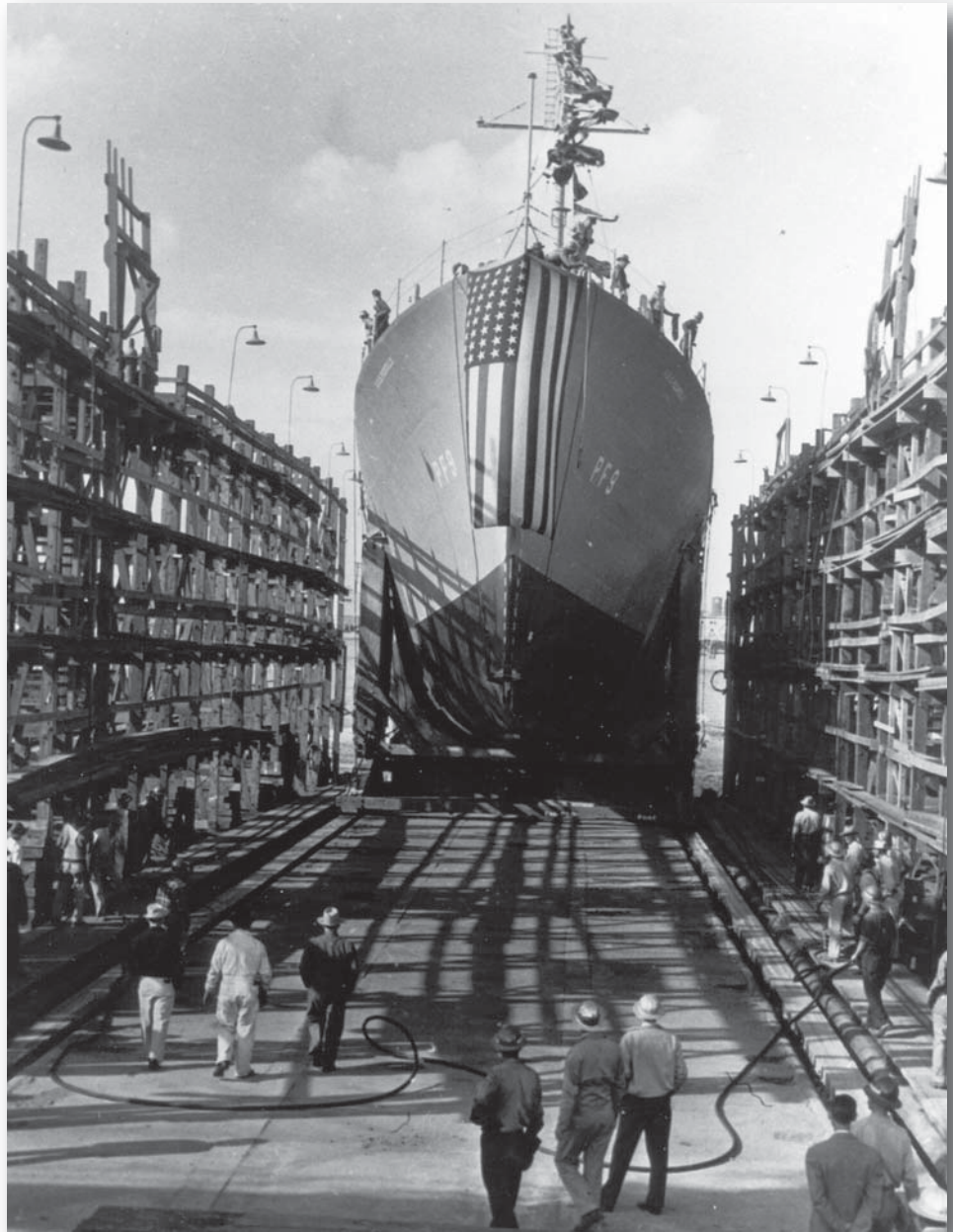


Chapter 4

Impact Topics and the Affected Environment



Introduction

This chapter begins with a discussion of the planning issues and concerns that were identified during the planning process. The chapter then discusses impact topics—those resources, including people, that might be affected by National Park Service actions proposed in the alternatives. This discussion includes explanations of why some of those topics were retained for further evaluation and some were dismissed from further analysis.

The major portion of the chapter describes the existing environment of Rosie the Riveter/World War II Home Front National Historical Park. It presents baseline information about the Richmond, California area that is potentially relevant to the implementation of any of the alternatives for Rosie the Riveter/World War II Home Front National Historical Park.

The narratives include a description of the cultural and historic resources, existing and potential visitor use, the social and economic environment, and the existing transportation facilities in the area. Because the park is in the San Francisco Bay Area, the transportation discussion has been broken out into land transportation and water transportation.

In some cases, facilities that are being proposed by various entities are also addressed, as these facilities have the potential to affect or be affected by implementation of any of the alternatives.

Planning Issues

IDENTIFICATION OF ISSUES

The National Park Service hosted public and government agency meetings and workshops to gather stories and ideas for the future of the national historical park. Public opinions and ideas were generated locally and nationally through newsletters, comment cards, letters, and responses to the Ford Motor Company's campaign to collect Rosie the Riveter and World War II home front stories and artifacts.

ISSUES TO BE ADDRESSED IN THIS GENERAL MANAGEMENT PLAN

- **World War II Historic Sites and Structures**

The World War II-era historic sites and structures in Richmond, California are maintained and managed by different public and

Richmond, California *The Home Front Today*



Enoch Yee, 2006

"History, that's what we are. If we don't have history, we won't know our past, we won't know our heritage, our culture. It's vital to preserve.... It's amazing that for such a long time that art has been coming through East Bay Center for the Performing Arts [at the Winter's building] and it's important because it keeps kids out of trouble. Seeing all these kids here, they're actually doing something good."

private owners. The National Park Service does not own any of the historic sites and structures. Many of these park resources are losing their World War II qualities and attributes while accommodating contemporary uses. What elements of the park's sites and structures need to be preserved in order to tell the World War II home front stories?

• **Museum Collections**

A large amount of World War II home front historic objects, artifacts, works of art, documents, drawings, and letters are located throughout the nation's attics and basements and in formal collections. What is the purpose of the park's museum collection and how will it guide future acquisitions?

The growing museum collection at Rosie the Riveter/World War II Home Front National Historical Park requires an appropriate curatorial and research facility that meets the Secretary of the Interior's standards. Where should the curatorial and research facility be located?

• **Visitor Experience**

Rosie the Riveter/World War II Home Front National Historical Park is a newly established partnership park. Currently, visitor opportunities to explore and learn about the World War II home front stories are not available at many of the park sites and structures. The national historical park lacks a unified identity among the many park sites

that could help guide park visitors. Most visitors explore the national historical park on their own, using self-guiding brochures. There are few scheduled talks and guided tours. Visitor orientation and information are available through the park's website and self-service information station. What level and type of park services, orientation, and education are necessary in order for visitors to experience and learn about the themes of the national historical park?

• **SS Red Oak Victory**

The Richmond Museum Association owns, manages, and is restoring the *SS Red Oak Victory*. There are potential alternative locations in which to berth the *SS Red Oak Victory* in Richmond, California. What is the best location to berth the *SS Red Oak Victory* in order to integrate it with the World War II home front stories and the visitor experience of the national historical park?

• **Role of the National Park Service**

The National Park Service maintains a small staff and is leading the planning effort in establishing the national historical park. The National Park Service has limited financial resources and does not own or manage the primary historic resources of the national historical park. What role and contributions could the National Park Service provide to this partnership park?

Impact Topics – Resources and Values at Stake in the Planning Process

An important part of planning is seeking to understand the consequences of making one decision over another. This environmental assessment identifies the anticipated impacts of possible actions on resources and on park visitors and neighbors. The impacts are organized by topic, such as “impacts on the cultural resources” or “impacts on visitor use and experience.” Impact topics serve to focus the environmental analysis and to ensure the relevance of impact evaluation.

Rosie the Riveter/World War II Home Front National Historical Park is a partnership park where the resources are owned and the visitor opportunities are managed primarily by other public and private entities. The impact topics will focus the discussion of environmental consequences that are described in chapter 5. That discussion will be focused on the actions of the National Park Service and the influence of those actions and not on actions of the non-federal cooperating partners of the park.

The impact topics identified for this general management plan are outlined in this section. They were identified based on federal laws and other legal requirements, Council on Environmental Quality (CEQ) guidelines, management policies, staff subject-matter expertise, and the input of staff from other agencies and the public who identified issues and concerns during the planning process. Also included in this section is a discussion of some impact topics that are commonly addressed in general management plans but that are dismissed in this plan for the reasons given.

IMPACT TOPICS TO BE CONSIDERED

• Cultural Resources

Cultural resource impact topics were selected on the basis of significant values identified in the park’s enabling legislation, major values identified during the plan’s scoping process, and applicable laws, executive orders, and regulations as well as management policies and guidelines. The National Historic Preservation Act, Archeological Resources Protection Act, Native American Graves Protection and Repatriation Act, National

Richmond, California *The Home Front Today*



Torm Nompraseurt, Laotian Organizing Project of Asian Pacific Environmental Network, 2006

“Our city’s environment and its resources must be protected in order to keep it beautiful and healthy for current and future generations to enjoy and benefit from. A lot of Laotians enjoy Richmond especially because of its shoreline. Our people do a lot of fishing. They enjoy the shoreline for picnics -Point Pinole or Point Richmond. Laotian people especially like to fish, not only for consumption but because it is a cultural practice. It’s also a generational practice that you live by water. Over here we have the Bay. The Laotians who live in Richmond appreciate the shoreline. It is where people fish and enjoy time with their families.”

Environmental Policy Act, and other legislation require that the effects of any federal undertakings on cultural resources be examined and analyzed. Also, NPS *Management Policies 2006*, Director's Order 28: *Cultural Resource Management Guideline* and Director's Order 24: *Museum Collections Management Guideline* call for consideration of the effects of planning proposals on cultural resources. Actions proposed in each of the alternatives considered in this planning document could affect four categories of cultural resources as defined in NPS *Management Policies*: archeological (historic) resources, structures (historic), cultural landscapes, and museum collections (objects).

• Visitor Use and Experience

Enjoyment of the historic resources by visitors is part of the fundamental purpose of the new national historical park. The visitor experience is an important issue that could be appreciably affected under the alternatives. The Organic Act and NPS *Management Policies 2006* direct the National Park Service to provide enjoyment opportunities that are uniquely suited and appropriate to the resources found in the national historical park. Two major aspects of visitation and enjoyment are evaluated: diversity of opportunities for exploration, and comprehensiveness of interpretation and education.

• Social and Economic Environment

A community such as Richmond, California, could notice changes brought about by a new national historical park depending on the degree of actions implemented by the cooperating partners. The impact topic relating to the social and economic environment of Richmond includes the influence of the national historical park on the economic environment, community infrastructure (such as police and fire), quality of life for residents, and opportunities for visitor support services.

• Transportation

There is the potential for the new national historical park to become an attraction that results in a change or additional use to the local land and water transportation infrastructure. The effects of park visitation could influence traffic patterns and transportation modes. Because the park is located in the Bay Area, the discussion of transportation is divided into transportation by land and transportation by water.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

Some impact topics that commonly are considered during the planning process were not relevant to the development of this general management plan because (a) implementing the alternative visions would have either no effect or a negligible effect on the topic or resource, or (b) the resource does not occur in the national historical park. Those topics include ethnographic resources; geologic resources; soils; prime and unique farmland; paleontological resources; natural shoreline and coastal processes; air quality; water resources; wetlands; floodplains; vegetation and wildlife; essential fish habitat; coral reef protection; marine protected areas; threatened, endangered, and candidate species and species of special concern; soundscape management; lightscape management; wild and scenic rivers; wilderness; environmental justice; energy requirements and conservation potential; and natural or depletable resource requirements and conservation potential. A discussion of why these topics were dismissed follows.

• Ethnographic Resources

The topic of ethnographic resources was dismissed as an impact topic because an ethnographic overview and assessment has not been undertaken for Rosie the Riveter/World War II Home Front National Historical Park. Thus, no ethnographic resources or sites of cultural significance have been identified in or near the park, and no traditional cultural properties have been listed, or determined eligible for listing, in the National Register of Historic Places.

Some historic sites, such as the Harbor Gate Homes defense housing project where the Richmond branch of the National Association for the Advancement of Colored People was established in 1944, have been demolished. However, some known historic buildings and sites associated with Richmond's World War II-era ethnic communities remain extant. These include

- ◆ Galileo Club (Italian American social and cultural organization)
- ◆ Japanese American nurseries (Cohesive community/commercial sector that was eradicated during the war and partially rebuilt afterwards)

- ◆ Mexican Baptist Church (Center for Mexican American community and source of information for migrants during wartime)

Little or no ethnographic research has been conducted on these groups or their cultural relationships to sites and resources in or near the park area.

It is recommended that an ethnographic overview and assessment be conducted to provide comprehensive background data on types, uses, and users of ethnographic resources in or near the park. While it is thought that the national historical park would have a negligible impact on any ethnographic resources that were identified, the information generated by the study would enable the National Park Service to provide a platform for ethnic communities to tell their stories.

• Natural Resources

Following is a general overview of the area that includes the noncontiguous sites of Rosie the Riveter/World War II Home Front National Historic Park. The information provided is pertinent to the dismissal of several natural resource impact topics.

In the 19th century, much of the area that is the present-day location of several waterfront sites associated with the park (Sheridan Observation Point Park, Ford Assembly Building, Lucretia Edwards Park, Bay Trail and Esplanade, Barbara and Jay Vincent Park, Shimada Peace Memorial Park, and Rosie the Riveter Memorial) was a tidal basin and mudflats. During the early decades of the 20th century this area was dredged and reclaimed to create a deep-water port and waterfront. By the late 1920s the area was fully developed.

At the outset of the 1940s the site of Shipyard No. 3—the only surviving shipyard of the four Richmond shipyards constructed during World War II and today an integral part of the park—was predominantly a series of small hills and tidal mudflats. Beginning in January 1942, the hills were graded flat and about 2.2 million cubic yards of soil and rock were dredged and/or moved to accommodate the construction of the shipyard. Much of the excavated soil and rock was used as fill to create acres of storage and parking on what were once tidal mudflats.

Since the 1940s the park shoreline has been a developed waterfront, hardened, and/or covered with riprap. There are no natural or artificial water courses within the park boundaries, and there are no stream or creek outlets along the shoreline of the park.

Richmond, California

The Home Front Today



Fredericka Bryant, 2006

“Until three or four years ago I didn’t even know about the ‘Rosie the Riveters.’ I didn’t know all the history of the city. You just don’t hear a lot about it. Older people in Richmond know about the war, but the youth don’t really know about the history of Richmond. I think it is important because our city has been degraded a lot and has been gentrified. Or people just look at our city and all the negative things that are portrayed in the media about our city. And people think that Richmond is just a dumping ground. It’s so negative and there are no positive images. And Richmond is not like that. Our city has history and is rich in spirit.”

Some of the present-day waterfront areas that contain park sites are current or former brownfield sites. Brownfields are former industrial and commercial sites where reuse or redevelopment is complicated by the presence of hazardous substances, pollutants, or contaminants. During World War II, activities related to shipbuilding, ship repair, ship scrapping, and metal recycling contaminated soils throughout the area. Contaminants that have been detected include asbestos, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, and heavy metals. Much of the waterfront area is, or will be, reclaimed (remediation primarily includes the consolidation and capping of contaminated soils and, in some cases, the establishment of covenants restricting use to commercial and industrial development).

The inland park sites (Maritime and Ruth C. Powers child development centers, Kaiser Permanente Field Hospital, Richmond Fire Station 67A) are in long-standing urban or commercial neighborhoods of Richmond. Each site is a developed and/or landscaped environment.

Geologic Resources. According to NPS management policies, the National Park Service will (1) assess the impacts of natural processes and human-related events on geologic resources, (2) maintain and restore the integrity of existing geologic resources, (3) integrate geologic resource management into National Park Service operations and planning, and (4) interpret geologic resources for park visitors. Examples of important geologic resources in parks include rocks and minerals; geysers and hot springs in geothermal systems; cave and karst systems; canyons and arches in erosional landscapes; sand dunes, moraines, and terraces in depositional landscapes; and dramatic or unusual rock outcrops and formations.

Rosie the Riveter/World War II Home Front National Historical Park neither protects and preserves nor interprets important geologic resources. Therefore, the topic of geologic resources was dismissed from further analysis.

Soils. According to its management policies, the National Park Service actively seeks to understand and preserve the soil resources of parks, and to

prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

Rosie the Riveter/World War II Home Front National Historical Park comprises lands that are classified by the Natural Resource Conservation Service as urban lands. Urban land is nonagricultural land comprising soil material that was disturbed and manipulated by human activities in an urban environment. Urban soils are extensively disturbed, displaced, and compacted, which creates a soil material unlike its natural counterpart. This can be due to (1) the mixing of soil material when soil is scraped away, stockpiled, and re-spread, or transported to another location and spread; (2) the dumping and spreading of soil material from diverse sources over existing surfaces; and (3) the contamination resulting from deposition, mixing, and filling of materials not found in the natural soil, or found at concentrations greater than those usually found in natural soils. Such disturbance and manipulation results in changes to the physical, chemical, and biological properties of these soils; these changes make them generally less favorable as a rooting medium than soils in a natural landscape.

