

Richmond
General Plan Update
Draft Environmental Impact Report

February 2011

Richmond General Plan Draft Environmental Impact Report

Prepared for:

City of Richmond
Development Services Department

Prepared by:



an **Atkins** company

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

RICHMOND GENERAL PLAN DRAFT EIR

INTRODUCTION

The Richmond General Plan Draft Environmental Impact Report (EIR) has been prepared to assess the potential environmental impacts associated with implementation of the proposed development as described in the Richmond General Plan. The Richmond General Plan (proposed project) expresses the community's comprehensive vision and broad goals for future development and aims to:

Present strategies and specific implementing actions to achieve the community's overarching vision and long-term goals;

Establish a basis for determining whether specific development proposals and public projects align with the community's vision and long-term goals;

Empower City departments, other public agencies, and private developers to design projects that will enhance community character and sustain and improve quality of life in accordance with particular values and principles defined in the General Plan;

Provide a basis for developing more detailed plans and implementing programs such as the Zoning Ordinance, capital improvement plans, facilities plans, community needs assessments, and specific plans; and

Guide public agencies that work with the City, such as school districts, regional boards, or state agencies, as well as private investors, as they contemplate future actions in the area.

The proposed General Plan would guide development for the entire City, with the majority of development planned within 16 proposed change areas. The General Plan is anticipated to guide development within the City for approximately 20 years from certification of the EIR.

As required under the California Environmental Quality Act (CEQA), Public Resources Code 21002.1(a), an EIR is intended to "identify the significant effects on the environment of a project, identify alternatives to the project, and indicate the manner in which those significant effects can be mitigated or avoided." The EIR evaluates and describes potentially significant environmental program-level and cumulative impacts, identifies policies, implementation actions, and mitigation measures to avoid or reduce the significance of potential impacts, and evaluates the comparative effects of potentially feasible alternatives to the proposed General Plan. This EIR is intended to be an objective document to be used by the lead agency, responsible agencies, and members of the public as a part of their evaluation of the proposed project. The EIR does not make a determination regarding the merits of the proposed project, but instead serves as an informational tool to be used by decision makers at their discretion.

LOCATION AND BACKGROUND

The City of Richmond is located in the nine-county San Francisco Bay Area in west Contra Costa County (see Figure 2-1: Project Location). Major nearby Bay Area cities and employment centers

include the City of Oakland, 9 miles to the south; the City of San Francisco, 17 miles west; and the City of San Jose, 50 miles south. Richmond's land mass forms a promontory that stretches into the San Francisco and San Pablo bays. This shoreline defines a significant portion of the City's borders to the north, west, and south. Neighboring San Francisco and Marin counties provide attractive backdrops from Richmond across the Bay. The cities of El Cerrito, San Pablo, and Pinole, as well as unincorporated areas of the County border Richmond to the north and east; and the Berkeley Hills, San Pablo, and Sobrante ridges frame the eastern edge of the City.

Regional access to the project site is provided from Interstate 80 (I-80) and Interstate 580 (I-580). Local access to the project site is provided by San Pablo Avenue and Cutting Boulevard, which serve as the primary corridor entrances.

Richmond is addressing anticipated growth demands through infill development in Downtown, along commercial corridors, and on underutilized brownfield parcels within the City's industrial areas. A preliminary assessment suggests that there are more than 1,200 acres of vacant and underutilized land in Richmond that may be available for infill development.

The proposed General Plan projects development in Richmond within stable areas, conservation areas, and 16 "change areas". The 16 change areas are as follows:

Change Area 1: Downtown/Macdonald Avenue

Change Area 2: Hilltop

Change Area 3: Ford Peninsula in Marina Bay

Change Area 4: San Pablo Avenue Corridor

Change Area 5: 23rd Street Corridor

Change Area 6: Marina Way Corridor

Change Area 7: Cutting Boulevard Corridor

Change Area 8: Harbour Way Corridor

Change Area 9: Ohio Avenue Corridor

Change Area 10: Carlson Boulevard Corridor

Change Area 11: Northern Parkway

Change Area 12: Northshore

Change Area 13: San Pablo Peninsula Area

Change Area 14: Port Priority Use Area

Change Area 15: Regatta/Marina Bay

Change Area 16: Southern Gateway

While the policies and guiding principles of the General Plan may lead to environmental impacts in all areas of the City, the change areas would experience the most drastic change in land uses and would be the focus of development and redevelopment efforts. Land uses in the vast majority of the

City are expected to remain stable. Many of the stable areas of the City are residential neighborhoods. However, areas that are not designated for a change in land use may benefit from improvements, such as community facility and infrastructure renovations or upgrades and the inclusion of neighborhood-serving retail, where appropriate.

Areas of the City with significant natural habitat, open space, parks and recreational resources, and agricultural lands that have been identified for conservation, preservation, and environmental rehabilitation are designated as priority conservation areas. Resources in these areas are especially valued by the community and protected by the City and other public and regulatory agencies.

SCOPE OF THE EIR

The scope of this EIR includes environmental issues determined to be potentially significant as determined through preparation of the NOP, responses to the NOP, a scoping meeting, and discussions among the public, consulting staff, and the City. This process identified the potential for significant impacts associated with the construction and/or operation of the proposed project in the following issue areas:

- Land Use Consistency and Compatibility
- Demographics
- Air Quality
- Biological Resources
- Climate Change
- Cultural Resources
- Geology, Soils, and Minerals
- Hazards, Public Safety, and Flooding
- Hydrology and Water Quality
- Noise
- Parks and Recreation
- Public Services
- Public Utilities
- Transportation and Circulation
- Visual Resources

Chapter 3 of this EIR evaluates the direct, indirect, and cumulative impacts resulting from construction and operation of the proposed project in these issue areas using information available at the time of the NOP, and in accordance with the provisions of CEQA.

