resulted in there being no discernible locations where potentially significant, below-ground cultural resources from this century are likely to be found.

IMPACTS

POTENTIAL ARCHAEOLOGICAL AND HISTORIC RESOURCES

Prehistoric Archaeological Resources

The potential for prehistoric archaeological resources was discussed in the Setting Section of this report. In summary, no recorded archaeological sites dating from the Prehistoric (or Protohistoric) Period are located within the Mission Bay Project Area. The closest recorded resource is about 1,500 feet away. Most of the Project Area lay beneath the waters of Mission Bay during those times. However, three pre-fill land areas on the shore of Mission Bay in the Project Area are regarded as potential locations for prehistoric archaeological sites: the south tip of Steamboat Point, south of the present intersection of Townsend and Third Streets; the north shore of Mission Creek where it entered Mission Bay, southeast of the present intersection of Townsend and Seventh Streets; and the northern end of Point San Quentin, north of the present Mariposa Street, between Pennsylvania Avenue and China Basin Street. The mouth of Mission Creek would have consisted of marshlands with less archaeological sensitivity. The Steamboat Point and Point San Quentin areas would be more likely locations for prehistoric sites. The remainder of the Project Area has a low potential for encountering prehistoric cultural resources, as it was inundated by the shallow waters of Mission Bay.

Historic Archaeological Resources

During the 1700s-1860s era, Mission Bay was almost entirely under water and Steamboat Point is the only location that may have significant cultural deposits from that period. The Steamboat Point area consisted of shipyards during the 1850s and early 1860s, and early maps and City directories show various buildings, saloons and dwellings in the area during this period. Subsurface remains of Gold Rush period shipyards, building foundations, historic artifacts and trash dumps could be located in that area. The main part of Steamboat Point was between Third, Fourth, Townsend and King

Streets, but the tip of Steamboat Point extended past the line later formed by King Street and into the Berry, King, Third and Fourth Streets block. Since shipping and shipbuilding were important activities, there is also the remote possibility of encountering undocumented buried ship remains. Also, the presence of a Chinese fishing village close to Steamboat Point at China Basin suggests the possibility of Chinese maritime remains and other artifacts in that section of the Project Area.

During the last four decades of the nineteenth century, Mission Bay underwent extensive filling and the Project Area developed into a diversified industrial area with a variety of enterprises. Included were shipbuilding, glass-making, chemical manufacturing, lumber production and related industries, railroad operation, a major dump, oil operations and food processing as well as other enterprises. Of all these industries, three stand out as possibly having resulted in significant historic archaeological areas; these are glass-making, shipbuilding and the dump.

By the early part of the twentieth century, Mission Bay had been completely filled, ending the deposit of potentially significant historic archaeological resources. At the same time, industrial diversity of the area was decreased; industries prominent in the Project Area during the twentieth century -- such as oil, lumber and railroads -- were not likely to leave important subsurface cultural resources.

Historic Structures

Previous studies have identified the following buildings or structures in the Project Area as possessing potential historic significance: the Third and Fourth Street Bridges dating from the 1930s, and the King and Sixth Streets pavement of cut basalt blocks dating from the 1890s (Banks 1983:13-14). The Foundation for San Francisco's Architectural Heritage identified the following as potential historic properties: the Southern Pacific engine roundhouse site on the north side of Mariposa Street between Tennessee and Pennsylvania Streets; the Montague Plant building site, which dated from the turn of the century and, as of 1949, was on the northwest corner of Mariposa and Third Streets; and four Southern Pacific freight sheds on King and

Berry Streets between Fourth and Sixth Streets (Nelson 1986). A 1983 historic architectural survey of the area (Snyder 1983:4) determined that the sheds were not eligible for the National Register; they were subsequently demolished in early 1986. A field review by David Chavez of the Project Area in September 1986 confirmed that the Southern Pacific engine roundhouse and the Montague Plant building have long been demolished as well, and no remnants of those buildings or associated artifacts were apparent.