The magnitude of earth that was moved to create the deepwater port and waterfront, as well as to accommodate the construction of Shipyards No. 2 and 3 during World War II, permanently altered the topography of the land and natural soil regimes. Since the 1940s much of the lands associated with the park, both along the waterfront and further inland, have been either developed or covered with impermeable surfaces (asphalt and concrete); this has eliminated much of the direct inflow of water to the soil and has altered soil moisture, chemistry, and landscape.

Construction associated with implementation of the alternatives primarily involves the rehabilitation of existing structures, which would have no additional impact on soils. Because the soils in Shipyard No. 3 were extensively disturbed by the construction of the shipyard in the 1940s, any short- or long-term adverse impacts on soils associated with excavation, grading, and resurfacing with concrete or asphalt would be negligible. Existing topography and elevations would not be altered during construction, and the potential for soil erosion would be minimal

because much of the surrounding park land is developed or covered with impermeable surfaces and appropriate soil erosion control measures would be implemented for any excavated or exposed soils.

Because the topography and natural soil regimes of the park lands were permanently altered by construction of a deepwater port and waterfront, as well as by decades of industrialization and urbanization, and because any construction-related adverse impacts on soils would be negligible, the topic of soils was dismissed from further analysis.

Prime and Unique Farmland. In August, 1980, the Council on Environmental Quality (CEQ) directed that federal agencies assess the effects of their actions on farmland soils classified as prime or unique by the U.S. Department of Agriculture's Natural Resource Conservation Service. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops (e.g., citrus, tree nuts, olives, cranberries, fruit, and vegetables).

According to the Natural Resources Conservation Service, there are no prime and unique farmlands in Rosie the Riveter/World War II Home Front National Historical Park. The soil within the land-based sites of the park is classified as urban land (see description of urban land under "Soils"). The park sites were extensively disturbed by decades of industrialization and urbanization, and much of the land is covered with impermeable surfaces. Because there are no prime and unique farmlands in the park, the topic of prime and unique farmlands was dismissed from further analysis.

Paleontological Resources. Paleontological resources are the remains of ancient plants and animals—both organic and mineralized remains in body or trace form—that provide information about earth's ancient environment. According to NPS management policies, paleontological resources will be protected, preserved, and managed for public education, interpretation, and scientific research.

There are no known paleontological resources in Rosie the Riveter/World War II Home Front National Historical Park, and it is extremely unlikely that any would be discovered. The land-based park sites are extensively disturbed by decades of industrialization and urbanization, and many of the waterfront sites were constructed on tons of fill material. Therefore, the topic of paleontological resources was dismissed from further analysis.

Richmond, California

The Home Front Today



Patricia Mizuhara-Gangwer and her Uncle, Rey Sonoda, 2006

"I moved to Richmond in 1981, but my uncle's family was here before the war. They ran the Sonoda Shoe Repair Shop at Harbour Way and Macdonald Avenue. His family, like all of Richmond's Japanese American residents, were forced to leave home for internment camps during WWII and never came back.

I have taught in Richmond schools for 22 years now. I currently teach kindergarten at Washington School. I think it is very important for children to know the history of their communities."

Natural Shoreline/Coastal Processes. According to NPS management policies, natural shoreline processes (such as erosion, deposition, dune formation, overwash, inlet formation, and shoreline migration) will be allowed to continue without interference in order to maintain the integrity of associated biological and physical systems. Disruption of natural shoreline physical processes directly impacts the species that depend upon them, usually resulting in diminished biodiversity.

During the early 20th century the natural shoreline in the area of the park was obliterated. The park's waterfront sites and their immediate environs are developed and landscaped environments. The shoreline is a developed waterfront, or is hardened or covered with riprap. There are no stream or creek outlets along the park shoreline, and there are no estuarine resources within or near park boundaries.

Decades of industrialization and urbanization have permanently altered the natural shoreline and coastal processes of the lands comprising the park. Therefore, the topic of natural shoreline/coastal processes was dismissed from further analysis.

Air Quality. Section 118 of the 1963 Clean Air Act (42 U.S.C. 7401 et seq.) requires a national park unit to meet all federal, state, and local air pollution standards. Rosie the Riveter/World War II Home Front National Historical Park is a class II air quality area under the Clean Air Act, as amended. A class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in Section 163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality-related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

The Clean Air Act requires the Environmental Protection Agency to identify national ambient air quality standards to protect public health and welfare. Standards were set for the following pollutants: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), inhalable particulate matter less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}), and lead

(Pb). These pollutants are designated criteria pollutants because the standards satisfy criteria specified in the act. An area where a standard is exceeded more than three times in three years can be considered a nonattainment area.

The California Clean Air Act of 1988, as amended, sets ambient air quality standards that are stricter than the federal standards and requires local air districts to promulgate and implement rules and regulations to attain those standards. Under the act, California Ambient Air Quality Standards (CAAQS) are set for all pollutants covered under national standards, as well as vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. If an area does not meet the California standards, it is designated as a state nonattainment area.

In 1993 the Environmental Protection Agency adopted regulations implementing Section 176 of the Clean Air Act as amended. Section 176 requires that federal actions conform to state implementation plans for achieving and maintaining the national standards. Federal actions must not cause or contribute to new violations of any standard, increase the frequency or severity of any existing violation, interfere with timely attainment or maintenance of any standard, delay emission reduction milestones, or contradict state implementation plan requirements. Federal actions that are subject to the general conformity regulations are required to mitigate or fully offset the emissions caused by the action, including both direct and indirect emissions that the federal agency has some control over.

Rosie the Riveter/World War II Home Front National Historical Park is in the San Francisco Bay Area Air Basin, which consists of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa, and Marin counties, as well as portions of Sonoma and Solano counties. The Bay Area Air Quality Management District is the air quality agency responsible for the entire basin. The agency monitors criteria pollutants continuously at stations throughout the Bay Area.

Overall, air quality in the basin is better than in other urban areas of California despite widespread urbanization and extensive industrial and mobile source (vehicular) emissions. The Bay Area's coastal

location and favorable meteorological conditions help keep pollution levels low much of the year, primarily due to the area's relatively cooler temperatures and better ventilation. However, when temperatures are hot and there are no ocean breezes, levels of ozone and other pollutants can exceed federal and state air quality standards.

The San Francisco Bay Area is designated a federal nonattainment area for ozone and a state nonattainment area for ozone and inhalable particulate matter. Ozone is a principal component of smog. It is caused by the photochemical reaction of ozone precursors (reactive organic compounds and nitrogen oxides). Ozone levels are highest in the Bay Area during days in late spring through summer when meteorological conditions are favorable for the photochemical reactions to occur, i.e., clear warm days and light winds.

The precursors for ozone are primarily generated by fuel combustion, and one of the primary sources of ozone in the San Francisco Bay Area is mobile source emissions. Rosie the Riveter/World War II Home Front National Historical Park comprises noncontiguous sites that in an urban/commercial/industrial area of Richmond. Two heavily traveled highways—Interstate 580 and Interstate 80—are nearby. Richmond has an approximate population of 100,000 and is located within the Bay Area with a population that exceeds six million; adverse impacts on air quality associated with vehicle use by the current four-person park staff would be imperceptible above existing background conditions. Park staffing levels are expected to increase only gradually and minimally in the foreseeable future, and any adverse impacts (direct, indirect, or cumulative) on air quality related to park staff use of vehicles during the life of the general management plan would be negligible.

The number of visitor vehicles operating in the park could potentially be correlated to the number of annual visitors to the park. However, visitation statistics for Rosie the Riveter/World War II Home Front National Historical Park are estimates based upon comparable park units and are therefore questionable.

The park is a relatively new unit of the national park system (created October 25, 2000), and the sites associated with the park are noncontiguous. In addition, the park is a commuter park—it would be difficult, if not impossible, to differentiate between those heading to park sites and those traveling through the area or to another destination because there are no fee stations or designated access points to park sites. However, due to the location of the 13 noncontiguous park sites—in an approximately 14-square-mile urban/ commercial/industrial area bisected by the well-traveled Interstate 580—emissions from visitor vehicles would be a tiny percentage of the overall emissions generated by

Richmond, California

The Home Front Today



Sharon Fuller, 2006

"This city was so important to us because we had access to so many things. My father taught us all seven of us kids to swim out that shoreline. We really grew up connected to the shoreline. That is where we usually gathered and had family Sunday picnics, and fished. It was very easy to walk from the Southside, dig up some worms, stick them on the cane pole, and just fish right off the shoreline. We really looked at the Bay as a way of sustaining. And I'm not talking about subsistence. I'm talking about it being the same type of culture that folks brought in from the South, where they fish in the bayous and where they fish in the streams, and where they really looked at the land and the water to sustain them. It wasn't something that was taken for granted. It was something that we really acknowledged and honored and appreciated."

mobile and stationary sources in Richmond and the San Francisco Bay Area. Similarly, any emissions associated with park operated land- or water-based shuttles would be imperceptible above existing background conditions. In addition, continued mobile source emission reductions due to technological improvements in engines and fuels would benefit air quality. Any adverse impacts (direct, indirect, or cumulative) on air quality related to park visitation would be negligible.

Structures in the park that would undergo rehabilitation would be surveyed for asbestos-containing materials before any construction activities. If asbestos-containing materials are present, the Bay Area Air Quality Management District would be notified and appropriate work practice requirements would be developed to prevent the emission of asbestos into the atmosphere. The work practice requirements would specify appropriate removal, handling, clean-up procedures, and time schedules, as well as the appropriate storage, disposal, and land-filling requirements for asbestos-containing waste materials. All operators would be required to maintain records, including waste shipment records, and would be required to use appropriate warning labels, signs, and markings.

Construction activities, including equipment operation and the hauling of material, could result in temporarily increased vehicle exhaust and emissions, as well as inhalable particulate matter. Construction dust associated with exposed soils would be controlled with the application of water or other approved dust palliatives. Also, dust-creating activities would be suspended when winds are too great to prevent visible dust clouds from affecting sensitive receptors (houses, schools, hospitals). In addition, any hydrocarbons, nitrogen or sulfur dioxide emissions, and airborne particulates created by fugitive dust plumes would be rapidly dissipated because the location of the park and prevailing winds allows for good air circulation. Overall, there could be a local, short-term, negligible degradation of local air quality during construction activities; however, no measurable effects outside of the immediate construction site would be anticipated. Any construction-related adverse effects on air quality would be temporary, lasting only as long as the construction.

None of the actions described in the general management plan would violate any air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Bay Area is in nonattainment under federal or state ambient air quality standards. Implementation of any of the alternatives described in the general management plan would have negligible effects on air quality, and Rosie the Riveter/World War II Home Front National Historical Park's class II air quality would be unaffected. Therefore, the topic of air quality was dismissed from further analysis.

Water Resources. NPS management policies require protection of water quality consistent with the Clean Water Act. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation in U.S. waters.

Rosie the Riveter/World War II Home Front National Historical Park comprises noncontiguous sites that are in an urban/commercial/industrial area of Richmond. All park sites except for the *SS Red Oak Victory* (which is currently moored in Berth 6A in Richmond Shipyard No. 3) are developed or landscaped environments that have been disturbed by more than a century of intense manipulation and use. There are no natural, artificial, permanent, or intermittent watercourses within park boundaries, and there are no stream or creek outlets along the shoreline of the park. Groundwater does not occur near the surface of the park sites. There are no estuarine resources within park boundaries. The park shoreline is either a developed waterfront or hardened and/or covered with riprap.

The park's domestic water needs are, and would continue to be, provided by the City of Richmond, which is expected to meet the present and predictable water needs of the park for any potable and fire suppression water needs. Wherever possible, water conservation features would be used throughout the park to reduce consumption.

Wastewater treatment services for the park sites are provided by the City of Richmond, which has sufficient capacity to indefinitely handle park flows. Precipitation that falls on buildings, roads, and other impervious structures, which could contain

pollutants such as hydrocarbons and heavy metals from vehicles, would continue to be diverted to existing sewer systems. No water or waste generated by park activities would be discharged into the Richmond Inner Harbor, and all chemicals used in the park, e.g. pesticides, solvents, paints, and wood preservatives, would be properly disposed of so as not to pose a threat to human or aquatic health.

The SS *Red Oak Victory* would be moored either at Berth 6A, or in the Santa Fe Channel adjacent to Sheridan Observation Point Park. To accommodate the berthing of the SS *Red Oak Victory* in the Santa Fe Channel, a small pier in the channel adjacent to Sheridan Observation Point Park would be extended a short distance from shore but out of the shipping way. Pilings for the pier would be driven using a barge-based steam or diesel pile driver. Operation of the barge and driving the pilings would disturb bottom sediments, temporarily increasing the turbidity of the water, but any impacts would be negligible—any suspended solids would be rapidly dissipated by normal ship traffic in the channel, and construction-associated turbidity would cease once the pier was erected. All appropriate state and/or national permits would be obtained before construction.

Because the Santa Fe Channel and adjacent inner harbor are hardened, littoral processes (interactions among waves, currents, winds, tides, sediments, and other materials near a shoreline that transport coastal materials to and away from beaches) are nonexistent, and the pilings associated with the pier would have no effect on littoral processes. In addition, no sources of point pollution (e.g., pipes or other discrete sources) would be created as a result of the pier extension.

Mooring the SS *Red Oak Victory* in the Santa Fe Channel would have no impacts on the water quality of the Richmond Inner Harbor because no water or waste would be discharged from the berthed ship into the waters of the channel or inner harbor. Neither the short extension from Sheridan Observation Point Park nor mooring the SS *Red Oak Victory* in the Santa Fe Channel or Richmond Inner Harbor waters would affect the water chemistry and related physiochemical properties (pH, temperature, dissolved oxygen, turbidity) of nearby coastal waters, the nature of their aquatic habitats, or contribute to

increased silt loads or nutrient enrichment of coastal waters.

Because implementation of the actions described in the general management plan would have either no effect or negligible effects upon water resources, the topic of water resources was dismissed from further analysis.

Wetlands. Executive Order 11990, “Protection of Wetlands,” requires federal agencies to avoid, where possible, adversely impacting wetlands. The goal of NPS wetlands management is to strive for a no net loss of wetlands as defined by both acreage and function. Proposed actions that have the potential to adversely impact wetlands must be addressed in a statement of findings.

There are no wetlands within or adjacent to park boundaries. There would be no impacts on wetlands under any of the alternatives, and a statement of findings for wetlands will not be prepared. Therefore, the topic of wetlands was dismissed from further analysis.

Floodplains. Executive Order 11988, “Floodplain Management,” requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. Certain construction within a 100-year floodplain requires preparation of a statement of findings.

There are no natural, artificial, permanent, or intermittent water courses in the park, and there are no stream or creek outlets along the shoreline of the park. The chances of a 100-year or 500-year flood in the park are inconsequential.

Four park sites—the southern end of Shipyard No. 3 (primarily the graving basins/dry docks), the western edge of Sheridan Observation Point Park, Barbara and Jay Vincent Park, and Shimada Peace Memorial Park—are in the 100-year coastal floodplain. None of the park sites is in the 500-year floodplain.

In the 19th century much of the area that is the present-day location of the park’s waterfront sites was predominantly a tidal basin and mudflats. Any natural floodplain values associated with this area—wildlife habitat, groundwater recharge, hydrologic balance or buffering of flood flows—have been

altered by more than a century of modification and occupation, and it is contrary to the park's purpose and significance to reestablish an environment in which the natural ecological systems associated with floodplains could function.

There are no park-related administrative, residential, warehouse, or maintenance buildings, and no nonexcepted parking lots in the 100-year floodplain, and there are no outdoor education and recreation values associated with the floodplain. Any new park-related buildings associated with Richmond Shipyard No. 3 would be constructed outside the floodplain. In addition, the potential short extension tie-up adjacent to Sheridan Observation Point Park, to accommodate the berthing of the SS *Red Oak Victory* in the Santa Fe Channel, would affect neither the capacity nor function of the 100-year floodplain.

None of the proposed actions in the general management plan would put life at risk; potential harm to any property would be negligible. A statement of findings for floodplains will not be prepared, and the impact topic of floodplains is dismissed from further analysis.

Vegetation and Wildlife. The National Environmental Policy Act of 1969 (42 USC 4321 et seq.) calls for an examination of the impacts on all components of affected ecosystems. According to its management policies, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants and animals.

None of the park sites included in Rosie the Riveter/World War II Home Front National Historical Park is a natural ecosystem. Other than the SS *Red Oak Victory*, the sites are developed or landscaped environments, or both. There are no natural, artificial, permanent, or intermittent watercourses in any of the park sites. There are no stream or creek outlets along the shoreline of the park, and no wetlands inside park boundaries. The waterfront shoreline is either developed or comprised of hardened, bare soil, riprap, or concrete. There are no rock reefs, tide pools, marshes, kelp beds, subtidal sand flats, or estuarine resources within park boundaries.

Vegetation along the waterfront is either ruderal or characteristic of a designed and landscaped habitat. Ruderal vegetation includes coyote brush (*Baccharis pilularis*), fennel (*Foeniculum vulgare*), yellow sweet clover (*Melilotus indica*), mustard (*Brassica* sp.), and pampas grass (*Cortaderia selloana*). Landscaped vegetation along the Bay Trail/Esplanade and at the Ford Assembly Building and oil house include grasses/lawn (*Festuca* sp.), ice plant (*Carpobrotus chilense*), Pride of Madeira (*Echium fastuosum*), lavender cotton (*Santolina* sp.), eucalyptus (*Eucalyptus* sp.), and rockrose (*Cistus* sp.).