SECTION FORMAT

Chapter 3 is divided into technical sections that present for each environmental issue area the environmental setting, regulatory setting, standards of significance, and impacts on the environment, and, where available, feasible mitigation measures for significant impacts. An analysis of project-specific and cumulative impacts for each issue area is included.

Each technical environmental section contains three main subsections: environmental setting, regulatory context, and impacts and mitigation measures. An explanation of each impact is followed by an analysis of its significance. The subsection concludes with a statement that the impact, following implementation of the mitigation measure(s) and/or the proposed policies and regulations, would be reduced to a less-than-significant level or would remain significant and unavoidable.

A “significant effect” is defined by section 15382 of the CEQA Guidelines as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment [but] may be considered in determining whether the physical change is significant.”

The analysis of environmental impacts considers both the construction and operational phases associated with implementation of the proposed project. As required by section 15126.2(a) of the CEQA Guidelines, direct, indirect, short-term, long-term, on-site, and/or off-site impacts are addressed, as appropriate, for the environmental issue area being analyzed. This EIR assumes compliance with applicable laws and other regulations.

Mitigation measures, if available, pertinent to each individual impact appear after the impact discussion section. The reduction of the impacts and the potential reduction in significance provided by identified mitigation measures are also evaluated. An example of the format is shown below.

Impact 3.X-1

General discussion of impact for the total project in paragraph form. Statement of the *level of significance* before mitigation in italics.

Mitigation Measures

Statement of ability of mitigation measure to reduce impact to a **less-than-significant level** in bold and italics.

3.X-1 a) *Recommended mitigation measure in italics and numbered in consecutive order.*

Each section also includes Standards of Significance, which identify the City of Richmond standards used to evaluate impacts of the analyzed project. The Standards of Significance used for this project were derived from the thresholds provided in CEQA Guidelines Appendix G. Where

applicable, local responsible agency thresholds were incorporated into the Standards of Significance.

Cumulative Impacts

An analysis of cumulative impacts follows the project-specific impacts and mitigation measures evaluation in the each section. As defined in CEQA Guidelines section 15355, a cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other past, present and reasonably foreseeable projects causing related impacts. Due to the changing nature of the surrounding development context, this EIR has provided a “worst-case” scenario level of analysis in order to ensure that all potential impacts are accounted for. Some of the projects that are incorporated into the cumulative context analysis may have changed substantially since the release of the NOP; however, it is the responsibility of this EIR to remain conservative in its assumptions. Due to the nature of the proposed General Plan, which would be developed over the next 20 years, it is not realistic in some cases to assume development of the Plan absent other cumulative growth. In such cases, the project-level analysis in the EIR represents a cumulative scenario. Where that is the case, that is described for the cumulative analysis. In each section, there is an introductory statement that defines the cumulative analysis methodology and the cumulative context being analyzed for the respective section (e.g., Contra Costa County projections, the Bay Area Air Quality Management District Basin). In some instances, an impact may be considered less than significant as a result of the anticipated development within the General Plan horizon as evaluated in this EIR, but would be considered potentially significant in combination with development of the surrounding area. In some instances, a potentially significant impact may result on a project level, but would not result in a cumulatively considerable impact.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed project on various aspects of the environment are discussed in detail in Chapter 3 of this EIR. Project-specific and cumulative impacts that cannot be avoided if the project is approved as proposed include:

Project-Specific Significant and Unavoidable Impacts

Project-specific significant and unavoidable impacts identified for the proposed General Plan include:

Air Quality

- 3.3-1 Implementation of the proposed General Plan could provide new sources of regional air emissions that would conflict with or obstruct implementation of the Clean Air Plan.
- 3.3-2 Implementation of the proposed General Plan would result in operational emissions that could contribute substantially to an existing or projected air quality violation.

Cultural Resources

- 3.5-1 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines.

Climate Change

- 3.6-1 Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment.

Noise

- 3.10-1 Construction activities associated with the future land use changes under the proposed General Plan could generate noise levels that exceed the noise standards established by the City of Richmond Municipal Code and would expose sensitive receptors to substantial temporary or periodic increases in ambient noise levels.
- 3.10-2 Construction of future new land uses under the proposed General Plan could generate or expose persons or structures to excessive groundborne vibration.
- 3.10-3 Implementation of the proposed General Plan could expose sensitive receptors to noise levels in excess of the noise standards established by the City of Richmond.
- 3.10-5 Operation of new land uses under the proposed General Plan would generate increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels in the project vicinity.

Public Utilities

- 3.13-3 Implementation of the General Plan Update would require the construction or expansion of wastewater treatment facilities or conveyance systems that could cause significant environmental effects.

Transportation and Circulation

- 3.13-1 The proposed General Plan may result in traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards.
- 3.13-3 Implementation of the proposed General Plan would produce higher demand for transit service, potentially exceeding the capacity of transit service providers.
- 3.13-6 The proposed General Plan would increase congestion and reduce travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials).

Visual Resources

3.15-1 Development activities associated with the proposed General Plan could have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of the site and its surroundings.