Aside from the Lefty O'Doul (Third Street) and Peter Maloney (Fourth Street) Bridges, one structure within the Project Area was observed that may be of historical importance; the building is the closed Fire Station 30, at the southeast corner of the intersection of Third and Mission Rock Streets. The station may be eligible for listing on the National Register. The other historic feature noted was the basalt block pavement on King Street between Third and Seventh Streets, and on Sixth Street south of King Street.

Other existing structures and features in the Project Area are of recent origins and no older than fifty years, generally the required age for structures to be considered by the State Historic Preservation Officer for National Register eligibility (although special circumstances can apply to buildings of lesser age).

Potential for Significant Resources

Mission Bay development may disturb cultural resources considered significant under criteria for the National Register of Historic Places. Significant resources are those historic and archaeological properties that are listed on the National Register or are potentially eligible for such listing (Advisory Council on Historic Preservation 1986a). Department of Interior regulations describe National Register criteria for listing as follows:

> 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 that (a) 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

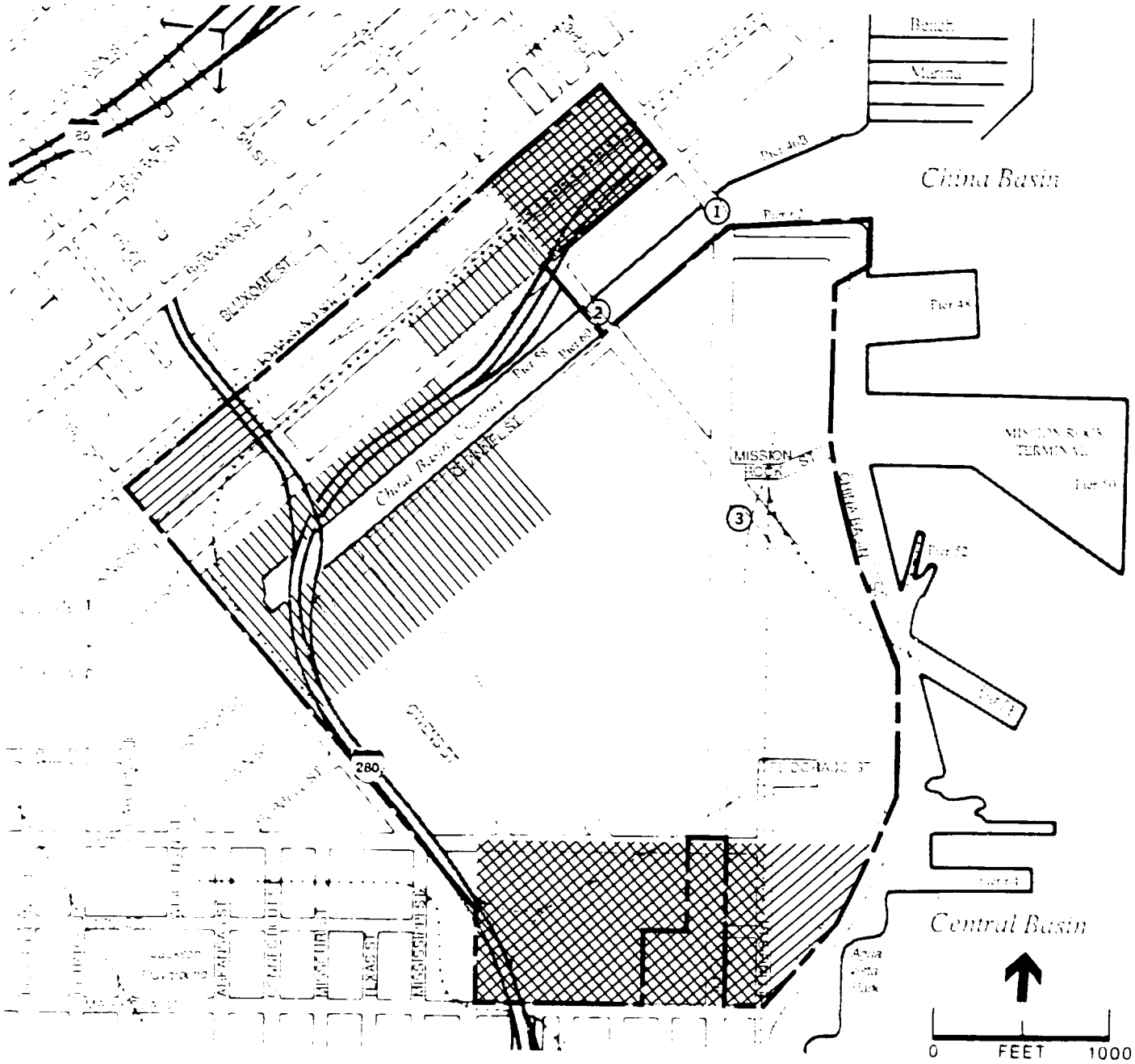
> past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or (d) that have yielded or may be likely to yield information important in history or prehistory (36 CFR Section 60.4, cited in Advisory Council on Historic Preservation 1986b).