Shipyard No. 3 is dominated by large structures and open spaces that are predominantly surfaced with impermeable material (concrete or asphalt). Minimal landscaped vegetation (trees and evergreen shrubs) is found near the cafeteria and first aid station. Eucalyptus and photinia (*Photinia x fraseri*) are common examples. The remaining park sites (Richmond Fire Station 67A, Kaiser Permanente Field Hospital, and the Maritime and Ruth C. Powers child development centers) are developed and landscaped. Vegetation includes grasses/lawn, sycamore (*Plantanus racemosa* or *Plantanus x acerifolia*), eucalyptus, and pines (*Pinus* sp.).

Decades of urbanization and industrialization have destroyed any natural habitat available to wildlife in the park. The absence of natural habitat and surface water preclude the presence of any land mammals except those common to urban habitats throughout the Bay Area, e.g., rodents, ground squirrels, and rabbits. Common avian species observed in the park or general vicinity include the Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), common raven (*Corvus corax*), song sparrow (*Melospiza melodia*), western gull (*Larus occidentalis*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), common loon (*Gavia immer*), double-crested cormorant (*Phalacrocorax auritus*), black-crowned night heron (*Nycticorax nycticorax*), and black-necked stilts (*Himantopus mexicanus*). None of the species are afforded special status by either state or federal agencies. There are no seabird rookeries in the park, and park lands are not critical for nesting or breeding. In addition, none of the actions proposed in the general management plan would affect transient birds.

Harbor seals (*Phoca vitulina*), California sea lions

(*Zalophus californicus*), and occasional northern elephant seals (*Mirounga angustirostris*) are known to occur in San Francisco Bay.

The park sites are urban and industrial in character and lack natural habitat. Therefore, preserving and restoring the natural abundances, diversities, dynamics, and distributions of native animal populations are not appropriate within the park. The topic of biotic communities was dismissed from further analysis.

Essential Fish Habitat. In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, federal agencies that fund, permit, or carry out activities that may adversely impact essential fish habitat are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential adverse effects of their actions on essential fish habitat; such agencies must also respond in writing to NMFS recommendations.

Essential fish habitat is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment underlying the waters. Necessary means the habitat required to support a sustainable fishery and the species’ contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types used by a species throughout its life cycle. The conservation of essential fish habitat is an important component of building and maintaining sustainable fisheries.

Table 10 shows the species distributions for essential fish habitat in San Francisco Bay (from the Bay Bridge to San Rafael Bridge), according to the National Marine Fisheries Service.

Loss or degradation of essential fish habitat is primarily the result of activities such as point and nonpoint water pollution, livestock grazing, mining, road construction, estuarine or marine habitat alteration, creation of migration barriers or hazards, increases or decreases in sediment delivery, and alteration of stream banks, shorelines, wetlands, and floodplains.

Table 10: ESSENTIAL FISH HABITAT – SPECIES AND RELATIVE ABUNDANCE

SPECIES	RELATIVE ABUNDANCE
Northern anchovy	Abundant
Jack mackerel	Present
Pacific sardine	Rare
English sole	Abundant
Starry flounder	Abundant
Brown rockfish	Abundant
Pacific sanddab	Present
Lingcod	Present
Sand sole	Present
Big skate	Present
Pacific whiting	Present
Kelp greenling	Present
Southern shark	Present
Curlfin sole	Present
Bocaccio	Rare
Cabezon	Few
Spiny dogfish	Present
Leopard Shark	Present

None of the actions described in the general management plan would contribute to a reduction in the quality or quantity of essential fish habitat or depress fish populations in San Francisco Bay. Therefore, the topic of essential fish habitat was dismissed from further analysis.

Coral Reef Protection. Executive Order 13089, “Coral Reef Protection,” calls for research aimed at identifying the major causes and consequences of degradation of coral reef ecosystems, reduction of impacts to coral reefs, and coral reef restoration.

There are no coral reef ecosystems in the Richmond Inner Harbor or general vicinity of Rosie the Riveter/World War II Home Front National Historical Park. Therefore, the topic of coral reef protection was dismissed from further analysis.

Marine Protected Areas. Executive Order 13158, “Marine Protected Areas,” defines marine protected areas as any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein. The executive order requires every federal agency to identify its actions that affect

the natural or cultural resources that are protected by a marine protected area and, to the extent permitted by law and the maximum extent practicable, to avoid harming these resources.

There are no marine protected areas in the Richmond Inner Harbor or general vicinity of Rosie the Riveter/World War II Home Front National Historical Park. Therefore, the topic of marine protected areas was dismissed from further analysis.

Threatened, Endangered, and Candidate Species and Species of Special Concern. The Endangered Species Act (1973) requires an examination of impacts on all federally listed threatened or endangered species. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species, known collectively as species of concern.

The National Park Service must conference or informally consult with the U. S. Fish and Wildlife Service and/or the National Marine Fisheries Service pursuant to Section 7 of the Endangered Species Act to (1) clarify whether and what listed, proposed, and candidate species or designated or proposed critical habitats may be in the project area; (2) determine what effect proposed actions may have on these species or critical habitats; and (3) determine the need to enter into formal consultation for listed species or designated critical habitats, or conference for proposed species or proposed critical habitats. Formal consultations begin when it is determined that a proposed action(s) is likely to adversely affect a threatened or endangered species or critical habitat.

On May 16, 2003 the U. S. Fish and Wildlife Service provided a list of threatened or endangered species, candidate species, and species of special concern that may be potentially found in Contra Costa County (appendix D). For each threatened or endangered species, candidate species, or species of concern, the National Park Service must decide if the actions described in the general management plan would result in a determination of

No effect—The proposed actions would not affect listed species or critical habitat.

May affect but not likely to adversely

affect—Any effects on listed species or critical habitat would be expected to be discountable, insignificant, or completely beneficial. (Insignificant effects relate to the inability to meaningfully measure, detect, or evaluate effects and discountable effects are those extremely unlikely to occur.) A may affect but not likely to adversely affect determination requires informal section 7 consultation.

May affect but likely to adversely

affect—Any adverse effect on listed species or critical habitat may occur as a direct or indirect result of the actions proposed or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action is likely to adversely affect the listed species. A may affect but likely to adversely affect determination requires formal section 7 consultation.

Is likely to jeopardize proposed species/ adversely modify proposed critical

habitat—The proposed action(s) is likely to jeopardize the continued existence of a species or adversely modify the critical habitat.

Appendix D lists the threatened or endangered species, candidate species, and species of special concern potentially found in Contra Costa County. The analysis indicates the potential for occurrence of each species in or near park sites and identifies the effect proposed actions would have upon each species. As described in appendix D, the National Park Service determined that the actions described in the general management plan would have no effect on any of the threatened or endangered species, candidate species, and species of special concern for the following reasons:

- ◆ The park sites are either outside the known range of the species or the sites lack suitable habitat. Decades of urbanization and industrialization have destroyed any natural habitat within park boundaries and, other than

the SS *Red Oak Victory*, the park sites are developed or landscaped environments. There are no natural, artificial, permanent, or intermittent watercourses in the park. There are no stream or creek outlets along the shoreline of the park, and there are no wetlands in the park. The park shoreline is a developed waterfront or covered with riprap, with no rock reefs, tide pools, marshes, kelp beds, or subtidal sand flats. There are no estuarine resources within park boundaries.

- ◆ None of the listed birds roost in park sites, and none of the actions proposed would disturb or endanger transient birds or result in habitat loss.
- ◆ The San Francisco Bay, a migratory corridor between riverine habitat and the Pacific Ocean, is designated critical habitat for several listed fish species. Habitat loss and degradation is primarily the result of overfishing, timber harvest, point and nonpoint water pollution, livestock grazing, mining, road construction, diking and stream bank stabilization, and dredge and fill activities. None of the actions proposed in the general management plan would contribute to habitat loss or degradation.
- ◆ None of the listed plant species occur in the park.
- ◆ None of the listed invertebrates live in the park due to the lack of suitable habitat (sand dunes, streams, ponds, marshes, vernal pools, grasslands, woodlands, and coastal scrub).

The National Park Service has determined that implementation of the actions described in the general management plan would have no effect on threatened or endangered species, candidate species, and species of special concern that may potentially be found in Contra Costa County. This environmental assessment will be forwarded to the U. S. Fish and Wildlife Service and the National Marine Fisheries Service for review and comment, pursuant to Section 7 of the Endangered Species Act, as amended. The topic of threatened, endangered, and candidate species and species of special concern was dismissed from further analysis.

Soundscape Management. In accordance with NPS management policies and Director's Order 47: *Sound Preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park

system units.

Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among national park system units. Acceptable human-caused sound can vary within each park unit as well, generally with greater acceptance in developed areas and lesser acceptance in undeveloped areas.

Rosie the Riveter/World War II Home Front National Historical Park is in a highly urbanized industrial and commercial area where the protection of a natural ambient soundscape and the opportunity for visitors to experience natural sound environments is outside the influence of the national historical park.

Lightscape Management. In accordance with NPS management policies, the National Park Service strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. Due to its highly urbanized industrial and commercial setting, and the small size of the park, the preservation of natural ambient lightscapes cannot be significantly influenced by action taken by the National Park Service. The National Park Service would encourage, however, limiting the use of artificial outdoor lighting to that which is necessary for basic safety requirements. It would also ensure that all outdoor lighting is shielded to the maximum extent possible, keeping light on the intended subject and out of the night sky to minimally contribute to surrounding light sources of Richmond and the greater Bay Area. Thus, the topic of lightscape management was dismissed from further analysis.

Wild and Scenic Rivers. According to NPS management policies, parks containing one or more river segments that are listed in the national rivers inventory maintained by the National Park Service, or that have characteristics that might make them eligible for the national wild and scenic rivers

system, must comply with Section 5(d) (1) of the Wild and Scenic Rivers Act. This act instructs each federal agency to assess whether those rivers are suitable for inclusion in the system. Such assessments, and any resulting management requirements, may be incorporated into a park's general management plan or other management plan. No management actions may be taken that could adversely affect the values that qualify a river for inclusion in the national wild and scenic rivers system. Because there are no rivers in Rosie the Riveter/World War II Home Front National Historical Park, the topic of wild and scenic rivers was dismissed from further analysis.

Wilderness. According to NPS management policies, the National Park Service will manage wilderness areas for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness. The management of wilderness areas includes the protection of such areas, the preservation of their wilderness character, and the gathering and dissemination of information regarding their use and enjoyment as wilderness.

Rosie the Riveter/World War II Home Front National Historical Park is an urban park with no wilderness values. Therefore, the topic of wilderness was dismissed from further analysis.

• Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing any disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the

fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a

disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of fair treatment is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

Richmond, California, contains both minority and low-income populations and communities; however, environmental justice is dismissed as an impact topic for the following reasons:

- ◆ The park staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors. The park staff and planning team members will continue to consult and work in a cooperative effort to improve communications and resolve any problems that occur during the general management planning process and any later implementation planning.
- ◆ The developments and actions of the proposed alternatives would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low-income population or community.
- ◆ The impacts on the natural environment that occur due to any of the alternatives would not disproportionately affect any minority or low-income population or community.
- ◆ The alternatives would not result in any identified effects that would be specific to any minority or low-income community.
- ◆ Any impacts to the social and economic environments due to the implementation of the alternatives would be negligible to minor adverse impacts or beneficial impacts. These impacts would not occur all at one time but would be spread over a number of years. In addition, the park staff and planning team do not anticipate that the impacts on the social and economic environments would appreciably alter the physical and social structure of the nearby communities.

• **Energy Requirements and Conservation Potential**

The *Council on Environmental Quality (CEQ) Guidelines for Implementing the National Environmental Policy Act* requires the examination of energy requirements and conservation potential as a possible impact topic in environmental assessments.

The National Park Service would encourage incorporating the principles of sustainable design and development into all facilities and park operations at Rosie the Riveter/World War II Home Front National Historical Park. Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short- and long-term environmental impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques.

The NPS *Guiding Principles of Sustainable Design* (1993) provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook for the design and management of visitor facilities describes principles that emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, and recycling. Park staff at Rosie the Riveter/World War II Home Front National Historical Park would encourage owners of park sites to reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology wherever possible. Energy efficiency would also be incorporated into any NPS decision-making process during the design or acquisition of facilities, as well as all decisions affecting NPS park operations.

Value analysis and value engineering, including life-cycle cost analysis, would be performed to examine energy, environmental, and economic implications of proposed NPS development. In addition, the park staff would encourage suppliers, permittees, and contractors to follow sustainable practices and address sustainable practices (relating to both park and nonpark situations) in interpretive programs.

Consequently, any adverse impacts relating to energy use, availability, or conservation would be negligible. Therefore, the topic of energy requirements and conservation potential is dismissed from further consideration.

• **Natural or Depletable Resource Requirements and Conservation Potential**

The *Council on Environmental Quality (CEQ) Guidelines for Implementing the National Environmental Policy Act* require examination of natural or depletable resource requirements and conservation potential as a possible impact topic in environmental assessments.

Rosie the Riveter/World War II Home Front National Historical Park is in an urban commercial and industrial area of Richmond. As described above, there are no natural resource values associated with the park, and park lands are devoid of depletable resources such as minerals and other energy resources. As stated above, any adverse impacts relating to energy use, availability, or conservation would be negligible. Therefore, the topic of natural or depletable resource requirements and conservation potential is dismissed from further consideration.

Cultural Resources

An overview of World War II home front and Rosie the Riveter is presented in chapter 2 and provides the local and national context for understanding the historic and cultural resources of the national historical park. The National Park Service has identified four categories of cultural resources that apply to the national historical park: archeological resources, cultural landscapes, structures, ethnographic resources, and museum objects. These resource types are used in the following discussion regarding resources at Rosie the Riveter/World War II Home Front National Historical Park.

ARCHEOLOGICAL RESOURCES

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. Archeological resources represent both prehistoric and historic time periods. They are found above and below ground and under water. They include prehistoric and historic period sites, materials found in museum collections, and the records associated with these sites and materials. Information revealed through the study of archeological resources is critical to understanding and interpreting prehistory and history.

• Archeological Resources in the Park

Consultations were conducted with the Richmond Museum of History, the East Bay Regional Park District, Richmond Redevelopment Agency, and the National Park Service, including personnel at the Pacific West Region. Based on these consultations, no archeological surveys, studies, or assessments, other than an initial cursory inventory of cultural resources, have been conducted for lands and properties listed in the enabling legislation for Rosie the Riveter/World War II Home Front National Historical Park. That cursory inventory was prepared by California Archeological Consultants, Inc. in 1979.

Although the National Park Service currently owns no land, the National Historic Preservation Act and other laws, as well as National Park Service policies, require that potential impacts to archeological

resources be considered at the earliest possible stage of planning to determine (1) whether and at what level the proposed project area has been surveyed archeologically, (2) whether archeological resources eligible for the national register have been identified in the area, and (3) whether such resources would be affected by the proposed project. All feasible measures would be taken to avoid impacting archeological resources, minimize damage to them, or recover data that otherwise would be lost. Any required data recovery would be designed in consultation with the California state historic preservation officer and would conform to NPS and professional standards.

The lands on which the City of Richmond is located have been disturbed and manipulated by urban, industrial, and harbor development activities since the 19th century. Thus, natural landforms have been altered substantially and many or most prehistoric archeological resources have been disturbed or removed from their original location. It is likely that the only archeological resources that might be discovered at the national historical park sites would relate to historic urban, industrial, and harbor developments of the 19th and 20th centuries.

CULTURAL LANDSCAPES

According to the National Park Service's Cultural Resource Management Guideline (NPS -28), a cultural landscape is

... a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

Thus cultural landscapes are the result of the long interaction between people and the land; they reflect the influence of human beliefs and actions over time

upon the natural landscape. Shaped through time by historical land-use and management practices—as well as politics and property laws, levels of technology, and economic conditions—cultural landscapes provide a living record of an area’s past and a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; this makes them a good source of information about specific times and places, but at the same time renders their long-term preservation a challenge.

• Cultural Landscapes in the Park

A cultural landscape inventory is designed to identify, document, analyze, and evaluate cultural landscape resources in a concise manner and with sufficient information to determine whether a resource is eligible for inclusion in the National Register of Historic Places.

To date no formal cultural landscape inventory surveys or studies have been conducted at the national historical park. The City of Richmond, however, does have some rather notable industrial landscapes that reflect the land use patterns and openness of Richmond’s World War II era.

HISTORIC STRUCTURES

Historic structures are constructed works created to serve some human activity. At the national historical park, historic structures include buildings, a vessel, fences, graving basins/ dry docks, and other assemblies of historical importance.

• Historic Structures/Buildings in the Park

A historic resource study provides a historical overview of a park and identifies and evaluates a park’s cultural resources within historic contexts. Although a historic resource study has not been prepared for the national historical park, a preliminary historic survey has been conducted. That survey, *Mapping Richmond’s World War II Home Front*, indicated the potential for additional World War II-related historic sites and structures within the City of Richmond, although their historic integrity has not been examined.

At the present time four historic properties within the national historical park boundaries are

individually listed in the National Register of Historic Places: Ford Motor Company Assembly Plant Historic District; Richmond Shipyard No. 3 Historic District; SS *Red Oak Victory* (Victory Ship); and Atchison Village Defense Housing Project Historic District.

By National Park Service policy, all historic structures that are named in the enabling legislation of a national historical park are considered to be eligible for listing in the National Register of Historic Places until determined otherwise by the state historic preservation officer. Currently, draft national register nomination forms have been prepared by the National Park Service for the Kaiser Permanente Field Hospital and the Ruth C. Powers and Maritime child development centers. In addition, one historic building—Richmond Fire Station 67A, which continues to function as a city firehouse—is listed in the national historical park’s enabling legislation as contributing to the significance of the park.