3.15-2 The development of the proposed General Plan could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Significant and Unavoidable Cumulative Impacts

Cumulative significant and unavoidable impacts identified for the proposed General Plan include:

Air Quality

The proposed General Plan is not currently consistent with the 2009 Clean Air Plan (CAP) with respect to population increases; therefore, the proposed General Plan's contribution to cumulative effects on the CAP would be significant.

The emissions associated with vehicle miles traveled are higher than the rate of increase in population within the City; this impact on cumulative conditions would be considered significant.

Implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants (ozone, carbon monoxide, nitrogen dioxide, and inhalable particulates) for which the region is in nonattainment under an applicable federal or state ambient air quality standard.

Cultural Resources

The project's incremental contribution to the cumulative loss of cultural resources would be potentially cumulatively considerable, and thus potentially significant.

The proposed General Plan has the potential to adversely affect significant paleontological resources that are non-renewable members of finite classes. Consequently, the project's incremental contribution to these cumulative effects would itself be potentially cumulatively considerable, and therefore potentially significant.

Development in the City and the region could result in the destruction of historic resources. This would be a significant cumulative impact; the proposed General Plan's contribution to this impact would be considerable, and therefore significant.

Climate Change

Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment.

Noise

The construction of future development allowed under the proposed General Plan could occur concurrently and adjacent to similar development/construction within 1,000 feet of City limits; therefore, cumulative impacts would be significant.

Vibration from construction of future new land uses within the City and immediately surrounding areas could potentially combine with construction vibration of the proposed project to result in a potentially significant cumulative impact.

Rail operations could expose sensitive receptors under the cumulative condition to noise levels above established standards and some of the exposure to rail noise would be attributable to the proposed General Plan. This impact would be significant.

The contribution of the proposed project to future roadway noise levels would be considered cumulatively considerable with respect to the projected exceedance of identified thresholds of significance.

Public Utilities

The growth associated with the proposed General Plan would be the major contributor to future flows to the wastewater treatment facilities, resulting in the need for expansion, which would be a significant cumulative impact.

Solid waste generation from approved and foreseeable cumulative projects in the area would exacerbate regional landfill capacity issues in the future. The proposed General Plan's contribution would be cumulatively considerable and this impact would be significant.

Transportation and Circulation

The proposed General Plan would contribute to traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards.

Implementation of the proposed General Plan would contribute to higher demand for transit service, potentially exceeding the capacity of transit service providers.

The proposed General Plan would contribute to increased congestion and reduced travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials).

Visual Resources

The development associated with the proposed General Plan, in combination with cumulative development could result in the obstruction of existing scenic views and the adverse alteration of the existing visual character. The proposed General Plan would generate a considerable contribution to this impact, which would be significant.

The development associated with the General Plan would generate buildings, vehicles, and structure that would emit lighting and glare impacts onto local receptors within the cumulative context. This would be a significant cumulative impact with considerable contribution from the proposed General Plan.

ALTERNATIVES TO THE PROPOSED PROJECT

Chapter 5 of the EIR analyzes the following alternatives to the proposed project:

No Project/1994 General Plan Alternative – Under this alternative, development for the proposed General Plan would not occur. Development would be guided by continued implementation of the existing General Plan.

Alternative 1: This alternative assumes a lower intensity of development in the City with a lower share of the County's growth, 8.39 percent of the population growth in Contra Costa County. Between 1980 and 2005, Richmond's share of regional population growth was 8.39 percent, so this alternative represents no change from the past growth trend.

Alternative 2: This alternative assumes that Richmond will capture 10.19 percent of population growth for the County over the next 20 years. This growth rate is higher than the historic growth rate in the region (8.39 percent) and is a moderate growth rate.

Environmentally Superior Alternative

Under CEQA, an EIR is required to identify the environmentally superior alternative (see CEQA Guidelines, section 15126 (e)). If the environmentally superior alternative to a project is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines, section 15126.6 (e) (2)).

Significant impacts identified for the proposed General Plan would be related to air quality, cultural resources, climate change, noise, wastewater, solid waste, traffic, and visual resources. The No Project/1994 General Plan Alternative would be consistent with the 2009 Clean Air Plan, but without Mitigation Measure 3.9-4, impacts related to runoff under the No Project/ 1994 General Plan Alternative would be greater than those of the proposed General Plan, and impacts could be *significant*. Alternatives 1 and 2 would result in reduced environmental impacts due to reduced development intensity, but would not reduce significant impacts to less than significant levels.

Transportation and air quality impacts are directly related to population and reductions in population, as well as improving alternative travel modes, which would reduce these impacts. However, impacts related to cultural resources would occur if historic structures or if currently undiscovered remains or artifacts are encountered during construction. Consequently, any alternative that includes development could potentially impact these resources. Similarly, the wastewater treatment plant currently experiences flows beyond capacity during wet weather, so any alternative that would generate wastewater flows would result in an impact. The only alternative, therefore, that could eliminate impacts on cultural resources and wastewater would be the No Development Alternative. However, the No Project/No Development Alternative would halt all development within the City, regardless of the status of entitlements. By stopping all future development, this alternative would eliminate growth in traffic impacts, greenhouse gas (GHG) emissions, demand for public infrastructure and services, and impacts on environmental resources, such as air quality, noise, biological, and cultural resources. However, while a No Development Alternative could be an option

for an individual development project, eliminating all future development in the entire City would not be a realistic alternative.

Although the other alternatives would reduce some of the impacts compared to the proposed General Plan, none would eliminate a significant impact. Infrastructure improvements that could result in physical effects would be required for any of these alternatives. The proposed General Plan was found through the planning process to be most consistent with the objectives of the plan and would serve the greatest population, while still potentially resulting in significant effects on disclosed above. Therefore, the proposed General Plan would be the environmentally superior alternative.