These criteria provide the context for impact and mitigation discussions as they give guidance in distinguishing what locations may contain significant cultural resources.

Cultural resources in the Project Area that may be affected include three areas of potential prehistoric archaeological deposits, seven areas of potential historic archaeological deposits, one potential architectural resource and the basalt block pavement feature (see Map 5). The adjacent Third and Fourth Street Bridges would remain undisturbed by all alternatives.

There is no archival evidence to suggest that prehistoric cultural deposits, significant or otherwise, are actually present at the three areas identified as archaeologically sensitive. Therefore, the potential for impacts on significant prehistoric resources at the three previously discussed locations (Steamboat Point, Point San Quentin and the mouth of Mission Creek) is considered to be low.

The Cultural Resources Setting Section, identifies numerous cultural developments, industries and enterprises and specific activity locations throughout the history of the Project Area. Many of the described areas would not contain associated cultural deposits, features or artifacts; and it is likely that few of those areas that did contain cultural remains would be regarded as significant resources under National Register criteria (Advisory Council of Historic Preservation 1986b). That is, despite the great diversity of historical enterprises that existed in the Project Area over time, it is likely that only a very few locations would yield archaeological information important to the understanding of San Francisco history. Three industries stand out as possibly having produced potentially significant historic archaeological resources; they are shipbuilding, glass-making and the nineteenth-century



MISSION BAY BOUNDARY

POTENTIAL FOR HISTORIC CULTURAL RESOURCES

POTENTIAL FOR PREHISTORIC CULTURAL RESOURCES

BASALT PAVEMENT BLOCKS

(1) LEFTY O'DOUL BRIDGE

(2) PETER MALONEY BRIDGE

(3) STATION 30 FIREHOUSE (vacant)

Mission Bay

SOURCE: David Chavez & Associates and ESA

MAP 5
CULTURAL RESOURCES POTENTIAL

dump. The potentially significant historical archaeological resources in the Project Area which may be subject to adverse impacts include:

1. Steamboat Point, a shipbuilding area of the 1850s and early 1860s. Steamboat Point was located in the two blocks bounded by Third, Fourth, Townsend and Berry Streets.

2. Point San Quentin/Point Potrero, another early shipbuilding area, occupied beginning in the 1860s, defined by Sixteenth Street on the north, Illinois Street on the east, Mariposa Street to the south and Pennsylvania Avenue to the west. This area includes the 1860s and 1880s shipbuilding yards of P. H. Tiernan and the Dickie Brothers at Third and Mariposa Streets.

3. The east side of Minnesota Street between Mariposa and Seventeenth Streets -- the location of the Pacific Glass Works (1863 to 1876).

4. The south side of Townsend Street between Third and Fourth Streets -- the original site of San Francisco Glass Works (1865 to 1870).

5. The block bounded by King, Berry, Fourth and Fifth Streets -- the second location of the San Francisco Glass Works (1870 to 1886).

6. The south side of Berry Street between Fifth and Seventh Streets -- the area of shipbuilding yards of Alexander Hay and Boole and Beaton (1880s).