MUSEUM COLLECTIONS

Museum collections are prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens valuable for the information they provide about processes, events, and interactions among people and environment.

• Museum Collections in the Park

An interim scope of collections statement, approved in January 2003, provides guidelines for the acquisition, preservation, and use of Rosie the Riveter/World War II Home Front National Historical Park’s museum collection. Objects in the park’s museum collection contribute directly to the understanding and interpretation of the park’s purpose, interpretive themes, and resource management goals and objectives.

In the scope of collections statement, appropriate cultural object types for the park’s museum collection are identified by discipline: archeological (artifacts and other specimens and records) and historical (historic objects, historic fabric, and archives).

The park's enabling legislation provides for the collection of oral histories (in multiple formats) that tell the personal stories of the people who participated in World War II home front activities throughout the nation. To date the University of California, Berkeley, has completed multiple phases of a project to collect digitally-coded videotapes of regional World War II home front stories.

Working in partnership with the National Park Foundation through the Proud Partners Program, the Ford Motor Company provided funds for a nationwide campaign calling for Rosie the Riveter

stories. Since November 11, 2003, when the campaign began with a press conference in Richmond, more than 9,000 "Rosies," or their friends and families, have contacted Rosie the Riveter/World War II Home Front National Historical Park. More than 2,000 stories written by "Rosies" have been collected, and nearly 2,000 artifacts and packets of memorabilia have been donated to the park. Some of these materials are currently housed in a small collection processing and storage facility at the park headquarters in the Richmond City Hall and are exhibited in the lobby of the city hall.

Visitor Use and Experience

CURRENT TOURISM

Currently, tourism is not a major industry in Richmond; however, the city's infrastructures of hotels, restaurants, marinas, recreational open spaces, trails, and area attractions continues to evolve.

• Tourist Attractions

Tourist attractions in the area include the boating marinas; the Bay Trail; historical sites including Point Richmond, Winehaven, the Ford Motor Company Assembly Plant, and the East Brother Lighthouse; the Rosie the Riveter Memorial; the SS *Red Oak Victory*; the Richmond Museum of History; the Golden State Model Railroad Museum at Point Richmond; and regional parks including Miller/Knox Regional Shoreline, Sobraante Ridge Regional Preserve, and Point Pinole Regional Park.

One source of interest for visitors to Richmond is its large number of attractive parks and waterfront areas that span the city as part of the East Bay Regional Park System. These sites attract mostly locals residents on day trips, and since most of these sites do not have nearby commercial retail and other services, they do not have much of an impact on the

city's economy and do not generate significant revenues for the city.

• Lodging

Richmond provides opportunities for lodging. In 2004 there were 11 hotels and about 600 hotel rooms.

In 2003 the City of Richmond realized transient occupancy tax revenues of \$0.9 million, or only 0.5% of the city's total income of \$151 million. In comparison, the nearby City of Berkeley, which is approximately the same size as Richmond in terms of population, realized \$2.5 million in transient occupancy tax revenues. Taking into account the fact that the transient occupancy tax is 12% in Berkeley and only 10% in Richmond, the total 2003 hotel sales were \$9 million in Richmond compared with nearly \$21 million in Berkeley.

Despite being relatively small, the Richmond lodging market realized a significant increase in real revenues during the last decade, mostly due to two new hotels built in 1999 and 2000. These two hotels added about 250 rooms to the city's existing 350 room inventory, increasing total supply by 71% in just two years.

Most Richmond hotels are located in areas away from park sites. The major park sites are located primarily in the South Shoreline area, whereas the hotels are situated near the freeways and close to the Hilltop Mall rather than near the waterfront. The only two hotels located in more visitor-oriented locations are in Point Richmond and are very small (15 rooms in total).

POTENTIAL TOURISM

Rosie the Riveter/World War II Home Front National Historical Park occupies a unique niche for historic sites in the Bay Area and in Richmond,

California. With many of the park's sites located on the waterfront near popular recreation destinations and close to major transportation systems, the park could attract local, regional, and national visitors. A wide array of considerations may be analyzed when estimating the number of potential visitors to Rosie the Riveter/World War II Home Front National Historical Park, ranging from regional tourism trends to the size of the park. However, five factors stand out as the most influential considerations for estimating visitation: local attractions, regional attractions, accessible sites within the national historical park, transportation options, and population growth.



Rosie the Riveter Memorial, Richmond, California, 2005. National Park Service.

Table 11: Visitation Estimates

POTENTIAL VISITATION TO ROSIE THE RIVETER/WORLD WAR II HOME FRONT NHS BASED ON COMPARABLE SITES					
Alternative Visions	Accessible Sites	Transportation Options	Adjacent Attractions	Comparable Sites (with average annual visitation)	Potential Visitation (post-GMP Implementation)
Alternative A	<ul style="list-style-type: none"> • Self-serve Visitor Orientation Center in City Hall • <i>SS Red Oak Victory</i> • Self-guiding tours 	<ul style="list-style-type: none"> • BART • Amtrak • AC Transit 	<ul style="list-style-type: none"> • Bay Trail Segments • Shoreline Parks 	<ul style="list-style-type: none"> • <i>SS Red Oak Victory</i>* (2,500) • Benicia Capital (12,000) • USS Potomac (15,000) • John Muir NHS (27,000) 	5,000 – 30,000
Alternative B	<ul style="list-style-type: none"> • Ford Assembly Building • <i>SS Red Oak Victory</i> • Child Development Centers • Kaiser Permanente Field Hospital • Shipyard No. 3 • War Worker Community 	<ul style="list-style-type: none"> • BART • Amtrak • AC Transit • Shuttle service from BART to park sites • Water taxis/ferries 	<ul style="list-style-type: none"> • Bay Trail Segments • Shoreline Parks • Multiple Visitor Attractions in Shipyard No. 3 • Contemporary attractions at Ford Assembly Building 	<ul style="list-style-type: none"> • John Muir NHS (27,000) • Bay Model (150,000) • China Camp State Park (460,000) • Miller Knox Regional Park (580,000) 	75,000 – 300,000**
Alternative C	<ul style="list-style-type: none"> • Ford Assembly Building • <i>SS Red Oak Victory</i> 	<ul style="list-style-type: none"> • BART • Amtrak • AC Transit • Shuttle service from BART to park sites 	<ul style="list-style-type: none"> • Bay Trail Segments • Shoreline Parks • Contemporary attractions at Ford Assembly Building 	<ul style="list-style-type: none"> • History San Jose (100,000) • Bay Model (150,000) • Maritime Museum - San Francisco Maritime National Historical Park (205,000) • Tech Museum of Innovation (650,000) 	75,000 – 175,000**

* Although the *SS Red Oak Victory* is now part of Rosie the Riveter/World War II National Historical Park, it was a stand-alone site for many years. Thus it is included as a "comparable site" with its own average annual visitation figures.

**The difference in potential visitation figures between alternative B and alternative C is due to the difference in number of sites that visitors would have the opportunity to visit. It is assumed that a park with many opportunities would attract more visitors than a park with one main attraction.

• Local Attractions

Based on the experience of similar parks, Rosie the Riveter/World War II Home Front National Historical Park has the potential to draw visitors from existing historic sites and nearby recreational attractions around Richmond, California. The Bay Trail provides a seamless bike and pedestrian connection between the national historical park and popular recreational destinations on Richmond's waterfront. Those attractions include the Miller Knox Regional Park and Point Isabel Regional Preserve, which attract 580,000 and 1,290,000 visitors respectively. Other World War II-era sites such as the USS *Potomac* or Port Chicago Naval Magazine National Memorial will continue to serve as local attractions helping draw visitors to the park.

• Regional Attractions

Based on the large number of visitors to regional attractions within 50 miles of Richmond, several sites were analyzed in order to estimate potential visitation to Rosie the Riveter/World War II Home Front National Historical Park. Jack London Square attracts upwards of 3.7 million visitors annually and is approximately 10 miles away in Oakland. Napa Valley, attracting 2.5 million leisure visitors annually, also was considered when estimating potential visitation to the national historical park, since many visitors to the Napa Valley pass through Richmond. While only a small percentage of visitors to these regional attractions would visit the national historical park, these attractions do provide a pool of potential visitors from which the park could draw.

Of particular interest are parks and attractions in the region that interpret World War II themes. Those parks include Angel Island State Park, the Jeremiah O'Brien Liberty ship, Port Chicago Naval Magazine National Memorial, San Francisco Bay Model, San Francisco Maritime National Historical Park, the USS *Pampanito*, and the USS *Potomac*. The SS *Red Oak Victory* also was included in this analysis because it received visitors before it became part of Rosie the Riveter/World War II Home Front National Historical Park. Visitation to these eight sites ranges from 165 visits to 4 million visits annually. If a concerted effort were made to package the marketing of Rosie the Riveter/World War II Home Front National Historical with other World War II-related sites in the region, visitation to the park would grow.

• Accessible Sites within the National Historical Park

The amount of visitation to Rosie the Riveter/World War II Home Front National Historical Park will depend in large part on the diversity of facilities, activities, and programming that will be accessible to the public. Access to Shipyard No. 3 and the development of restaurants, entertainment, and visitor facilities along the waterfront would greatly increase the visitation potential of the national historical park. However, without public access to most of the park sites, as is the current situation, visitation would be expected to remain minimal.

• Transportation Options

Peak traffic counts on the I-80 and I-580 freeways through Richmond average 12,000 and 7,000 vehicles per hour respectively. Park signs are located along these freeways to attract visitors to the park.

A variety of public transportation options are available to the City of Richmond. Shuttle connections between the downtown BART and Amtrak stations would facilitate greater visitation to waterfront sites. In the future, there is the potential for ferry service that would link the national historical park to major visitor attractions in San Francisco. The 1992 Regional Ferry Plan for the San Francisco Bay Area found that a limiting factor for ferry service to Richmond would be the lack of a "mid-day trip generator." With visitor activities on the Richmond waterfront, a greater demand for daytime ferry trips would certainly be created.

• Population Growth and Potential Tourism

Parks such as Rosie the Riveter/World War II Home Front National Historical Park, which may offer diverse and dynamic opportunities for visitors, often have great appeal locally and are able to draw consistent visitation from those local populations. Therefore, population growth, particularly in the Richmond area, was considered important when estimating potential visitation. Contra Costa County, where the national historical park is located, has the fourth highest population in the Bay Area; in 2006 it had just over 1 million residents. The county will likely experience a 69% population increase by the year 2040. Neighboring counties of Solano and Sonoma will also grow by an estimated 89% and 59% respectively by the year 2040; these population increases could heavily influence visitation to the

national historical park as well.

On a broader scale, over 50% of the visitors to California's national parks visited parks in the region of the Bay Area, and visitation to national park units around San Francisco has increased by 2.7% since 1997. Because of its location in California, with the highest tourist visitation in the country, and its location in an urban area, Rosie the Riveter/World War II Home Front National Historical Park has the potential to have high visitation. This is particularly true if the park is directly connected to the most densely populated areas of the region via a variety of transportation options.

CHANGING PERCEPTIONS

Richmond is beginning to recognize and celebrate its critical role in World War II. For many years the city has held a "Festival by the Bay," with art, music, and food. In fall 2007, that festival was renamed the Home Front Festival, and had an additional cultural and historical aspect to it. An exhibit on Henry J. Kaiser was part of the event, as well as a re-creation of a historic ship launch at Shipyard No. 3. A Rosie and Home Front Reunion was held at the Ford Assembly Building. The Rosie the Riveter Trust held its first major fundraising activity as part of the festival, as well.

The City of Richmond has been granted "Certified Local Government" status, which enables the city to apply for historic preservation grants from the state.

The City of Richmond also received "Preserve America City" status in 2006. This program recognizes and designates communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs. This designation also allows the city to apply for Preserve America grants.

RECREATIONAL BOATERS

Recreational boaters in the San Francisco Bay region are looking for new destinations to sail and boat to

as part of the boating experience. The planning team has recognized that Rosie the Riveter/World War II Home Front National Historical Park is an ideal attraction for recreational boaters to explore.

Although growing slowly, the number of recreational boaters in the Bay Area is on the rise. That growth, combined with a boating season that averages 300 days per year, increases the likelihood that boaters will demand new destinations to visit. According to several harbor masters in the region, there are currently very few destinations in San Francisco Bay where boaters may anchor near shore or tie up at a marina if they wish to come on land to explore, recreate, shop, dine, or overnight in a local hotel. And there are even fewer opportunities for boaters to access national park sites.

The typical day for a recreational boater involves leaving from a home marina or a public launch ramp, staying on the water for the afternoon then returning back to the same marina or launch ramp from which they originated. Included in a membership to some private marinas or yacht clubs is the reciprocal privilege to dock overnight at cooperating marinas. However, this opportunity does not exist for the vast numbers of boaters on San Francisco Bay.

On the City of Richmond's waterfront, the Marina Bay Yacht Harbor is the only public facility at which boats may tie up on a daily or overnight basis. That particular facility does have a restaurant and is adjacent to the Rosie the Riveter Memorial at Marina Bay Park and the Bay Trail. Other facilities in the area, such as Brickyard Cove Marina, are private and do not allow boaters to tie up on a daily or overnight basis.

Angel Island State Park, the inlet to the Napa River, China Camp State Park, and South Beach Harbor at the Embarcadero are a few of the top recreational destinations for boaters in the Bay Area. Those destinations offer a variety of activities and facilities for boaters such as day use tie ups, pump-out facilities, and land-based recreation. This combination of characteristics is relatively hard to find in the San Francisco Bay Area and is a potential niche that could be filled by the Rosie the Riveter/World War II Home Front National Historical Park.

• Trends in Recreational Boating

The San Francisco Bay Area continues to be the major recreational boating destination for boaters from all over Northern California. According to the California Department of Boating and Waterways, approximately 166,000 boats were registered in the area of San Francisco Bay in 2005. While a small number of these boats are registered for commercial use, the vast majority of them are registered for recreational use.

While the number of recreational boats in the Bay Area has not grown substantially in recent years, portions of San Francisco Bay do experience crowded boating conditions. According to the California Department of Boating and Waterway's *Report on Safe Boating in the San Francisco Bay Area*, Contra Costa County recreational boaters experience extreme congestion in and around many marinas. In fact, "congestion on waterways" was the number one problem reported by boaters in the San Francisco Bay Area. Areas such as Indian Slough in Contra Costa County experience some of the highest recreation boat congestion, due in part to the numerous residential developments surrounding waterways in those areas.

The California Department of Boating and Waterways has projected that the number of recreational boaters in the region will likely increase over the next 20 years (see table 12). This is a reflection of the population growth forecast for East Bay areas such as Solano and Contra Costa counties.

Table 12: Forecast Boat Population – San Francisco Bay, 2005 to 2020

2005	2010	2015	2020
166,789	174,806	176,273	179,219

Source: California Department of Boating and Waterways

• Facilities for Recreational Boaters

The waterfront of San Francisco Bay is dotted with recreational marinas; according to several harbor masters in the Bay Area there is a gradually increasing demand for berths throughout the region. Because of the nearly full utilization of marina berths within the San Francisco, Marin, Contra Costa, Alameda, and San Mateo county areas, many

facilities maintain waiting lists for owners of recreational crafts looking to rent a berth on a monthly basis. For example, berths at the San Francisco Municipal Marina are in particularly high demand: in recent years there were over 300 people on the waiting list for slips at the facility. Furthermore, due to constraints such as costs and permit requirements, very few marinas in the Bay Area are pursuing expansions at this time.

In close proximity to the national historical park, the privately owned Brickyard Cove Marina has 350 berths for recreational boats. Often, there are no spaces available for monthly rent and no day-use slips available for the public. Due to high demand and limited space for boats, this private marina maintains a waiting list for berths.

Also in close proximity to the national historical park and to the Ford Assembly Building, in particular, is the public Marina Bay Yacht Harbor, which is significantly larger than Brickyard Cove. Marina Bay currently has 845 slips for recreational boats and maintains an average occupancy rate experienced by other marinas in the San Francisco Bay Area. In addition to monthly rentals, the marina does offer public tie-up spaces for day users and a limited number of overnight berths for visitors.

The availability of other facilities at or near marinas such as restaurants, marine repair shops, waste pump-outs facilities, fuel stations, or power supplies are important to boaters as well. Along the City of Richmond's waterfront, there are relatively few associated facilities for recreational boaters. There are a number of repair facilities and two pump-out locations for boats in the Richmond area. A restaurant is in operation at Marina Bay and is well used throughout the year. However, there are few other land-side services in the immediate area.

Social and Economic Environment

Richmond, California is the largest city in western Contra Costa County. It is located 16 miles northeast of San Francisco on a peninsula separating the San Francisco Bay and the San Pablo Bay.

The sites of the national historical park are scattered throughout the southwestern corner of Richmond, with many park sites situated along the waterfront. The description that follows is focused primarily on the areas of Richmond that include the park sites. To simplify the analysis, the park sites were grouped into two general areas which are called “South-central Richmond” and “South Shoreline.” The borders of the two areas are defined by census tract groupings that allow access to detailed community and economic information. The two regions have notably different profiles.

South-central Richmond includes mainly residential neighborhoods and is home to three park sites: Atchison Village, the Ruth C. Powers and Maritime child development centers, and Richmond Fire Station 67A. It comprises U.S. Census tracts 3770 and 3790.