SUMMARY OF IMPACTS

Table ES-1 provides a complete list of all impacts and mitigation measures for the topics evaluated in this EIR. For each impact, the table presents the impact statement, significance of the impact before mitigation, applicable mitigation measures, and the level of significance of the impact after implementation of the mitigation measures. Only those cumulative impacts noted as significant and unavoidable are included in Table ES-1 for brevity. The reader is referred to the main EIR text for a complete discussion of both program-level and cumulative impacts.

Environmental Impacts and Mitigation

Table ES-1 shows the impacts on the proposed General Plan and the comparative impacts of the alternatives to the Plan. These impacts are discussed in Chapter 3, Environmental Analysis. In the course of drafting the EIR for this project, it was determined that other impacts could be reduced to a less-than-significant level with implementation of the proposed mitigation measures described herein.

Under CEQA, a significant effect on the environment is defined as a substantially or potentially substantial adverse change in any of the physical conditions within the area affected by the project, including, land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (CEQA Guidelines section 15382). Implementation of the proposed project would result in significant and unavoidable impacts on some of these resources. These impacts are analyzed in Chapter 3 and summarized in Table ES-2.

TABLE ES-1

**IMPACTS OF THE PROPOSED GENERAL PLAN AND
COMPARATIVE IMPACTS OF THE PROJECT ALTERNATIVES**

Issue Area	Proposed Project	No Project/1994 General Plan	Alternative 1	Alternative 2
Air Quality	SU	Reduced	Reduced	Reduced
Biological Resources	LS	Equal	Equal	Equal
Climate Change	SU	Reduced	Reduced	Reduced
Cultural Resources	SU	Equal	Equal	Equal
Geology, Soils, and Mineral Resources	LS	Equal	Equal	Equal
Hazards and Hazardous Materials	LS	Equal	Equal	Equal
Hydrology and Water Quality	LS	Greater ¹	Equal	Equal
Noise	SU	Reduced	Reduced	Reduced
Parks and Open Space	LS	Equal	Equal	Equal
Public Services	LS	Equal	Equal	Equal
Public Utilities	SU	Reduced	Reduced	Reduced
Transportation and Circulation	SU	Reduced	Reduced	Reduced
Visual Resources	SU	Reduced	Equal	Equal

Notes:

1. One threshold was increased to a significant level from that of the proposed General Plan.
 SU = Significant and Unavoidable – if any impact was identified as significant and unavoidable in the technical analysis.
 LS = Less than Significant – if all impacts were identified as less than significant in the technical analysis.
 NI = No impact would occur when compared to the proposed project.
 Equal = Level of significance is equal or similar to the proposed project.
 Greater = Level of significance is greater than the proposed project.
 Reduced = Level of significance is reduced compared to the proposed project, but not necessarily to a less-than-significant level.
 Source: PBS&J, 2009.

TABLE ES-2

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		d. The City of Richmond shall consult with project proponents during the pre-application review process to ensure that uses with a high level of operational emissions are appropriately designed and sited to avoid impacts on neighboring uses and regional air quality.	
3.3-3 Operational activities under the proposed General Plan would not expose sensitive receptors to substantial pollutant concentrations in excess of the established thresholds. This impact would be considered less-than-significant.	LS	3.3-3 a. The City of Richmond shall implement special overlay zones around all planned sources of TACs to minimize the potential impacts to sensitive receptors. Land Use diagrams within the adopted General Plan will indicate the Special Overlay Zones which shall include an overlay zone of at least 500 feet on either side of all freeways and high volume roadways (100,000 vehicles per day or more). b. The City of Richmond shall require all new industrial and commercial development projects that have the potential to emit TACs to be located an adequate distance from existing and proposed development used by sensitive receptors—including residential, schools, day care facilities, congregate care facilities, hospitals, or other places of long-term residency. The determination of development projects that have the potential for TAC emissions and adequate distances from sensitive receptors as identified in CARB’s “Air Quality and Land Use Handbook—A Community Health Perspective (April 2005; CARB Guidance) are as follows: <ul style="list-style-type: none"> • Proposed dry cleaners and film processing services that use Perchloroethylene shall be sited at least 500 feet from sensitive land uses. • Proposed auto body repair services shall be sited at least 500 feet from sensitive land uses. 	LS

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SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<ul style="list-style-type: none"> • Proposed gasoline dispensing stations with an annual throughput of less than 3.6 million gallons shall be sited at least 50 feet from sensitive land uses. Proposed gasoline dispensing stations with an annual throughput at or above 3.6 million gallons shall be sited at least 300 feet from sensitive land uses. • Other proposed sources of TACs including furniture manufacturing and repair services that use Methylene Chloride or other solvents identified as a TAC shall be sited at least 300 feet from sensitive land uses. • Proposed distribution centers with more than 100 trucks per day; more than 40 trucks with operating transport refrigeration units per day; or where transport refrigeration unit operations cumulatively exceed 300 hours per week should not be sited within 1,000 feet of sensitive land uses. • Proposed rail yards for major service and maintenance operations should not be sited within 1,000 feet of sensitive land uses. • Proposed chrome platers should not be sited within 1,000 feet of new sensitive land uses. • Proposed port developments should not site the heavily impacted areas immediately upwind of sensitive land uses. Siting of port developments should be done in consultation with the BAAQMD. • Proposed petroleum refineries should not site the heavily impacted areas immediately upwind of sensitive land uses. Siting of refineries should be done in consultation with the BAAQMD. 	