7. The area bordered by Berry, Fifth and Seventh Streets, south to where a line extended from Irwin Street would meet Fifth Street -- the City dump from the 1870s to the early 1890s.

Closed Fire Station 30, considered to be potentially eligible for the National Register (based on criteria c), may be subject to adverse impacts. The cut basalt block pavement on King and Sixth Streets may also be adversely affected. The basalt pavement would not be eligible for National Register

consideration, but can be considered of local historic importance (Olmsted et al. 1977:133; Bank 1983:33).

The seven potential historic archaeological locations could be disturbed by land alteration activities (grading, trenching, excavation) for Mission Bay building construction and the removal of the I-280 stub. All alternatives would involve new construction in areas where historic archaeological deposits are potentially located. Disturbance or removal of soils containing archaeological features and artifacts would destroy the archaeological integrity of the deposits, thus diminishing research potential and the ability of those deposits to yield information important in history.

The architectural integrity and historical importance of Fire Station 30 could be adversely affect by changes in use proposed in Alternatives A and N, or demolition proposed in Alternative B. Construction activities along King and Sixth Streets would affect the basalt pavement.

YEAR 2000 IMPACTS

Alternative A

The initial phase of development would include the easterly half-block of Townsend, Third and King Streets, the area west of Third Street immediately south of the Channel; and S/LI/RD uses east of Third Street at Sixteenth and China Basin Streets. Subsurface construction activities in the Townsend, Third and King Streets area could disturb historic archaeological deposits associated with the 1850s and early 1860s shipbuilding industry and the original location (1865 to 1870) of the San Francisco Glass Works.

Dredging and cleaning up the edges of the Channel between Seventh and Fifth Streets could result in the exposure of dump associated artifacts. Development north of the Channel by the year 2000 would include the office buildings in the two-block area bounded by Townsend, Third, Berry and Fourth Streets. Subsurface construction activities in that area, including the removal of the I-280 stub, could further disturb historic archaeological deposits associated with the 1850s and early 1860s Steamboat Point

shipbuilding operations. Continued development on the Townsend, Third, King and Fourth Streets block could disturb historic archaeological deposits associated with the original 1865 to 1870 location of the San Francisco Glass Works. Roadway improvement and construction of the Muni-Metro light rail line on King Street would also disturb the basalt pavement.

Development west of Third Street by the year 2000 that could impact historic resources would include housing and S/LI/RD construction east of Seventh Street, north of Alameda Street, south of China Basin Channel and west of the Central Plaza. That area is the southern extension of the nineteenth-century dump and important historic artifacts could be disturbed as a result of subsurface construction activities.

Construction that could adversely impact cultural resources east of Third Street would be development of S/LI/RD uses between Fifteenth and Mariposa Streets, part of the former Point San Quentin area; subsurface work could disturb historic archaeological deposits associated with the 1860s shipbuilding industry. The rehabilitation and reuse of closed Fire Station 30 for fire department or other community facilities could disturb the building's architectural integrity.

East of Third Street construction activities that could affect cultural resources would be the development of S/LI/RD buildings south of Sixteenth Street and east of Third Street, the former Point San Quentin area; subsurface construction could disturb historic archaeological deposits associated with the 1860s shipbuilding industry. Also east of Third Street would be the community facilities southeast of the intersection of Third and Mission Rock Streets, the location of Fire Station 30. Alteration of this structure could disturb its architectural integrity.

Alternative B

The initial phase of development -- residential and office construction east of I-280, north of Hubbell Street and south of the channel -- could disturb artifacts associated with the southern extension of the nineteenth-century dump.

Development north of the Channel completed or under construction by the year 2000 would include the six-block area of medium-high density residential structures bounded by Townsend, Third, Berry and Sixth Street, and removal of the I-280 stub. As with Alternative A, construction in the two-block area bounded by Townsend, Third, Berry and Fourth Streets could disturb archaeological deposits associated with the 1850s and 1860s Steamboat Point shipbuilding industry. Construction in the Townsend, Third, King and Fourth Street block could disturb archaeological deposits from the 1865 to 1870 San Francisco Glass Works. Construction in the King, Fourth, Berry and Fifth Streets block could disturb historic archaeological deposits associated with the second location of the San Francisco Glass Works, 1870 to 1886. Road improvements and Muni-Metro extension on King and Sixth Streets would disturb the basalt pavement.