The South Shoreline area includes all of Point Richmond as well as the south-facing waterfront region extending to the border with El Cerrito. It comprises Census tracts 3780 and 3800. South Shoreline includes a mix of industrial, residential, and recreational areas and is home to ten park sites: Rosie the Riveter Memorial, Barbara & Jay Vincent Park, SS *Red Oak Victory*, Ford Assembly Building and Oil House, Richmond Shipyard No. 3, Bay Trail and Esplanade, Sheridan Observation Point Park, Shimada Peace Memorial Park, Lucretia Edwards Park, and Kaiser Permanente Field Hospital.

While this analysis addresses social and economic issues both in the entire city and the areas associated with the national historical park, South Shoreline is of particular interest, as it includes most of the park sites and would likely be most directly impacted by the future development of Rosie the Riveter/World War II Home Front National Historical Park.

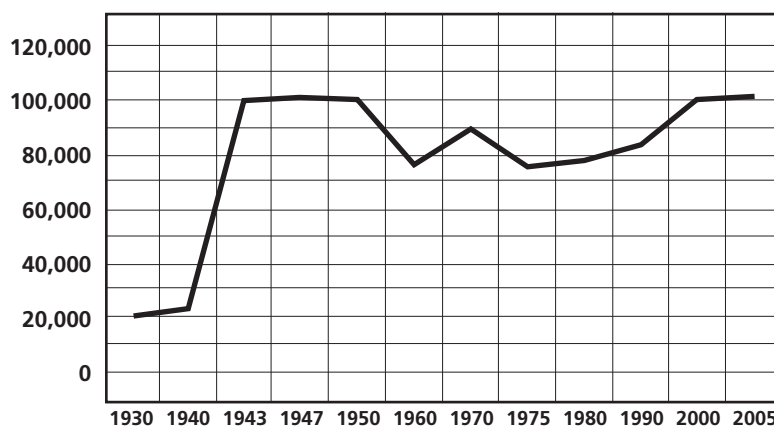
DEMOGRAPHICS

• Population Trends

The rise and fall of the city’s population from the 1940s to the 1960s is the most dramatic indicator of the home front effort. The city saw a tremendous influx of workers in the 1940s to support war related industries. Then, when the war ended, those industries left and so did many of the workers (see figure 1).

The recent increase in population is due mainly to new residential developments, many within areas near the primary sites of the national historical park. The population of Richmond is expected to grow by 25% between 2005 and 2030: from 102,186 to approximately 127,700.

Figure 1: Population of Richmond, 1930 to 2005



In 2000, nearly one quarter of Richmond’s population lived in the areas of South-central Richmond and South Shoreline. From 1990 to 2000, the population of these two increased much faster than Richmond’s population as a whole, with South Shoreline’s population increasing faster than that of South-central Richmond. In 2000, the geographically smaller South-central Richmond, with 13,900 residents, was more populated than the much larger South Shoreline, with 8,900 residents (see appendix E, table 1 for details).

While a significant part of Richmond’s expected growth will presumably be fueled by future housing developments, South-central Richmond includes

only a few vacant parcels available for these new developments. Accordingly, the South-central Richmond population is not expected to grow significantly in the future. However, several residential developments are underway and proposed projects in South Shoreline, if approved, will cause the population in this area to increase significantly during the next five to ten years.

• Population Composition

The South-central Richmond and South Shoreline areas have considerably different compositions: African Americans constitute the largest group in South-central Richmond, while Caucasians constitute the largest group in South Shoreline.

Just as the percentage of African Americans in South-central Richmond is significantly higher than in the city as a whole, so is the percentage of Caucasians in South Shoreline. Also, the proportion of Hispanics is much higher in South-central Richmond than in South Shoreline.

COMMUNITY CHARACTERISTICS

• Unemployment

Richmond had been economically depressed the past few decades relative to most Bay Area communities: however, in recent years its economy has been growing stronger. While the unemployment rate in Richmond was 7.8% in 2005, more than twice the county's rate of 3.3%, it was down from 12.2% in 1993.

• Household Income

Over the last decade, household income has remained lower in Richmond than in Contra Costa County as a whole, but the gap is narrowing. In 2005, median household income was almost \$53 thousand in Richmond compared with \$69 thousand in the county as a whole.

• Education

According to U.S. Census figures, 75% of the city's population had a high school diploma compared with 87% in the county. Similarly, only 22% of Richmond residents had a bachelor's degree compared with 35% in the county (see appendix E, table 2 for details).

• Poverty Levels

The proportion of people living below the poverty level in Richmond has historically been at least double the proportion in Contra Costa County as a whole.

Generally, the areas of South-central Richmond and South Shoreline have extremely different socio-economic profiles. On average, South Shoreline residents are better educated, have more jobs, and earn significantly higher incomes than Richmond residents as a whole; the opposite is true of South-central Richmond residents. Accordingly the disparity between the two neighboring areas is vast.

While South Shoreline residents have higher incomes as a whole, a relatively large percentage of both areas residents live beneath the poverty level. In 2000, 30% of South-central Richmond residents and 19% of the much wealthier South Shoreline residents were living beneath the poverty line, compared to 16% in the city as a whole (see appendix E, table 2 for details).

These statistics point to the fact that South Shoreline presents a mixed social and economic profile that includes both prosperous and economically distressed areas. The more prosperous areas of South Shoreline are those areas located along the waterfront offering valuable views of the San Francisco Bay Area. The most economically depressed areas are those located inland, just south of South-central Richmond.

HOUSING TRENDS

Similar to the region's population, the housing supply in Richmond has only slightly increased since the early 1990s. Of the new homes built between 1990 and 2000, less than 15% were affordable to low-income and first-time homebuyers. Nonetheless, Richmond maintains a more affordable housing market than most other Bay Area communities. Even though home prices doubled in Richmond between 1997 and 2002, owning a house in Richmond remains significantly less expensive than in most other cities in the Bay Area. High density development in South Shoreline is fueling the rising housing costs in Richmond.

• **Proposed Residential Developments**

Richmond is one of the last bayside Bay Area locations with significant quantities of vacant and underutilized land that potentially is available for residential, industrial, or commercial use. This land is generally available at a lower cost than in other places in the region. The transportation system serving these areas has been improved with the completion of Interstate 580 and the Richmond Parkway.

Historically, the city's reputation for high crime rates, poor schools, and environmental problems caused by the major chemical firms created a barrier to residential and commercial investment and development. However, the recent intensity of the regional real estate market has encouraged some developers to disregard these perceptions and to recognize the positive attributes of the city. In addition, Richmond has no locally imposed restrictions such as "no growth" limitations, growth management plans, or annual development quotas on the supply of new housing. These favorable conditions for new housing development explain why housing developers are more and more attracted to Richmond (City of Richmond).

In the last few years, new housing developments have been completed throughout Richmond, including projects in waterfront areas in South Shoreline. South Shoreline leads the city in the number of new housing projects.

South Shoreline, the large waterfront area that includes most of the national historical park sites, has long been an industrial area and still includes the commercial Port of Richmond. However, the area is slowly being transformed into a residential/recreational area, beginning with the construction of marinas on the southern shoreline of Richmond in the late 1980s.

The recent and proposed housing units in South Shoreline target middle to high-income families. According to Richard Mitchell, City of Richmond planning director, one of the reasons for the high housing prices on the waterfront is that the cost of developing housing units at those locations is very high. Since most of the marina area was industrial at one time, the sites must be decontaminated to allow residential developments.

• **Bay Area Build-Out Capacity and Urban Infill**

One way to accommodate population growth while preserving open space and sensitive environmental lands is to develop housing in existing urban areas, an idea called urban infill. The trend toward building more housing developments in Richmond is likely to continue due to the waning "build-out" capacity of the Bay Area and the associated efforts towards urban infill.

According to the California Department of Finance population projections, the nine-county San Francisco Bay Area is projected to add nearly 1.5 million new residents between 2000 and 2020. The region will need between 90,000 and 150,000 acres of developable land to accommodate this level of growth.

If recent trends were to continue, most new development would occur on previously undeveloped sites at the urban fringe, putting substantial pressure on the region's natural environment and open space lands. However, that trend is changing. Since about 1996, the market for infill development has picked up significantly.

Richmond in particular seems likely to be a target of urban infill development in the years to come. Within Contra Costa County, Richmond offers some of the best access to the urban centers of San Francisco, Oakland, and Berkeley, and also contains some of the last remaining undeveloped waterfront land left in the Bay Area.

CURRENT DEVELOPMENT

One current economic concern in Richmond is the critical need for neighborhood retail development, particularly in South Shoreline and in downtown.

• **South-central Richmond Projects**

In the 1960s and 1980s, local planners and policymakers envisioned downtown Richmond as a regional center for high-end office employment. However, in the 1970s and 1980s, the city's unemployment level was relatively high and the predicted economic benefits of the Bay Area Rapid Transit (BART) station and the Social Security building in downtown Richmond did not

materialize. In addition, the construction in 1976 of a large shopping mall at Hilltop, in the northern part of Richmond adjacent to the I-80 freeway, caused a significant decline in downtown retail activity.

It was estimated in 2002 that as much as \$3,000 per capita “leaks” out of the Richmond downtown area each year due to a lack of retail outlets. Local retail businesses capture less than half of residents’ total retail purchases. In addition, the perceived lack of community resources or entertainment options prevent many nonlocal residents from visiting downtown Richmond (University of California at Berkley 2002).

The city has completed a major residential center near its downtown BART station. Transit Village, which includes 231 residential units and 24,000 square feet of commercial space, is expected to initiate development along Macdonald Avenue and to help rebuild the downtown as an active neighborhood.

The Richmond Main Street Initiative is working with businesses and community leaders in the downtown area to plan for the revitalization of Macdonald Avenue as the center of Richmond’s arts, nightlife, and community activity. These planned changes may take 10 to 20 years to materialize and fully transform the downtown area.

• South Shoreline Projects

In the late 1970s, Marina Bay was constructed in the area of South Shoreline previously occupied by the Kaiser Shipyards. Conceived as a mixed-use project, an 800-slip recreational marina for small boats was built and residential developments were constructed around the marina.

The number of residential developments has increased in South Shoreline since the construction of the marina. Over the past few decades, South Shoreline has witnessed a further decrease in its heavy industry and an increase in offices, as well as an increase in research and development facilities. The recent transformation of the area has given rise to tensions between residential and industrial uses in South Shoreline.

Despite the trend away from industry, the South Shoreline area still contains vacant and underutilized

parcels available for industrial or commercial use. Because of the relatively low cost of land and improving socio-economic factors, several commercial and research and development projects have been proposed for some of these parcels. However, very few retail and hospitality services are available in South Shoreline, despite the presence of a significant number of residents.

• Ford Assembly Building

The Ford Assembly Building is a historic structure that is included in the Rosie the Riveter/World War II Home Front National Historical Park; it is located on the waterfront of the Richmond inner harbor. Until recently, the building belonged to the City of Richmond. Today, a private developer continues to rehabilitate the 517,000-square-foot building for mixed use, incorporating office, research and development, light industrial, retail, event, and public gathering spaces, as well as space for other uses. According to documents associated with the Ford Assembly Building Reuse Project, one of the objectives of the project is to “develop the project site into an exciting waterfront destination that will attract visitors and Richmond residents.”

ECONOMIC TRENDS

Richmond was established as the western terminus for the Santa Fe railroad at the beginning of the 20th century. Because of its bayside location, the city attracted the oil industry and developed over time as an auto, shipbuilding, and chemical town with a number of other smaller industries. While the city “boomed” with the onset of World War II, Richmond’s economic dependence on a few major heavy industries caused economic decline when the war ended and Kaiser shipyards, located in South Shoreline, closed. In the 1950s additional major employers left the city, resulting in increased unemployment, as well as vacant shoreline facilities.

During the 1960s new industries began to occupy the shoreline—many of them warehousing, distribution, chemical and research facilities. The 1970s saw development in South Shoreline on land previously occupied by one of the four Kaiser shipyards. The 1980s and 1990s saw additional growth, including the arrival of biotechnology companies. Then a slowing in the county and city

economies in the early 2000s mirrored a national slowdown.

The current distribution of jobs is still highly concentrated in heavy and moderate industry; Chevron is the largest employer in the city (see table 13).

**Table 13: City of Richmond –
Principle Employers 2005**

Business Name	Number of Employees
Chevron USA, Inc.	2,461
The Permanente Medical Group	732
Berlix, Inc.	413
Costco Wholesale #482	325
Macy's Hilltop	261
California Autism Foundation, Inc.	250
Palecek Imports, Inc.	220
The Home Depot #643	209
Quick Response Services Corporation	188
TPMG Regional Laboratory	176

Source: City of Richmond Community Development Department, 2005.

Today, however, Richmond's economy is more diverse than in the past. Like other places in the Bay Area, Richmond's economy is undergoing a major transition from its historical focus on heavy industry towards more light industry and high technology. This has resulted in new business parks that accommodate both light industrial and office/flex type commercial buildings. Office/flex is a zoning designation designed to provide areas for research and development, offices, institutional uses, and low impact industrial uses.

Richmond is well served by the Bay Area's transportation roadway system (i.e., two interstate freeways, I-80 and I-580, and the Richmond Parkway). The completion of these systems in the mid-1990s has resulted in industrial growth along the corridors of both roadways.

Richmond currently has a number of successful developments offering retail, research, and commercial office space. However, the city still has many roads linking these successful developments to underdeveloped areas that contain large numbers of vacant buildings and space. With the increase in land

prices in other Bay Area communities and the increase in economic activity in Richmond, these vacant buildings and spaces may soon become more attractive to private investors for industrial/commercial development and redevelopment.

PORT OF RICHMOND TRENDS

The Port of Richmond occupies a significant amount of space on South Shoreline and includes many significance historic structures and features, including Shipyard No. 3

Chevron is responsible for the overwhelming majority of port activity. The non-Chevron port activities along the Santa Fe Channel have declined in the last ten years, transforming the port from a small but active port, boasting a diverse container load, to its current primary orientation on oil and chemical shipments. In 2003, the port unloaded less than 70% of the metric tonnage that it had a decade previously (see appendix E, table 3 for details).

As an economic indicator, the tonnage statistics themselves do not accurately characterize the local economic contribution of the port. Due to its nature, the labor required to unload oil and other liquid chemicals from ships is negligible: a port employee essentially opens a tap and lets the commodity flow to its destination container. So the employment generated by port activities has been greatly reduced from past years. For this reason, the Pacific Maritime Association, an organization that tracks economic activity at West Coast ports, estimates that the Port of Richmond accounts for an extremely small portion of total San Francisco Bay Area port activity.

CITY FINANCE TRENDS

During the past decade, City of Richmond expenditures often have been higher than revenues. However, the situation has improved dramatically, and fiscal year 2005-2006 saw the city in the black (see appendix E, table 5 for details).

The largest sources of revenues for the City of Richmond are property taxes and local taxes. Sales and use taxes are also a significant source of

revenues (see appendix E, table 6 for details).

COUNTY FINANCIAL TRENDS

The City of Richmond has some influence on the county's fiscal condition. In a telephone conversation on December 21, 2004, Paul Abelson, chief accountant for Contra Costa County, stated that Richmond's Chevron, for example, is the single biggest taxpayer in the county. However, none of the other 10 largest taxpayers in the county are located in Richmond.

In addition to taxes, the county collects revenue via licenses and franchise fees, fines and penalties, and

charges for services and property use. During the past decade, county revenues and expenditures have grown at identical average annual rates over the period, increasing faster than inflation due to the rapid population growth and associated development occurring in the county (see appendix E, table 7 for details).

Contra Costa County tax revenues have risen over the past five years due to the substantial growth in property taxes collected by the county. As the property tax rate remained constant over the period, all of the growth in revenue reflects growth in the aggregate value of properties within the county (see appendix E, table 8 for details).

Transportation by Land

EXISTING ACCESS TO THE PARK

Rosie the Riveter/World War II Home Front National Historical Park consists of numerous separate sites located along the shoreline and within the urban fabric of Richmond, California. The sites are located within approximately 3 miles of one another. This proximity provides relatively easy access by private vehicle and feasible, but more difficult, access by public transportation if combined with walking or bicycling. Some of the park sites are open to the public, while others are currently in private use and can be viewed only from the exterior.

Bridge, and to the points on the east side of the bay via the I-80 freeway.

In the vicinity of the national historical park, I-580 generally provides three travel lanes in each direction and interchanges with Canal Boulevard, Harbour Way, and 23rd Street/Marina Bay Parkway. Figure 2 is a map of the area, and enlargements of the three interchange configurations on I-580 are shown in insets 1 through 3. The average daily traffic on I-580 between the Harbour Way and Marina Bay Parkway interchanges consists of approximately 86,000 vehicles per day with 6,300 vehicles per hour during the peak hour. (California Dept. of Transportation)

STREET NETWORK

For private vehicle access, the national historical park is well served by the street and highway system. The I-580 freeway is located less than a mile from the current self-serve visitor orientation center, the Rosie the Riveter Memorial, and Richmond Shipyard No. 3. This highway provides access to the west side of the bay via the Richmond/San Rafael

The interchange with Canal Boulevard provides access to Richmond Shipyard No. 3 and the SS *Red Oak Victory*. The interchange with Harbour Way provides access to the existing self-service visitor orientation center (located in the temporary Richmond City Hall South), Sheridan Observation Point Park, the Ford Assembly Building, Lucretia Edwards Park, the Maritime Child Development Center, Fire Station 67A, and the Kaiser Permanente

Field Hospital. The I-580 interchange with 23rd Street provides access to the Rosie the Riveter Memorial in Marina Bay Park, Shimada Peace Memorial Park, Barbara and Jay Vincent Park, and the Ruth C. Powers Child Development Center.