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SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<p>c. Proposed sensitive land uses including schools, daycare facilities, congregate care facilities, hospitals, or other places of long term residency for people shall be sited:</p> <ul style="list-style-type: none"> • At least 500 feet from dry cleaners and film processing services that use Perchloroethylene. • A least 500 feet from auto body repair services. • At least 50 feet from existing gasoline dispensing stations with an annual throughput of less than 3.6 million gallons and 300 feet from existing gasoline dispensing stations with an annual throughput at or above 3.6 million gallons. • At least 300 feet from existing land uses that use Methylene Chloride or other solvents identified as a TAC, including furniture manufacturing and repair services. • At least 1,000 feet from distribution centers with more than 100 trucks per day; more than 40 trucks with operating transport refrigeration units per day; or where transport refrigeration unit operations cumulatively exceed 300 hours per week. In addition sensitive land uses should not be sited near facility entry and exit points. • At least 1,000 feet from major service and maintenance rail yards. • At least 1,000 feet from chrome plating facilities. • Avoid siting sensitive land uses immediately downwind from the most heavily impacted areas of existing port facilities. • Avoid siting sensitive land uses immediately downwind from petroleum refineries. 	

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SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		d. The City of Richmond shall consult with the BAAQMD to identify TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.	
3.3-4 Implementation of the proposed General Plan would not create objectionable odors that would affect a substantial number of people. This is a <i>less-than-significant</i> impact.	LS	3.3-4 None required.	LS
Cumulative Impacts			
The proposed General Plan is not currently consistent with the 2009 Clean Air Plan (CAP) with respect to population increases. Implementation of Mitigation Measures 3.3-1 through 3.3-4 would reduce impacts; however, it is not certain the impacts would be reduced to a less-than-significant level. Therefore, the proposed General Plan's contribution to cumulative effects on the CAP would be significant.			
The emissions associated with vehicle miles traveled are higher than the rate of increase in population within the City; this impact on cumulative conditions would be considered significant.			
Though implementation of Mitigation Measures 3.3-2 and 3.3-3 has the potential to reduce the emission of criteria pollutants for which the basin is non-attainment, it is not certain that the measures would reduce impacts to less than significant. Therefore, implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable federal or state ambient air quality standard.			
3.4 Biological Resources			
3.4-1 The proposed General Plan would not have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. This is considered a <i>less-than-significant</i> impact.	LS	3.4-1 None required.	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.4-2 The proposed General Plan would not interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. This is considered a <i>less-than-significant impact</i> .	LS	3.4-2 None required.	LS
3.4-3 The proposed General Plan would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. This is considered a <i>less-than-significant impact</i> .	LS	3.4-3 None required.	LS
3.4-4 The proposed General Plan would not have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. This is considered a <i>less-than-significant impact</i> .	LS	3.4-4 None required.	LS
3.4-5 The proposed General Plan would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. This is considered a <i>less-than-significant impact</i> .	LS	3.4-5 None required.	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.4-6 The proposed General Plan would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan since none exist. As a result, the proposed project would have <i>no impacts</i> on adopted conservation plans.	NI	3.4-6 None required.	NI
3.5 Cultural Resources			
3.5-1 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines. Because mitigation is not certain to reduce impacts to a less-than-significant level, this would be considered a <i>significant and unavoidable impact</i> .	PS	3.5-1 Future projects shall implement the City's Historic Structures Code to minimize impacts on historical resources by requiring thorough scrutiny before any resource may be demolished and ensuring that alteration conforms to the Secretary of the Interior's Standards for the Treatment of Historic Properties.	SU
3.5-2 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of an archaeological resource as defined in section 15064.5 of the CEQA Guidelines or disturb human remains, including those interred outside of formal cemeteries. With the implementation of mitigation measures, this is considered a <i>less-than-significant impact</i> .	PS	3.5-2 a. The City shall require that impacts on unique archaeological resources be mitigated to a less-than-significant level through methods identified in Public Resources section 21083.2, including planning construction to avoid archaeological sites, deeding archaeological sites into permanent conservation easements, capping or covering archaeological sites with a layer of soil before building on the sites, or planning parks, greenspace, or other open space to incorporate archaeological sites.	LS

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		b. The City shall require new development within the City to evaluate the potential for impacts on human remains. The City shall require that the treatment of human remains and of associated or unassociated funerary objects discovered during any soils disturbing activity shall comply with applicable state and federal laws, including notification of the County Coroner and, in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC).	
3.5-3 Development activities associated with the proposed Richmond General Plan Update could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. With the implementation of mitigation measures, this is considered a less-than-significant impact.	PS	3.5-3 The City shall require new development within areas of high sensitivity paleontological resources to evaluate the potential for impacts on significant paleontological resources. The City shall require that impacts on significant paleontological resources be mitigated to a less-than-significant level through data recovery or other methods determined adequate by a professional paleontologist.	LS
Cumulative Impacts			
The project's incremental contribution to the cumulative loss of cultural resources would be potentially cumulatively considerable, and thus potentially significant.			
The proposed General Plan has the potential to adversely affect significant paleontological resources that are non-renewable members of finite classes. Consequently, the project's incremental contribution to these cumulative effects would itself be potentially cumulatively considerable, and therefore potentially significant.			
Development in the City and the region could result in the destruction of historic resources. This would be a significant cumulative impact; the proposed General Plan's contribution to this impact would be considerable, and therefore significant.			