The proposed open space north of China Basin Channel and south of Berry Street is the location of late nineteenth-century shipbuilding operations, and grading and construction could disturb historic archaeological deposits associated with the 1880s shipbuilding yards of Alexander Hay and Boole and Beaton.

West of Third Street, development would include office, medium- and low-density residential and retail buildings east of Seventh Street, north of Hubbell Street and south of Hooper Street. That area is within the southern extension of the nineteenth-century dump, and important artifacts could be present. Subsurface work to develop the mid-Channel wetland would also disturb the historic dump area.

Alternative N

Development north of the Channel would include office uses on the Townsend, Third, King and Fourth Streets block, which could disturb archaeological deposits associated with the 1850s and early 1860s shipbuilding industry at Steamboat Point, and the 1865 to 1870 San Francisco Glass Works. Street improvements on King Street would disturb the basalt pavement. Development south of the Channel and west of Third Street by the year 2000 would not disturb identified cultural resources areas.

YEAR 2020/BUILDOUT IMPACTS

The buildout of all alternatives would disturb all seven areas identified as archaeologically sensitive, the basalt block pavement and Fire Station 30.

Alternative A

Development north of the Channel in the King, Fourth, Berry and Fifth Streets block could disturb archaeological deposits associated with the 1870 to 1886 operation of the San Francisco Glass Works. High-density residential development bounded by the Channel and Berry, Fifth and Sixth Streets could disturb archaeological deposits associated with the 1880s shipbuilding yards of Alexander Hay and Boole and Beaton, and artifacts from the nineteenth-century dump. Street improvements on King and Sixth Streets would disturb the basalt pavement.

West of Third Street, residential and S/LI/RD development east of the railroad tracks, and south of the Channel could further disturb historic artifacts from the dump. Construction of S/LI/RD in the area bounded by Sixteenth, Third, Mariposa and Iowa Streets could disturb archaeological deposits from the 1860s Point San Quentin shipbuilding operations and the 1863 to 1876 Pacific Glass Works.

Alternative B

North of the Channel, residential development west of I-280 could disturb archaeological deposits from 1880s shipbuilding yards and artifacts at the dump.

West of Third Street, residential and community facilities development bounded by Sixteenth, Third, Mariposa Streets and the railroad tracks could disturb archaeological deposits from 1860s shipyards and the 1863 to 1876 Pacific Glass Works. Development east of Third Street and south of Sixteenth Street could disturb 1860s shipyard deposits, as well. The proposed extension of Fourth Street east of Third would require the demolition of Fire Station 30.

Alternative N

Development north of the Channel could disturb archaeological deposits associated with: the 1850s-1860s Steamboat Point shipbuilding operations in the King, Third, Berry and Fourth Streets block; the 1870 to 1886 location of the San Francisco Glass Works; the 1880s shipbuilding yards south of Berry Street between Fifth and Sixth Streets; and the nineteenth-century dump. The basalt block pavement could be disturbed as well, as roadways are rebuilt to serve new M-2 development. Development west of Third Street could disturb deposits from the 1860s Point San Quentin shipbuilding operation and the 1863 to 1976 Pacific Glass Works. Development east of Third Street could disturb the 1860s Point San Quentin shipbuilding areas. The reuse of closed Fire Station 30 for fire department or other community service uses could disturb the building's architectural integrity.

MITIGATION

HISTORIC ARCHAEOLOGICAL RESOURCES

With the exception of some limited archaeological testing in sensitive areas, very little is known about the actual areal extent, specific nature and location of historic features and artifact caches, and depositional integrity of the archaeological deposits. Specific information of that nature is important in determining the actual significance of archaeological resources and in developing appropriate mitigation plans.