I-580 creates a distinct boundary between the urban street grid of Richmond to the north and the discontinuous and sparser roadway infrastructure to the south. Visiting the park sites south of the interstate requires retracing routes several times because Marina Bay and the Santa Fe Channel separate a number of the sites. All of the park sites north of the interstate are not yet open to the public and are either in private ownership or are still in contemporary, nonpark-related use.

The self-guiding auto tour (described in a booklet currently available at the visitor orientation center and on the park website) begins at the self-service visitor orientation center located in temporary Richmond City Hall South and continues with a visit to the Rosie the Riveter Memorial in Marina Bay Park. Visitors are then directed to Sheridan Observation Point Park at the end of Harbour Way South, where they can view the Ford Assembly Building and see Richmond Shipyard No.3 across the channel.

Visitors then make their way back north on Harbour Way and west onto Cutting Boulevard, crossing I-580 twice, before driving south on Canal Boulevard to the roadway providing access to Richmond Shipyard No. 3 and the *SS Red Oak Victory*. Use of a private vehicle is the only motorized way to visit all of these sites, as public transit does not serve the *SS Red Oak Victory* or Richmond Shipyard No. 3.

Although the Richmond Museum of History is not a park site as identified in the enabling legislation, it is a major contributor to the visitor educational experience. The museum is located at 4th Street and Nevin Avenue, fairly close to the other park sites that are located north of I-580.

• Traffic Volumes

The streets identified in the following discussion provide access and circulation to the area and to the Rosie the Riveter/World War II Home Front National Historical Park. In 2004, traffic volumes on

several of the streets were documented as part of the traffic study conducted for the initial study on the Ford Assembly Building Reuse Project. Those volumes are included in the following discussion.

Harbour Way is a north-south arterial with some direct access to I-580 via on-ramp and off-ramp connections. South of I-580, the street is referred to as Harbour Way South and has one travel lane in each direction. Harbour Way South provides access to the west side of the Ford Assembly Building and Sheridan Observation Point Park. North of I-580, the street is four lanes wide, with two travel lanes in each direction. In the 2004 traffic study, the daily traffic volume on Harbour Way South was documented at approximately 1,300 vehicles per day.

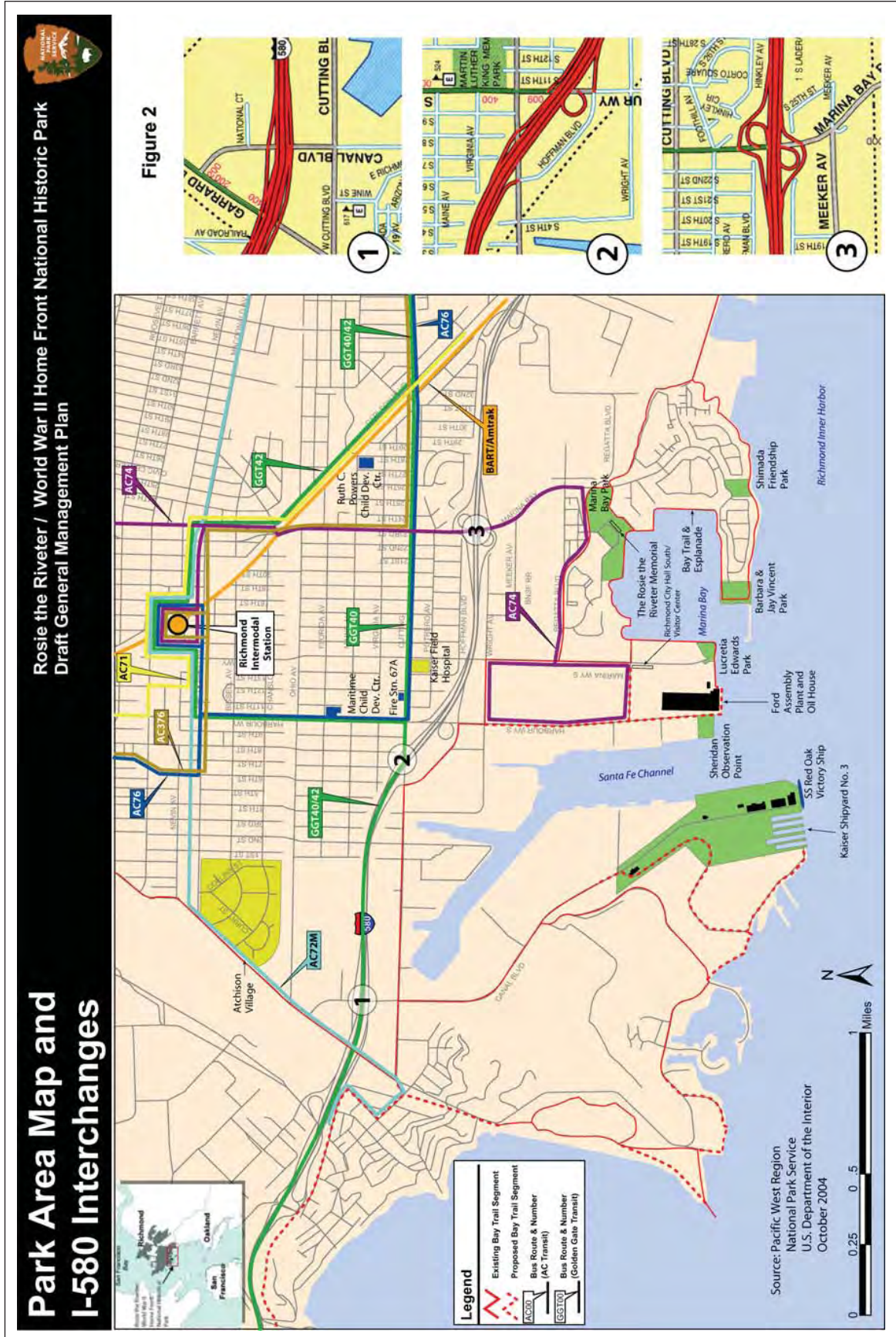
During that same traffic study, peak hour volumes were counted for intersections along Harbour Way South from Hall Avenue to Cutting Boulevard. During the morning peak hour, Harbour Way traffic volume was 148 vehicles per hour north of Hall Avenue, 329 vehicles per hour north of Wright Avenue, and almost 1,200 vehicles per hour north of Cutting Boulevard. During the evening peak hour, Harbour Way traffic volume was 149 vehicles per hour north of Hall Avenue, 306 vehicles per hour north of Wright Avenue, and almost 1,100 vehicles per hour north of Cutting Boulevard.

Marina Way South is a four-lane arterial street with north-south orientation and no direct connections to I-580. Marina Way South provides access to the current park visitor center, located in the temporary Richmond City Hall South, and to Lucretia Edwards Park, located at the southern terminus of Marina Way South. North of I-580, the Kaiser Permanente Field Hospital is located along the west side of Marina Way South, between Potrero Avenue and Cutting Boulevard.

In 2004, traffic counts showed peak traffic on Marina Way South to be 218 vehicles per hour during the morning peak and 242 vehicles per hour during the evening peak.

Marina Bay Parkway and 23rd Street provides north-south access in the study area and full access ramps to and from I-580. South of I-580, the street is named Marina Bay Parkway and provides access to the Rosie the Riveter Memorial, Shimada Peace

Figure 2: Park Area Map and I-580 Interchange



Memorial Park, and Barbara and Jay Vincent Park. The February 2004 traffic study showed traffic volume on Marina Bay Parkway, north of Regatta Boulevard, to be 739 vehicles per hour during the morning peak and 793 vehicles per hour during the evening peak.

North of I-580, the street becomes 23rd Street. None of the national historical park sites are located directly on this street, but 23rd Street does provide an access route to the Ruth C. Powers Child Development Center located at 28th Street and Maine Avenue. The February 2004 traffic counts showed traffic volume on 23rd Street, south of Cutting Boulevard, to be 1,669 vehicles per hour during the morning peak and 1,940 vehicles per hour during the evening peak.

Regatta Boulevard is a four-lane, east-west arterial connecting Marina Way South and Marina Bay Parkway. Regatta continues east of Marina Bay Parkway and then jogs north to an interchange with I-580. The February 2004 traffic counts showed traffic volume on Regatta Boulevard, west of Marina Bay Parkway, to be 356 vehicles per hour during the morning peak and 312 vehicles per hour during the evening peak.

Cutting Boulevard is a four-lane, east-west arterial that connects I-80 and I-580 and provides ramp access to and from both freeways. For access to national historical park sites, Cutting Boulevard provides an important east-west connection for Canal Boulevard, Harbour Way, Marina Way, and 23rd Street/Marina Bay Parkway.

Two of the national historical park sites, Kaiser Permanente Field Hospital and Fire Station 67A, are located along Cutting Boulevard. The February 2004 traffic counts showed traffic volume on Cutting Boulevard east of Harbour Way to be 844 vehicles per hour during the morning peak and 848 vehicles per hour during the evening peak.

Canal Boulevard is a four-lane thoroughfare extending from Garrard Boulevard through an interchange with I-580, then continuing south/southeast to the gate of the Port of Richmond and Shipyard No. 3.

The most recent traffic counts available for Canal

Boulevard were peak hour counts conducted in 2004 for the Northbay Business Park Development Project. The 2004 Northbay traffic count showed peak hour traffic volume on Canal south of Cutting Boulevard to be 350 vehicles per hour during the morning peak and 340 vehicles per hour in the evening peak. For Canal north of I-580, the Northbay traffic study documented 1,130 vehicles per hour in the morning peak and 1,050 vehicles per hour in the evening peak. (City of Richmond, Planning Department, 2004)

Garrard Boulevard provides a diagonal connection in a northeasterly direction from Cutting Boulevard to the intersection with Canal Boulevard and then continuing north to Macdonald Avenue. The roadway is a four-lane arterial and is generally parallel to a railroad-switching yard located along the western edge of Garrard.

Macdonald Avenue is an east-west arterial extending from Garrard Boulevard on the west, through downtown Richmond, and connecting to I-80 east of the study area. From Garrard Boulevard to 6th Street, Macdonald Avenue is four lanes wide, with two lanes in each direction. East of 6th Street, the road is two lanes wide, with one lane in each direction and a landscaped median. East of 16th Street, the road transitions back to four lanes. The most recent traffic volumes available for Macdonald Avenue were 2002 counts from the City of Richmond. The 2002 counts showed 5,300 vehicles per day on Macdonald between Garrard and 6th Street and 15,000 vehicles per day between 8th Street and Harbour Way.

TRAFFIC ANALYSIS METHODOLOGY

The capacity of urban roadway networks is generally determined by traffic operations at intersections rather than operations along roadway segments. Standard practices have been established for transportation planning applications to evaluate the traffic operating conditions at intersections by using level of service (LOS) applications. Level of Service is a qualitative assessment of traffic conditions, and its rating generally reflects travel time and speed, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service "A" represents free flow conditions, while Level of Service "F"

indicates excessive delays and long queues.

The City of Richmond has adopted policies stating that transportation evaluations of this type shall comply with requirements of the Contra Costa Transportation Authority (CCTA) for traffic studies. The Contra Costa Transportation Authority methodology requires Level of Service computations that are based on the intersection's volume-to-capacity (V/C) ratio; these Level of Service ranges are shown in table 14.

• Existing Levels of Service

Recent traffic studies conducted for proposed projects in the Richmond area were reviewed in order to determine existing traffic conditions at intersections that would potentially be used by visitors to Rosie the Riveter/World War II Home Front National Historical Park. Table 14 summarizes the existing Level of Service for selected intersections based on a traffic study done for the Ford Assembly Building Reuse Project and a study done for the 10-B Nevin Redevelopment Plan Amendment. As can be seen in Table 15, the majority of intersections are operating at Level of Service "A."

Table 14: Definitions of Levels of Service for Signalized Intersections

Level of Service	Expected Delay	Range of Volume-to-Capacity Ratio (V/C)
A	Little or no delay	Less than 0.60
B	Short traffic delays	0.61 - 0.70
C	Average traffic delays	0.71 - 0.80
D	Long traffic delays	0.81 - 0.90
E	Very long traffic delays	0.91 - 1.00
F	Extreme delays potentially affecting other traffic movements in the intersection	Greater than 1.00

Source: Contra Costa Transportation Authority, *Technical Procedures*, August 1992.

Table 15: Existing Intersection Levels of Service

INTERSECTION/ (SOURCE REFERENCE)	MORNING PEAK HOUR		EVENING PEAK HOUR	
	Volume/ Capacity	Level of Service	Volume/ Capacity	Level of Service
Canal Boulevard and Cutting Boulevard / (a)	0.20	A	0.14	A
Canal Boulevard and I-580 EB ramps / (a)	0.23	A	0.25	A
Canal Boulevard and I-580 WB ramp / (a)	0.54	A	0.22	A
Garrard Boulevard and Macdonald Avenue / (a)	0.37	A	0.65	A
Harbour Way and Macdonald Avenue / (a)	0.39	A	0.72	C
Cutting Boulevard and I-580 WB off-ramp / (b)	0.26	A	0.15	A
Cutting Boulevard and Harbour Way / (b)	0.56	A	0.55	A
Marina Bay Parkway and I-580 EB ramps / (b)	0.42	A	0.31	A
Marina Bay Parkway and I-580 WB ramps / (b)	0.34	A	0.35	A
23rd Street and Cutting Boulevard / (b)	0.59	A	0.67	B
Marina Bay Parkway and Regatta Boulevard / (b)	0.22	A	0.20	A

Source:

(a) Table 6.3, *Draft EIR, 10-B Nevin Redevelopment Plan Amendment*, City of Richmond Redevelopment Agency, April 22, 2005.

(b) Table T-2, *Ford Assembly Building, Reuse Project, Mitigated Negative Declaration*. City of Richmond, June 2004.

PUBLIC TRANSIT

The City of Richmond has a variety of public transportation options with bus service provided by Alameda-Contra Costa County (AC) Transit and Golden Gate Transit, and rail service provided by the Bay Area Rapid Transit (BART) District and Amtrak. The Richmond Intermodal Station, which is located approximately 1 mile north of I-580 and within 2 miles of most national historical park sites, provides access to each of these providers. The intermodal station is located just north of Macdonald Avenue between Marina Way and 19th Street. Originally surrounded by parking lots and vacant city-owned land, the station is now the heart of a high-density, mixed-use development.

The station serves six AC Transit routes (70, 71, 72M, 74, 76, and 376), Golden Gate Transit Route 42, the BART orange and red lines, and the Amtrak Capitol Corridor and San Joaquin routes. The AC Transit routes provide local bus service within Alameda and Contra Costa counties. Golden Gate Transit provides regional bus service in San Francisco, Marin, and Sonoma counties. BART connections provide access to San Francisco and the East Bay Area, while Amtrak provides long-distance rail service to Sacramento, Fresno, Stockton, and Bakersfield.

While public transit serves some of the national historical park sites, there is no public transit service that provides easy and convenient public access to most park sites. A visit to several sites would require walking distances of up to a half mile and transferring between bus routes.

• Alameda-Contra Costa County Transit

The Alameda-Contra Costa County Transit District, known as AC Transit, provides local bus service in Alameda and Contra Costa counties. Several AC Transit routes serve sites within the park, and six routes are accessible from the Richmond Intermodal Station (see figure 2). Route 74 is the only local bus route serving sites south of I-580. The route is run every half-hour and passes Marina Bay Park (the site of the Rosie the Riveter Memorial) and the visitor center at the temporary Richmond City Hall South. Other sites within walking distance (approximately one-quarter mile) of this transit route include Sheridan Observation Point Park, the Ford Assembly

Building, and Lucretia Edwards Park. North of I-580, the Ruth C. Powers Child Development Center is within walking distance of the route, as well.

Route 76 passes the Maritime Child Development Center, Fire Station 67A, and the Kaiser Permanente Field Hospital; it also passes within two blocks of the Ruth C. Powers Child Development Center. This route intersects Route 74 at the intersection of 23rd Street and Cutting Boulevard. It runs every half hour on weekdays and every hour on weekends. Route 72M passes by Atchison Village, and runs approximately every half hour. Routes 71 and 376 pass within one or two blocks of the Ruth C. Powers Child Development Center. Route 71 provides service every half hour on weekdays and every hour on weekends. No public transportation routes serve the SS *Red Oak Victory*, Richmond Shipyard No. 3, or the Shimada Peace Memorial and Barbara and Jay Vincent parks.

• Golden Gate Transit

Golden Gate Transit provides bus service along the Golden Gate corridor in San Francisco and in Marin and Sonoma counties. Routes 40 and 42 provide service over the Richmond/San Rafael Bridge between Marin County and the City of Richmond. Both routes follow I-580 over the bridge to Cutting Boulevard. Route 40 continues east on Cutting, passing by Fire Station 67A and the Kaiser Permanente Field Hospital, and passing within two blocks of the Ruth C. Powers Child Development Center. Route 42 turns north on Harbour Way, passing by the Maritime Child Development Center on its way to the Richmond Intermodal Station. Then Route 42 joins back with Route 40 at the intersection of Carlson Avenue and Cutting Boulevard, passing by the Ruth C. Powers Child Development Center along the way.

Route 40 provides service approximately every hour on weekdays during peak hours. Route 42 provides service throughout the day on weekdays and weekends. Route 42 runs every half hour on weekdays until approximately 8:00 p.m. After that time, and on weekends, service runs every hour.