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3.6 Climate Change			
<p>3.6-1 Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment. Implementation of BAAQMD BMPs would ensure that construction emissions of GHGs would be less than significant. However, even with the implementation of all feasible mitigation measures, the impacts of operational emissions would remain uncertain and, therefore, be considered <i>significant and unavoidable</i>.</p>	S	<p>3.6-1 a. All construction projects shall incorporate the most recent Best Management Practices for Greenhouse Gas Emissions as indicated by the BAAQMD.</p> <p>b. All new development and all retrofits of single-family developments, multi-family developments of over 10 units, and all commercial/industrial remodels of over 10,000 square feet shall be required to exceed Title 24 standards by 20 percent by 2020 and 30 percent by 2030. This mitigation measure enhances General Plan Action EC3.C. Measures to reduce emissions can include, but are not limited to:</p> <ul style="list-style-type: none"> • Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.; • Install solar water heaters; • Install top quality windows and insulation; • Install energy efficient lighting; • Optimize conditions for natural heating, cooling and lighting by building siting and orientation; • Use features that incorporate natural ventilation; • Install light-colored "cool" pavements, and strategically located shade trees along all bicycle and pedestrian routes; and • Incorporate skylights, reflective surfaces, and natural shading in buildings design and layouts; • Replace inefficient air conditioning and heating units with new energy efficient models; • Replace older, inefficient appliances with new energy efficient models; • Replace old windows and insulation with top-quality windows and insulation; 	SU

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<ul style="list-style-type: none"> • Replace inefficient and incandescent lighting with energy efficient lighting; and • Weatherize existing buildings to increase energy efficiency. c. Require all new City-owned and operated facilities and 50 percent of all new development to generate at least 10 percent of their energy use from renewable sources. Enhances General Plan Action EC3.B. d. All new commercial and multi-family developments installing boilers shall be required to install energy efficient boilers such that they achieve a minimum 4.5 percent reduction in energy usage. The same reductions shall be required of all remodeled multi-family developments of over 10 units and all commercial/industrial remodels of over 10,000 square feet. e. Develop improved waste reduction and expanded recycling programs such that a 75 percent diversion rate is achieved by 2020 and an 85 percent diversion rate is achieved by 2030 for all non-construction waste streams. Potential measures could include: providing recycling containers in parks and public spaces; establishing computer reuse and recycling programs; enhancing recycling and green waste services for all residents; and providing locations for household hazardous wastes to be recycled. Enhances General Plan Actions EC3.D. f. Develop a program that requires all construction and demolition activities to evaluate energy use and waste and to reduce or mitigate construction-related impacts by 75 percent. Enhances General Plan Actions EC3.E. g. Implement an Anti-Idling Policy for heavy-duty diesel trucks, including local delivery trucks and long-haul truck transport within the City. This policy would prohibit idling of on and off-road heavy duty diesel vehicles for more than 5 minutes. Enhances General Plan Policy EC5.3. 	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		<ul style="list-style-type: none"> <li>h. Provide tax and development incentives for employers with more than 100 employees within the City to establish a trip reduction plan that would incorporate annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information at a minimum, and implement secure bicycle parking, showers and lockers for employees who bike to work. This measure could encourage smaller businesses to cooperate in establishing joint trip reduction plans. Enhances General Plan Actions EC2.F and EC2.I. <li>i. Implement Citywide car and bicycle sharing programs. Collaborate with service providers to identify potential sites for locating carshares. <li>j. Require new local-serving mixed-use in residential areas to provide needed services and amenities close to where people live and work. Require new development and redevelopment projects to provide community amenities and uses that serve priority community needs. Enhances General Plan Policy EC4.1 and General Plan Actions EC4.A, EC4.B, and EC4.D. <li>k. Require mixed-use development along transit-oriented corridors that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used. Enhances General Plan Policy EC4.2 and Actions EC2.C, EC2.E, EC2.G, EC4.A, EC4.B, EC4.C and EC4.E. 	

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		<ul style="list-style-type: none"> i. Collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak, and major employers in Richmond that provide shuttle service to expand transit in the evenings and late nights, and for people with special needs. Enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to maintain and enhance service within the City and region. Explore strategies to address affordability, access, and safety. Expand outreach and information programs to promote transit use. Measure results in a 10 percent expansion of transit system, and an increase in service frequency and speed for 2020; and a 15 percent expansion by 2030. Expand outreach and information programs to promote transit use. Enhances General Plan Policy EC2.C. m. All new street lighting and all re-modeled or replaced street lighting shall consist of high-efficiency lamps that reduce energy consumption by a minimum of 16 percent. n. All new traffic lights and all replaced traffic lights shall consist of LED lights. This high efficiency lighting would reduce emissions from traffic lights by 90 percent. o. Require new development to incorporate water-saving measures demonstrating a minimum reduction of 20 percent in water use over a similar project completed within the previous five years. This measure enhances General Plan Action EC3.F. This measure would be enhanced by General Plan Action EC3.G. 	