Alternatives A, B and N

As the seven potential historic archaeological areas become subject to excavation, trenching and grading or other forms of land alteration associated with any of the Mission Bay alternatives, subsurface testing for archaeological resources should be carried out. Archaeological exploration should likely consist of large-scale mechanical augering and trenching and should be coordinated with geotechnical or other soil studies to reduce duplication of effort.

The project sponsor should develop archaeological exploration programs for sensitive areas that should include the following:

- o define specific research parameters and prepare a written study plan in consultation with the Department of City Planning prior to subsurface exploration, with emphasis on National Register determination of historical significance and the maximum retrieval of archaeological data;

- o examine large-scale exposure of soil profiles;

- o provide for detailed field records, including photographs and drawings, to document subsurface soil profiles, archaeological deposits and depositional integrity;

- o complete a detailed report of findings to describe research and exploration methodologies, testing results, all archaeological finds and recommendations for resource management; and

- o file the study plan, data and findings with the Department of City Planning and the State Historic Preservation Officer.

Qualified professionals with experience in historic archaeology should conduct all project-related subsurface archaeological exploration and excavation in accordance with current professional standards of data retrieval, field documentation and report preparation. Once the subsurface testing programs are completed, decisions can be made as to the most effective mitigation measures for the resource areas. Preconstruction archaeological excavation and construction monitoring of endangered significant cultural deposits may be required for some areas; construction monitoring alone may be appropriate for others.

Archival review suggests that depositional integrity of the late nineteenth-century city dump has been lost because of scavenging while the dump was in operation; however, important historical artifacts may still be present. Pre-construction archaeological testing is not recommended. Archaeological monitoring during construction is the recommended mitigation measure for that area.

Archaeological monitoring programs should include:

- o Preconstruction orientation to inform the project sponsor and supervisory construction personnel of the archaeological sensitivities of the specific development area. This would include the nature and type of features and artifacts that could be encountered, and the need for strict prohibition of unauthorized collecting of cultural materials.

- o If archaeological deposits are encountered during construction, the monitoring archaeologist should have the authority to halt excavation or construction in the immediate vicinity of the find. Upon informing the project sponsor and City officials, an evaluation of the deposits should

be made and appropriate mitigation measures developed in a timely manner. Such procedures should be accomplished in accordance with prevailing City guidelines for dealing with such archaeological discoveries, and could include developing a site exploration program as described above.

- o Preparation of a detailed report on all monitoring procedures and findings, including recommendations.

HISTORIC STRUCTURES

Alternatives A and N

An architectural historian should prepare an evaluation of the architectural integrity and historical importance of closed Fire Station 30. If the building was found eligible for National Register nomination or for City Landmark designation, preservation of the architectural integrity and reuse of the building should be carried out consistent with Department of the Interior guidelines for National Register properties, or City Landmark guidelines. The historian should complete a full archival and photographic record of the building.

Alternative B

An architectural historian should prepare an evaluation of the architectural integrity and historical importance of closed Fire Station 30. If the building was found eligible for National Register nomination or for City Landmark designation, preservation and reuse should be implemented. That could require a realignment of the proposed extension of Fourth Street east of Third. That realignment would not alter the overall configuration of streets or land uses in Alternative B.

Alternatives A, B and N

The cut-basalt pavement on King and Sixth Street, or sections of the pavement could be left intact and incorporated as an historical feature of

interest; or the removed pavement could be stored and used as road or pathway material in other Mission Bay locations such as pedestrian walkways, parks or plazas. An alternative measure would be to remove the blocks for later use in other part of the City; that would be consistent with the San Francisco Department of Public Works policy for historic basalt block pavement (Olmsted et al. 1977:112).

OTHER CULTURAL RESOURCES

Alternatives A, B and N

The entire Mission Bay Project Area has at least some sensitivity for the presence of unknown archaeological remains. Prehistoric cultural deposits could be encountered in three identified areas and unknown historical features, artifact caches and debris areas could be located anywhere in the Project Area. Archaeological information should be provided to supervisory personnel prior to construction; included should be details as to the nature of potential deposits and procedures to be followed in the event of an unmonitored archaeological discovery.