• BART – Bay Area Rapid Transit

Bay Area Rapid Transit (BART) is the commuter rail line serving the Bay Area. The Richmond Intermodal Station is the northernmost stop on the BART

orange and red lines, which provide service from Richmond to Fremont and from Richmond to Millbrae/San Francisco International Airport respectively. BART provides frequent service to the station. On weekdays, the orange line trains run every 15 minutes between 4:00 a.m. and 7:00 p.m., and every 20 minutes between 7:00 p.m. and midnight. On weekdays, the red line trains run every 15 minutes between 5:00 a.m. and 6:30 p.m. On weekends, the orange line trains run every 20 minutes between 6:00 a.m. and midnight on Saturdays and between 8:00 a.m. and midnight on Sundays. On Saturdays, the red line trains run every 20 minutes between 9:00 a.m. and 7:00 p.m. There is no service on the red line on Sundays.

• Amtrak

The State of California provides funding for three long-distance Amtrak rail routes in the state. Two of these, the San Joaquin and Capitol routes, run through Richmond and stop at the Richmond Intermodal Station. The San Joaquin route, operated by Caltrans, runs north-south in central California, connecting Bakersfield, Fresno, Stockton, and Sacramento; a spur line on the route connects to the Bay Area. The line operates four round trips between the Bay Area and Bakersfield.

The Capitol Corridor route, operated by the Capitol Corridor Joint Powers Board (CCJPB) runs east-west in central California, connecting the Bay Area with Sacramento. The Capitol Corridor line operates 12 round trips between the Bay Area and Sacramento (Amtrak California).

• Tour Buses

There are currently no formal bus tour operations providing access to or tours of the national historical park. Private tour bus companies may be stopping in the park, but no records have been maintained of these visits.

• Commercial Marine Activities

Richmond maintains a deepwater shipping port. The U.S. Army Corps of Engineers documents annual statistics on waterborne commerce for the United States; vessel visits to Richmond Harbor are one of the reported statistics. The numbers shown in table 16 are the reported inbound vessels to Richmond Harbor; the outbound numbers are essentially the same.

• Other Railroads

There are national and local railroad lines that are located near many of the park sites. These active railroad lines can disrupt traffic flow when in use. The Union Pacific (UP) system includes former Southern Pacific and Western Pacific lines and facilities. The Burlington North Santa Fe (BNSF) system includes former Santa Fe lines and facilities. The main lines of the UP from Martinez and Stockton are routed through Richmond, as well.

Richmond is also the western terminus of the BNSF system; BNSF has two intermodal terminals in the area, both of which handle domestic traffic.

Richmond Pacific (formerly Parr Terminal) provides local switching service in the area. Richmond Pacific provides rail connections to the Levin-Richmond Terminal Corporation (or Port of Richmond's Terminal No. 9), located on Wright Avenue. The rail lines serving the Richmond area cross many of the city streets with at-grade crossings, as shown in figure 3, and trains using the at-grade crossings can block street traffic for lengthy periods.

In general, trains operated by the Levin-Richmond Terminal are short (less than 13 cars) and run on a varying schedule from 6 a.m. to 10 p.m. The BNSF has a minimum of two trains and a maximum of eight trains per day that use the rail lines in this area; these trains are up to 7,000 feet in length. Table 17 summarizes the at-grade crossings on access routes to the national historical park sites.

The City of Richmond currently has a study underway that is analyzing the feasibility of a grade-separated vehicular crossing for the BNSF route south of I-580. Both the Marina Bay Parkway and Harbour Way South at-grade crossings are being studied as alternative locations for construction of the grade-separated vehicular crossing.

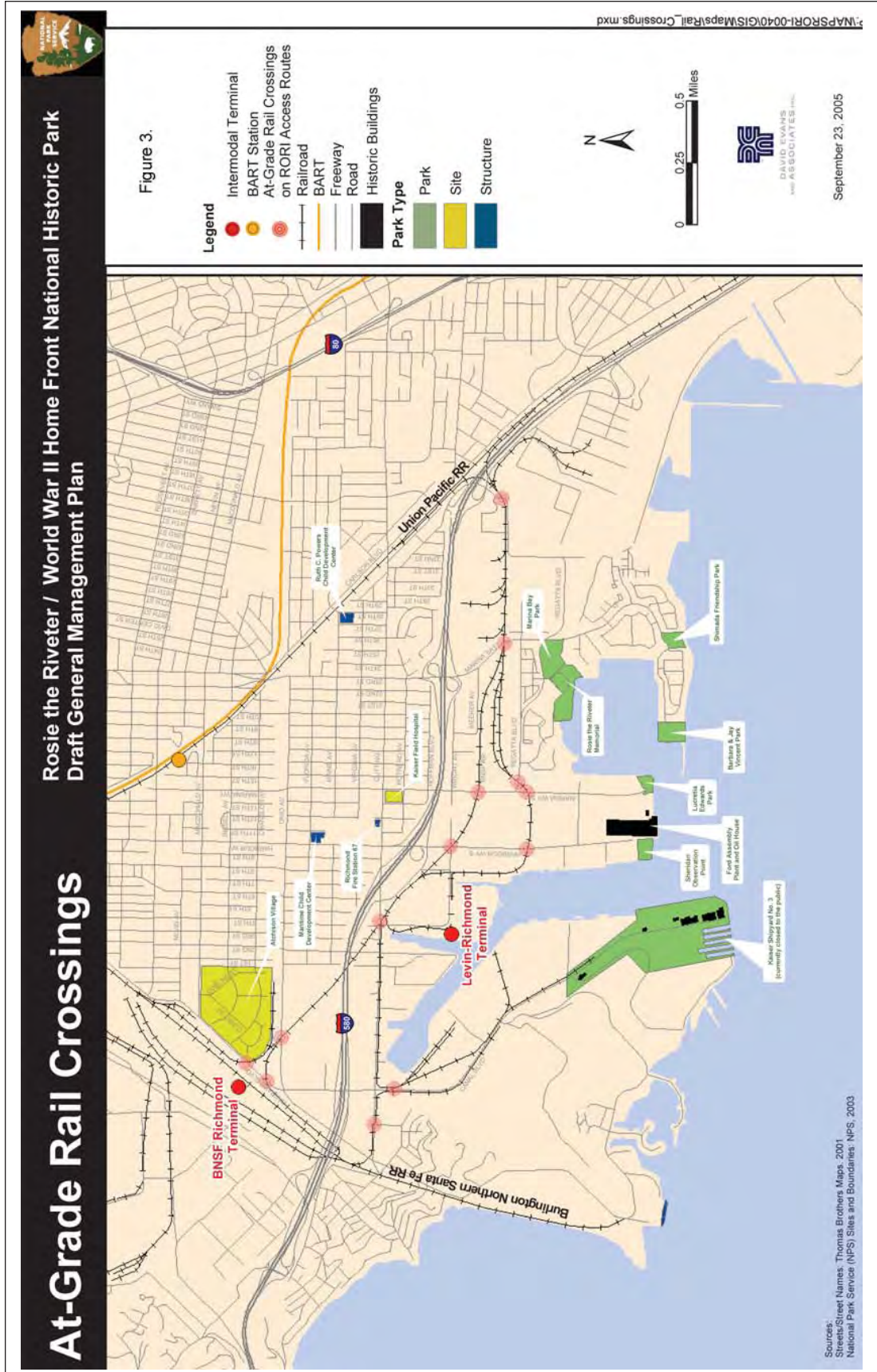
Table 16: Vessel Traffic to Richmond Harbor (2003)

TYPE OF VESSEL	NUMBER OF VESSEL VISITS (Inbound)
Passenger and Dry Cargo (Self propelled)	58
Tanker (Self propelled)	378
Tow or Tug (Self propelled)	3,586
Dry Cargo (Barge)	390
Tanker (Barge)	1,395
Total	5,807

Table 17: At-Grade Rail Crossings

AT-GRADE CROSSINGS	ACCESS TO PARK	SITES ISSUES
Marina Bay Parkway, north of Regatta Boulevard	Rosie the Riveter Memorial, Shimada Friendship Park, and Barbara & Jay Vincent Park	Long BNSF trains can block the crossing for up to 10 minutes
Marina Way South, south of Wright Avenue (two crossings)	Lucretia Edwards Park and east side of Ford Building	Northern crossing can be blocked by long BNSF trains for up to 10 minutes. Southern crossing mainly used by shorter Richmond Pacific trains.
Regatta Boulevard, east of Marina Way South	Trips between Ford Building and parks along Marina Bay Parkway	Crossing mainly used by shorter Richmond Pacific trains.
Harbour Way South – Two crossings: Wright Avenue intersection and south of Wright	West side of Ford Assembly Building and Sheridan Observation Point Park	Northern crossing at Wright Avenue can be blocked by long BNSF trains for up to 10 minutes. Southern crossing mainly used by shorter Richmond Pacific trains.
Cutting Boulevard, west of I-580 ramp	Trips between Ford Assembly Building and Shipyard	Long BNSF trains can block the crossing for up to 10 minutes.
Canal Boulevard, south of Cutting	Shipyard	Most trains are for shorter for transferring freight to port terminals
Garrard Boulevard, between Ohio and Macdonald (two crossings)	Atchison Village	Long BNSF trains can block the crossings for up to 10 minutes.

Figure 3: At-Grade Railroad Crossings



• Bicycle and Pedestrian Facilities

The primary bicycle and pedestrian facility accessing the park is the San Francisco Bay Trail (Bay Trail), which runs through or near a majority of the shoreline park sites. Richmond has 20 miles of completed Bay Trail.

This pedestrian and bicycle route provides access to a number of park sites, including Shimada Peace Memorial Park, Barbara and Jay Vincent Park, the Rosie the Riveter Memorial, the visitor center at the temporary Richmond City Hall South, Lucretia Edwards Park, the Ford Assembly Building, and Atchison Village. Planned extensions of the trail will access Sheridan Observation Point Park and Shipyard No. 3.

The four parks currently on the trail, along with the nearby visitor center and Ford Assembly Building, are spaced from approximately .25 mile to .5 mile apart on the trail. While the four-mile round-trip distance is too long for an easy walking tour of these sites, it is suitable for a bicycle tour.

The Bay Trail runs along Marina Way South north to Wright Avenue and on Harbour Way between Wright Avenue and Hoffman Boulevard. If a bicycle route were established along either Harbour Way or Marina Way South leading north across I-580, three additional park sites would be easily accessible by bicycle: the Maritime Child Development Center, Fire Station 67A, and Kaiser Permanente Field Hospital.

Sidewalks are provided on all public streets connecting the various park sites to one another, and they provide pedestrian access from parking lots and transit stops to most of the park sites.

• Parking

Parking is available at the majority of the national historical park sites. Formal parking lots are available at the Lucretia Edwards, Barbara and Jay Vincent, and Shimada Peace Memorial parks. Some of these lots experience high levels of use during the weekends when the open space parks experience high recreational use. Parking for other national historical park sites is available only as on-street spaces adjacent to the individual sites.

Figure 4 shows the existing available public parking lots at Sheridan Observation Point Park and Lucretia Edwards Park. These parking areas are located close to the Ford Assembly Building. No formal studies of parking occupancy have been done, but existing levels of use appear to be low.

Figure 5 shows the existing public parking lot adjacent to the Rosie the Riveter Memorial in Marina Bay Park. Marina Bay Park is a fairly active park, and the parking lot also serves the boat slips of the Marina Bay Yacht Harbor that are located close to the park. No formal studies of parking occupancy have been done, but this parking lot currently has higher levels of use than the public lots at Sheridan Observation Point Park and Lucretia Edwards Park.

Figure 6 shows the existing public parking lots for the Shimada Peace Memorial Park and the Barbara & Jay Vincent Park. Both of these parking lots jointly serve park users and visitors to the national historical park sites. Existing use levels are fairly high, particularly on the weekends.

As shown in figure 7, parking for the Ruth C. Powers Child Development Center is currently available only at on-street locations with parallel parking along Maine Avenue, 27th Street, and 28th Street. Existing use levels appear to be low.

Figure 8 shows existing parking available for the Kaiser Permanente Field Hospital and the Richmond Fire Station. For Kaiser Permanente Field Hospital, parking is available on the street with parallel parking along Cutting Boulevard, 13th Street, and Potrero Avenue, and in an area with angle parking along southbound Marina Way. For Fire Station 67A, on-street spaces are available along Cutting Boulevard and 12th Street. Existing use levels appear to be low.

Atchison Village is located south of Macdonald Avenue between Garrard Boulevard and 1st Street. Atchison Village remains an active, residential area, and motor vehicle access to Atchison Village has been closed at two of the three streets connecting to the surrounding neighborhoods. Public access to the area is mainly feasible from Macdonald Avenue, and on-street parking is available on Macdonald from Garrard to 1st Street.

Figure 4: Sheridan Observation Point / Lucretia Edwards Park



Figure 5: Existing Parking for Rosie the Riveter Memorial at Marina Bay Park



Figure 6: Existing Parking for Barbara & Jay Vincent Park / Shimada Friendship Park



Figure 7: Existing Parking for Ruth C. Powers Child Development Center

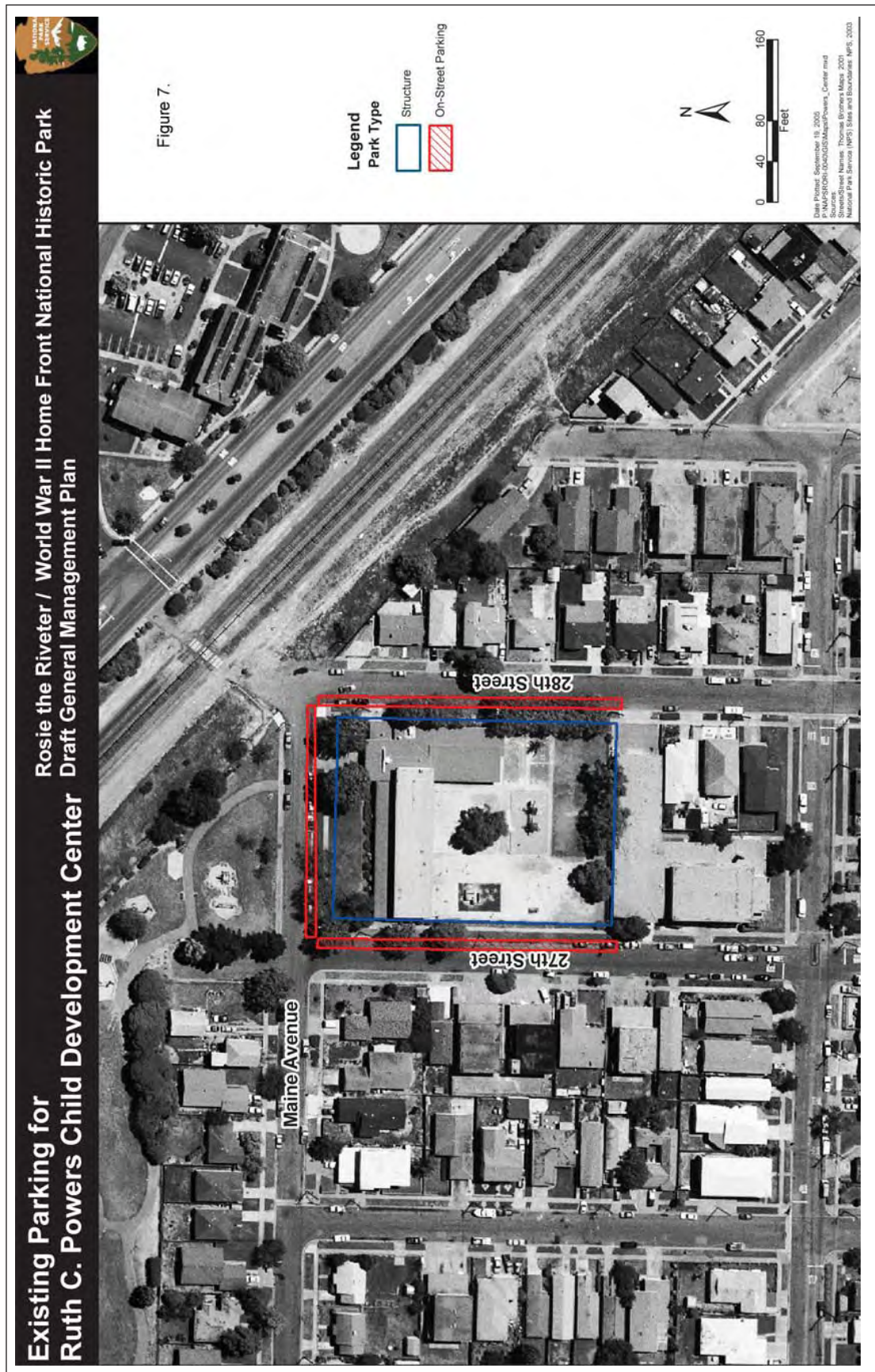
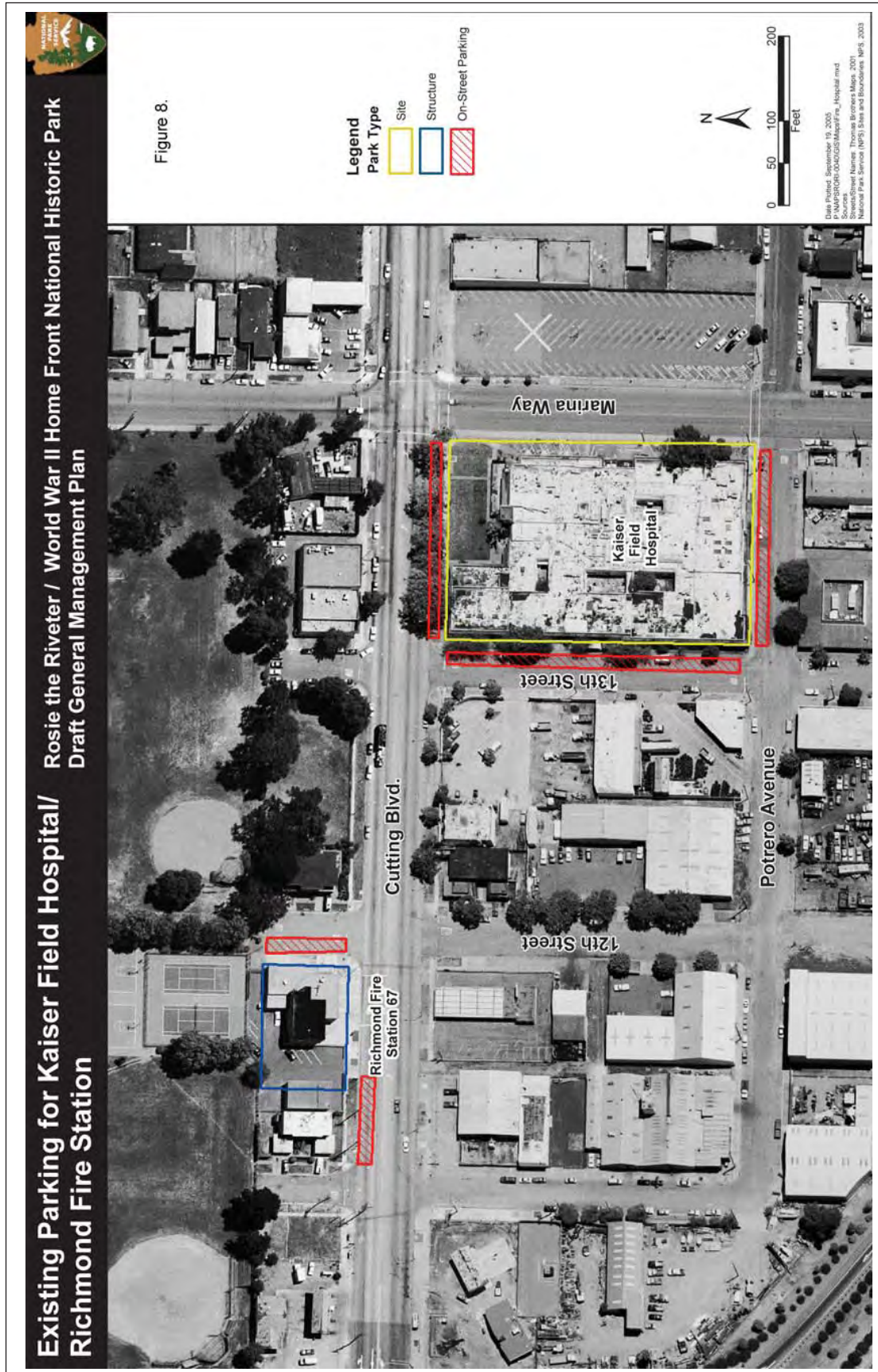