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
<p>3.6-2 Construction and operation of the proposed project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Through the implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.6-1 and General Plan Policies, it is anticipated that emissions would be reduced to a <i>less-than-significant</i> level and, therefore, would not be considered cumulatively considerable.</p>	LS	3.6-2 None required.	LS
3.7 Geology, Soils, and Minerals			
<p>3.7-1 Buildout of the proposed General Plan would not expose people or structures to fault rupture, strong seismic groundshaking, or seismic-related ground failure beyond an acceptable level of risk which is minimized through adherence to the California Building Code. This is considered a <i>less-than-significant impact</i>.</p>	LS	3.7-1 None required.	LS
<p>3.7-2 Adherence to the California Building Code would ensure that development under the proposed General Plan would not be subject to risk from settlement and/or subsidence of land, lateral spreading, or expansive soils, which could create risks to life and property. This is considered a <i>less-than-significant impact</i>.</p>	LS	3.7-2 None required.	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.7-3 Project-specific review and conformity with the City's Hillside Preservation Ordinance would ensure that development under the proposed General Plan would not result in soil erosion that would result in long-term safety concerns or slope instability beyond an acceptable level of risk. This is considered a <i>less-than-significant impact</i> .	LS	3.7-3 None required.	LS
3.7-4 Development under the proposed General Plan would not result in landslide hazards beyond an acceptable level of risk. This is considered a <i>less-than-significant impact</i> .	LS	3.7-4 None required.	LS
3.7-5 Development under the proposed General Plan would not affect mineral resource availability. This is considered a <i>less-than-significant impact</i> .	LS	3.7-5 None required.	LS
3.8 Hazardous Materials			
3.8-1 Implementation of the proposed General Plan would involve the routine use, storage, transportation, and disposal of hazardous materials in existing and proposed land uses. However, it would not create a significant hazard to the public or the environment. As a result, the proposed General Plan would have a <i>less-than-significant impact</i> with respect to use, storage, handling and disposal of hazardous materials.	LS	3.8-1 None required.	LS

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<p>3.8-2 Development under the proposed General Plan would include demolition or renovation of existing structures that could contain asbestos-containing materials, lead-based paint, PCBs, or other building materials containing hazardous substances that could expose people or the environment to risks associated with those materials. However, project-specific review and implementation of best management practices and project-specific mitigation measures would ensure that these activities would not result in a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, this is considered a <i>less-than-significant impact</i>.</p>	LS	3.8-2 None required.	LS
<p>3.8-3 There are locations within the City that are included on the list of hazardous materials sites (Cortese List) compiled pursuant to Government Code section 65962.5, as well as other locations where hazardous materials-related environmental contamination may be present, but the site is not yet listed. However, the existing regulatory framework and City requirements to address contaminated sites would reduce exposure hazards to the public or the environment to <i>less than significant</i>.</p>	LS	3.8-3 None required.	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.9 Hydrology and Water Quality			
3.9-1 Development under the proposed General Plan would not result in violation of waste discharge requirements (WDRs), because of existing measures to ensure compliance with the WDRs and the proposed policies and implementing actions included as part of the General Plan. This is a <i>less-than-significant impact</i> .	LS	3.9-1 None required.	LS
3.9-2 New development under the proposed General Plan would not be expected to substantially reduce groundwater recharge or increase groundwater use within the City. This is a <i>less-than-significant impact</i> .	LS	3.9-2 None required.	LS
3.9-3 Construction and operation of development under the proposed General Plan could substantially alter drainage patterns that could result in substantial erosion or siltation. Implementation of General Plan Policies and Implementing Actions would render this impact <i>less than significant</i> .	LS	3.9-3 None required.	LS
3.9-4 Implementation of the proposed General Plan could alter drainage patterns and cause or contribute to increased runoff and flooding. This impact is <i>less than significant</i> .	LS	3.9-4 None required.	LS
3.9-5 Buildout of the proposed General Plan could increase the amount of runoff and pollution in runoff. This impact is <i>less than significant</i> .	LS	3.9-5 None required.	LS
3.9-6 Construction and operation of development under the proposed General Plan could contribute to groundwater quality degradation. This impact is <i>less than significant</i> .	LS	3.9-6 None required.	LS

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3.9-7 Construction and operation of development under the proposed General Plan could expose people and structures to 100-year flood hazards. However, existing and proposed flood hazard regulations, policies, and implementing actions of the proposed General Plan would reduce risks to acceptable levels. The impact would be <i>less than significant</i> .	LS	3.9-7 None required.	LS
3.9-8 Development within the City could be subject to dam failure inundation and sea level rise flood hazards. Implementation of General Plan Policies and Implementing Actions would render this a <i>less than significant impact</i> .	LS	3.9-8 None required.	LS
3.9-9 The proposed General Plan would require infrastructure improvements to accommodate increased stormwater runoff and drainage needs, the construction of which could result in physical impacts. However, standard construction measures and Best Management Practices would reduce impacts to less than significant. This is a <i>less-than-significant impact</i> .	LS	3.9-9 None required.	LS

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Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.10 Noise			
3.10-1 Construction activities associated with the future land use changes under the proposed General Plan could generate noise levels that temporarily exceed acceptable noise levels. Implementation of noise limits in the City of Richmond Municipal Code would limit the exposure of sensitive receptors to temporary or periodic increases in noise levels. However, because noise from construction activities could exceed allowable noise levels, this is considered a <i>significant and unavoidable impact</i> .	S	3.10-1 Future projects shall incorporate project-specific mitigation measures to reduce the impact of construction noise.	SU
3.10-2 Construction of future new land uses under the proposed General Plan could generate or expose persons or structures to temporary groundborne vibration. Though it is unlikely that vibration would exceed levels of mere annoyance for short periods, the potential for impacts on sensitive uses renders this impact <i>significant and unavoidable</i> .	S	3.10-2 Future projects shall incorporate project-specific mitigation measures to reduce the impact of construction-related groundborne vibration.	SU
3.10-3 Implementation of the proposed General Plan could expose sensitive receptors to noise levels in excess of the existing noise standards established by the City. There are no known feasible measures to reduce train noise below a level of significance; this impact would be <i>significant and unavoidable</i> .	S	3.10-3 Future projects shall incorporate project-specific mitigation measures and maintain Quiet Zones to reduce the impact of train noise.	SU
3.10-4 Operation of new land uses under the proposed General Plan would not generate and expose sensitive receptors on- or off-site to excessive groundborne vibration or groundborne noise levels. This is considered a <i>less-than-significant impact</i> .	LS	3.10-4 None required.	LS