If archaeological remains were discovered during subsurface construction, land alteration work in the general vicinity of the find should be halted, the Office of Environmental Review in the Department of City Planning contacted and a qualified archaeologist consulted. Prompt evaluations could then be made regarding the finds and a course of action acceptable to all concerned parties could then be adopted. Should prehistoric archaeological human remains be discovered, local Native American organizations should be consulted.

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APPENDIX

PHONE MEMOS

Prepared by: David Chavez
Date: 7/20/87 & 11/30/87

To: ESA, Inc.
Copies: NCC
KK/5555 Phone Memo:

MISSION BAY EIR
Phone Memo

Project #5555 EIR Task or Section(s) Setting

Subject Archaeological Investigations in San Francisco

CONTACT:

Name Alan Pastron
Title Archaeologist
Agency Archeo-Tec, Inc.
Phone

MESSAGE:

Alan Pastron was contacted twice regarding the two recently excavated archaeological sites (CA-SFr-112 and -113). During our first conversation he gave a summary of his findings, which are included in the report. On the second occasion he informed me that the site reports are being reviewed by the San Francisco Department of Planning and are not yet available.

ATTACHMENT K

Prepared by: David Chavez
Date: 8/14/86

To: ESA, Inc.
Copies: NCC
KK/5555 Phone Memo:

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Project #5555 EIR Task or Section(s) Setting

Subject Historical Resources in Project Area

CONTACT:

Name Gladys Hansen
Title San Francisco Librarian
Agency San Francisco History Room, Main Library
Phone

MESSAGE:

Historian L. H. Shoup contacted Gladys Hansen and then visted the Library Archives for purposes of reviewing source materials.

ATTACHMENT K

Prepared by: David Chavez
Date: 9/17/86

To: ESA, Inc.
Copies: NCC
KK/5555 Phone Memo:

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Phone Memo

Project #5555 EIR Task or Section(s) Setting

Subject Third and Fourth Streets Bridges

CONTACT:

Name Steven Mikesell
Title Architectural Historian
Agency Cal Trans - Sacramento Office
Phone (916) 443-9981

MESSAGE:

Historians L. H. Shoup and S. Mikesell discussed the historical significance of the Third and Fourth Streets bridges. Mr. Mikesell stated that both bridges are considered to be eligible for the National Register of Historic Places and agreed to send us materials on the significance evaluations for the bridges.

ATTACHMENT K

Prepared by: David Chavez
Date: 9/18/86

To: ESA, Inc.
Copies: NCC
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Phone Memo

Project #5555 EIR Task or Section(s) Setting

Subject History of Mission Bay

CONTACT:

Name Nancy Olmsted
Title Historian
Agency
Phone

MESSAGE:

Historian L. H. Shoup contacted Nancy Olmsted regarding her forthcoming book on Mission Bay. Shoup inquired about sources that might be useful for our studies.

ATTACHMENT K

Prepared by: David Chavez
Date: 9/22/86

To: ESA, Inc.
Copies: NCC
KK/5555 Phone Memo:

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Phone Memo

Project #5555 EIR Task or Section(s) Setting

Subject Historic Properties in the Mission Bay Study Area

CONTACT:

Name Chris Nelson
Title Architectural Historian
Agency Foundation for San Francisco Architectural Heritage
Phone (415) 441-3000

MESSAGE:

Mr. Chris Nelson at the Foundation for San Francisco Architectural Heritage was contacted by telephone and David Chavez visited the Foundation Library. The historic resources sensitivity of the Mission Bay Study Area was discussed and Mr. Nelson identified the following sensitive properties:

- The Southern Pacific Freight Sheds
- The Third and Fourth Streets Bridges
- The Southern Pacific Engine Roundhouse located on Mariposa Street between Tennessee and Pennsylvania Streets
- The Montague Plant Building at the northwest corner of Mariposa and Third Streets

ATTACHMENT K