Figure 8: Existing Parking for Kaiser Permanente Hospital



TRANSPORTATION IMPROVEMENT PROGRAM

The Transportation Improvement Program is a comprehensive listing of all Bay Area transportation projects that receive federal funds or that are subject to a federally required action. The Transportation Improvement Program sets forth the Metropolitan Transportation Commission's investment priorities for transit and transit-related improvements; highways and roadways; public transit; and other surface transportation improvements in the nine-county San Francisco Bay Area. Every two years the Metropolitan Transportation Commission (MTC) prepares and adopts the Transportation Improvement Program.

By law, the Transportation Improvement Program must cover at least a three-year period and contain a priority list of projects grouped by year. Further, the Transportation Improvement Program must be financially constrained by year (meaning that the amount of dollars programmed must not exceed the amount of dollars estimated to be available). The Metropolitan Transportation Commission adopted the 2005 Transportation Improvement Program in July 2004, and it covers programming for fiscal years 2004-05 through 2006-07.

Projects in Contra Costa County that are included in the adopted 2005 Transportation Improvement

Program and which could serve the transportation system in the area of the national historical park are provided in table 18.

MEASURE "J," CONTRA COSTA COUNTY

In November 2004, voters in Contra Costa County approved the passage of "Measure J," a continuation of the county's half-cent transportation sales tax for 25 more years. The expenditure plan for Measure J includes potential funding for ferry service from Richmond to San Francisco; the proposed ferry project could directly benefit transportation services for Rosie the Riveter/World War II Home Front National Historical Park.

Other projects in the Measure J expenditure plan that may have indirect benefits for Rosie the Riveter/World War II Home Front National Historical Park include the following:

- ◆ upgrade the Richmond Parkway, including potential intersection and interchange upgrades
- ◆ BART parking, access, and other improvements
- ◆ local streets maintenance and Improvements
- ◆ pedestrian, bicycle and trail facilities
- ◆ additional bus service enhancements for West County

Table 18: Transportation Improvement Program in Contra Costa County within the area of Rosie the Riveter/World War II Home Front National Historical Park

Projects	Sponsor	Status
Local Street Projects		
Richmond Greenway and Bikeway - Phase I	Richmond	Active
North Richmond Main Street Project	Richmond	Active
Dornan Dr/Garrard Blvd Tunnel	Richmond	Active
Richmond Parkway Bay Trail - Phase I	Richmond	Active
Carlson Boulevard Rehabilitation	Richmond	Proposed
Transit Projects		
Richmond Intermodal Station - Phase III	WCCTAC	Active
Richmond Parkway Transit Center Parking	Richmond	Active
Richmond BART Parking Structure	BART	Active
Red Oak Victory Ship Restoration - Phases 1 & II	Richmond	Active
Richmond Intermodal Station Facilities - Phase III	Richmond	Proposed
Pedestrian and Bicycle		
Richmond Transit Village Transit and Pedestrian Improvement	BART	Active

Transportation By Water

CURRENT WATER TRANSIT SERVICE IN THE BAY AREA

The city of San Francisco serves as the terminus for all existing ferry routes in the San Francisco Bay Area with terminals at Pier 41/43 (Fisherman's Wharf) and the San Francisco Ferry Terminal (see appendix E, table 9 for details).

Sixty percent of the total annual riders, four million passengers, are commuters moving between communities in East Bay or Marin County to the employment centers of San Francisco. The remaining 40% of riders, or three million

passengers, use ferries for recreational purposes, traveling primarily to Alcatraz or Angel Island (see table 19).

Currently there are six commuter-based water-transit services throughout the Bay Area:

- ◆ Oakland-Alameda-San Francisco
- ◆ Harbor Bay-San Francisco
- ◆ Vallejo-San Francisco
- ◆ Sausalito-San Francisco
- ◆ Larkspur-San Francisco
- ◆ Tiburon-San Francisco

Table 19: Bay Area Annual Ferry Ridership Trends

YEAR	COMMUTERS	RECREATION RIDERS	TOTAL Recreation Riders and Commuters
1989	2,339,496	N/A	2,339,496
1990	2,607,857	N/A	2,607,857
1991	2,594,347	N/A	2,594,347
1992	2,697,977	N/A	2,697,977
1993	2,737,535	N/A	2,737,535
1994	2,681,422	2,700,000	5,381,422
1995	2,609,163	2,700,000	5,309,163
1996	2,912,487	2,700,000	5,612,487
1997	3,104,405	2,780,000	5,884,405
1998	3,541,422	2,975,800	6,517,222
1999	3,559,222	2,970,200	6,529,422
2000	3,972,216	3,026,000	6,998,216
2001	4,027,712	2,907,678	6,933,712
2002	3,666,091	N/A	3,666,091
2003	3,452,923	N/A	3,452,923
2004	3,448,928	N/A	3,448,928
2005	3,326,869	N/A	3,326,869

Source: San Francisco Bay Area Water Transit Authority.

FUTURE WATER TRANSIT IN THE BAY AREA

The San Francisco Bay Area Water Transit Authority is a regional agency authorized by the State of California to operate a comprehensive San Francisco Bay Area public water transit system. The Water Transit Authority's goal over the next twenty years is to develop a reliable, convenient, flexible, and cost-effective water-transit system that will help reduce vehicle congestion and pollution in the Bay Area. In 2003 the Water Transit Authority's ferry transit plan was approved by state statute and if implemented, estimates suggest that ridership could grow to approximately 12 million riders annually by 2025.

The primary objectives of the San Francisco Bay Area Water Transit Authority planning efforts include establishing new ferry routes and improving service on the existing ferry systems.

Potential new routes that the Water Transit Authority is considering include the following:

- Berkeley-San Francisco-Mission Bay
- **Richmond-San Francisco**
- Treasure Island-San Francisco
- Antioch/Pittsburgh-Martinez-San Francisco
- Hercules/Rodeo-San Francisco
- South San Francisco-San Francisco
- Redwood City-San Francisco
- Port Sonoma-San Francisco (further study)
- East Bay-Peninsula (further study)
- Hunters Point (further study)

In addition, Water Transit Authority goals include

- ◆ placing in service 31 new passenger ferries over the next ten years
- ◆ acquiring clean emission vessels
- ◆ developing convenient landside connections to terminals
- ◆ expanding facilities at the San Francisco Ferry Building
- ◆ constructing two spare vessels
- ◆ partnering with Redwood City, Treasure Island, Antioch, Martinez, Hercules and Moffett Field to continue planning their respective waterfronts
- ◆ pursuing funding from federal and local sources

REGIONAL EFFORTS TO FUND WATER TRANSIT

In 1999, the San Francisco Bay Area Water Transit Authority was created by the California Legislature to produce a 10-year plan for ferries and landside connections in the Bay Area. In August 2003, the state of California approved the Water Transit Authority's plan to operate a comprehensive regional ferry system in the San Francisco Bay Area. The primary funding mechanism to implement that plan is a sales tax approved by Bay Area voters in March 2004. Referred to as Regional Measure 2 (RM2), the sales tax raised the toll on the seven bridges in the San Francisco Bay Area by \$1.00. Passage of RM2 secures money for ferry projects along with more than 30 other transportation projects around the region. The tax will help fund new capital for ferry routes between San Francisco, Berkeley, and South San Francisco. In addition, RM2 will be used to acquire more ferries for the existing Alameda/Oakland line, subsidize operations for the Vallejo route, and add more berths at San Francisco's Downtown Ferry Terminal to accommodate the expected growth in ferry traffic. Up to \$1 million in funding for planning will also be made available to study the viability of new service between Richmond and San Francisco.

Although money from RM2 is a major windfall for water-based transportation in the Bay Area, it does not fund the entire Water Transit Authority ferry plan. Therefore, the Water Transit Authority is working with San Mateo and Contra Costa counties to secure additional funds. On a national level the Water Transit Authority is working with other ferry systems to increase the Federal Ferry Boat Discretionary Fund. Senator Patty Murray (D-WA) and California Senators Feinstein and Boxer led an amendment approved by the U.S. Senate to increase the Federal Ferry Boat Discretionary Program from \$38 million to \$125 million per year in the Transportation Reauthorization Bill.

LOCAL EFFORTS TO FUND WATER TRANSIT

The San Francisco Bay Area Water Transit Authority has recommended upgrading old boats to a faster, more competitive boat for the Richmond ferry

service as well as developing an integrated marketing campaign and convenient landside connection to the Richmond Port. In support of this plan, the Richmond City Council passed a resolution in 2004 requesting that a portion of the Contra Costa County Transportation Authority sales tax reauthorization be reserved for Richmond ferries. Referred to as “Measure J,” the measure was approved by voters in November 2004 by a two-thirds margin and extends the current half-cent sales tax for 25 years. Of the estimated \$2 billion raised through the sales tax, the package includes \$45 million for ferry service in Contra Costa County and includes language that would allow funding for the Richmond Parkway (\$16 million) to be re-allocated to a ferry in the future if the City of Richmond requests it. Money earmarked for ferry service could go to either the City of Richmond or City of Hercules proposed service.

For a number of years, Contra Costa County residents have been pushing local authorities to provide new ferry service from Richmond, Hercules, Martinez, and Antioch. In response, a group of prominent county policy makers has formed a group, Water Transit Advocates for Contra Costa County, in an effort to increase regional support for ferries and to identify multiple funding sources. The cities of Richmond and Hercules expect to include \$57 million for ferries in the Contra Costa sales tax expenditure plan and the City of Martinez expects to set aside approximately \$8.5 million for ferries from the same source.

WATER TRANSIT FACILITIES IN RICHMOND

The 1999-2000 ferry service between Richmond and San Francisco docked at the Richmond Ferry Terminal at Sheridan Observation Point Park. The Ferry Terminal, adjacent to the Ford Assembly Building, consisted of little more than an open air shelter for waiting passengers and approximately 200 automobile parking spaces. For future high-quality ferry service to be a success in Richmond, city officials and the Water Transit Authority believe a new terminal must be constructed. Some funds for terminal construction are budgeted within the Contra Costa County Measure J sales tax but not enough to cover the \$6 million the Water Transit

Authority estimates would be necessary for a new terminal at Marina Bay in Richmond.

The potential to develop water transit access to the Rosie the Riveter/World War II Home Front National Historical Park could result in easy, affordable, and enjoyable visitor access to the park while serving regional transportation goals and supporting the residents of Richmond, California.

With over seven million ferry passengers annually, the San Francisco Bay Area ranks as the third largest market in the United States for water transit, and continues its long history of moving its population via ferries. Ferry ridership in the San Francisco Bay Area has grown steadily over the past 20 years and has experienced growth of approximately 1.5 million riders annually since 1994. While this ridership is significant enough to influence regional transportation trends, current ridership is still far less than historic numbers in the Bay Area which approached 50 million riders annually prior to the opening of the Bay Bridge in 1936. The fact that San Francisco’s population in the 1930s was only a quarter of what it was in 2004 highlights the fact that the region’s population has moved away from water transit over the years in favor of the automobile.

Among San Francisco Bay Area communities, the city of Richmond, California presents a unique mix of development, economic, and water transportation opportunities. Less than eight nautical miles north of San Francisco, Richmond is located at the western extreme of Contra Costa County, on a cape separating central San Francisco Bay and San Pablo Bay. While construction of bridges and development of mass transit systems such as Bay Area Rapid Transit (BART) have reduced the use of water transit over the years, ferry service has been established in Richmond several times in the past. The 1998 Loma Prieta Earthquake presented a crucial need for ferry service while the San Francisco-Oakland Bay Bridge was under repair, leading to several start-ups in the East Bay. Richmond was among the cities served by emergency ferry services following that earthquake and experienced up to 993 riders per day during the short operation of those services. However, with the restoration of the Bay Bridge, ridership and the viability of the Richmond ferry service quickly declined.

Between 1999 and 2000, ferry service to Richmond was provided once again by the Red & White Fleet, a San Francisco excursion and charter operator. That service used ferry terminals at Sheridan Observation Point Park in Richmond and the San Francisco Terminal Building. However, because fare revenue did not sufficiently cover operating costs, the operator was allowed to terminate the service under terms of the agreement with the City of Richmond.

According to the San Francisco Bay Area Water Transit Authority (Water Transit Authority), the Richmond waterfront is still ideally suited for future water transit to San Francisco and to outlying recreation venues. Based on its population, its development potential along the waterfront, and its location, Richmond has the potential to draw significant ridership in the future. The Water Transit Authority estimates that as many as 1,850 daily passengers would use a commuter ferry in year 2025.

However, factors such as the redevelopment of the Ford Assembly Building, development of brownfields in the area, and development of the Rosie the Riveter/World War II Home Front National Historical Park may serve to increase those ridership estimates.

In 2001 the consulting firm Booz-Allen & Hamilton Inc. produced *An Assessment of the Business Case for Water Transit between Richmond and San Francisco* for the Richmond Redevelopment Agency. That study looked into the many factors which would potentially affect the development of new ferry service in Richmond. Taking those many factors into account, the study compared three different service scenarios ranging from 12 vessel trips per day to 80 trips per day. As presented in table 20, the ridership forecast for those service scenarios ranged from 500 riders per day to 3,500 riders per day.

Table 20: Potential Richmond, California Ferry Service Scenarios

ATTRIBUTE	LOW SCENARIO (MTC 1992 FERRY PLAN)	MID-RANGE SCENARIO	HIGH SCENARIO (WATER TRANSIT TASK FORCE)
Daily one-way vessel trips (both directions)	12	40	80
Number of vessels	1	2	5
Travel speed	25-35 knots	25-35 knots	25-35 knots
Travel time	25 minutes	25 minutes	25 minutes
Headways			
Peak period	60	30	15
Off peak	–	60	30
	500	1400	3500
Projected parking need	175	490	1200
Capital Costs =			
Vessels	\$3.50 Million	\$7.00 Million	\$17.50 Million
+ Terminals/parking (surface)	<u>\$2.85 Million</u>	<u>\$4.74 Million</u>	<u>\$9.00 Million</u>
= Total capital costs	\$6.35 Million	\$11.74 Million	\$26.50 Million
Operating Costs =			
Annual operating cost	\$1.02 Million	\$2.04 Million	\$5.11 Million
– Annual operating revenue	<u>\$0.53 Million</u>	<u>\$1.26 Million</u>	<u>\$3.15 Million</u>
= Annual operating subsidy	\$0.49 Million	\$0.78 Million	\$1.96 Million
20-year operating subsidy	\$9.80 Million	\$15.60 Million	\$39.20 Million
Average one-way fare (including discounts)	\$3.50	\$3.00	\$3.00
Projected farebox recovery *	51%	62%	62%

*Based on MTC ridership forecasts for the low and high service scenarios