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3.10-5 Operation of new land uses under the proposed General Plan would generate increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels in the project vicinity. While implementation of General Plan policies would reduce impacts on sensitive receptors, the impact would remain <i>significant and unavoidable</i> .	S	3.10-5 Future projects shall incorporate project-specific mitigation measures to promote non-motorized transportation to reduce the impact of traffic noise.	SU
Cumulative Impacts			
The construction of future development allowed under the proposed General Plan could occur concurrently and adjacent to similar development/construction within 1,000 feet of City limits; therefore, cumulative impacts would be significant.			
Vibration from construction of future new land uses within the City and immediately surrounding areas could potentially combine with construction vibration of the proposed project to result in a potentially significant cumulative impact.			
Rail operations could expose sensitive receptors under the cumulative condition to noise levels above established standards and some of the exposure to rail noise would be attributable to the proposed General Plan. This impact would be significant.			
The contribution of the proposed project to future roadway noise levels would be considered cumulatively considerable with respect to the projected exceedance of identified thresholds of significance.			
3.11 Parks and Recreation			
3.11-1 Implementation of the proposed General Plan would increase the use of existing neighborhood and regional parks or other recreational facilities but would not substantially accelerate or result in substantial physical deterioration of the facilities. This is considered a <i>less-than-significant impact</i> .	LS	3.11-1 None required.	LS
3.11-2 Implementation of the proposed General Plan would not create a demand for the construction or expansion of park facilities beyond that anticipated in the General Plan. This is considered a <i>less-than-significant impact</i> .	LS	3.11-2 None required.	LS

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3.12 Public Services			
3.12-1 Implementation of the General Plan Update would increase the demand for fire protection and emergency services and/or create a demand for additional fire stations, department personnel, and/or equipment, but would not reduce the level of protection. This is considered a <i>less-than-significant impact</i> .	LS	3.12-1 None required.	LS
3.12-2 Implementation of the General Plan Update would increase the demand for police protection services and create a demand for additional police stations, department personnel, and/or equipment, but would not reduce the level of protection. This is considered a <i>less-than-significant impact</i> .	LS	3.12-2 None required.	LS
3.12-3 Implementation of the proposed General Plan could generate additional students, but the demand for new school facilities would be fully mitigated with required payment of school fees. As a result, this is considered a <i>less-than-significant impact</i> .	LS	3.12-3 None required.	LS
3.12-4 Implementation of the proposed General Plan would create an additional demand for library services, but would not result in a substantial adverse environmental impact associated with the provision of new or physically altered libraries or the need for new or physically altered libraries. This is considered a <i>less-than-significant impact</i> .	LS	3.12-4 None required.	LS

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SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.13 Public Utilities			
3.13-1 Implementation of the proposed General Plan would not require or result in the construction and/or expansion of water supply facilities, the construction of which could cause significant environmental impacts, or require water supplies in excess of existing entitlements. This is considered a <i>less-than-significant impact</i> .	LS	3.13-1 None required.	LS
3.13-2 Implementation of the proposed General Plan would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. This is considered a <i>less-than-significant impact</i> .	LS	3.13-2 None required.	LS
3.13-3 Implementation of the General Plan Update could require the construction or expansion of wastewater treatment facilities or collection systems that could cause significant environmental impacts, absent project-specific mitigation measures. Because it is not certain that project-specific mitigation would reduce all impacts to a less-than-significant level, this is considered a <i>significant impact</i> .	S	3.13-3 Future projects shall incorporate project-specific mitigation measures to reduce impacts from the construction of new wastewater collection and treatment facilities.	SU
3.13-4 Implementation of the proposed General Plan would not result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the project's demand in addition to the provider's existing commitments. This is considered a <i>less-than-significant impact</i> .	LS	3.13-4 None required.	LS

LS = Less than Significant

S = Significant

PS = Potentially Significant

SU = Significant and Unavoidable

NI = No Impact

TABLE ES-2

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.13-5 Implementation of the proposed General Plan could result in the generation of additional solid waste, but there is sufficient landfill capacity to accommodate the increased demand for solid waste service. This is considered a <i>less-than-significant impact</i> .	LS	3.13-5 None required.	LS
3.13-6 Implementation of the proposed General Plan would comply with all applicable federal, state, and local statutes and regulations related to solid waste. This is considered a <i>less-than-significant impact</i> .	LS	3.13-6 None required.	LS
3.13-7 Implementation of the General Plan would increase the demand for electricity and natural gas, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. This is considered a <i>less-than-significant impact</i> .	LS	3.13-7 None required.	LS
3.13-8 Implementation of the proposed General Plan would not result in the wasteful or inefficient use of energy. This is considered a <i>less-than-significant impact</i> .	LS	3.13-8 None required.	LS
Cumulative Impacts			
The growth associated with the proposed General Plan would be the major contributor to future flows to the wastewater treatment facilities, resulting in the need for expansion, which would be a significant cumulative impact.			
Solid waste generation from approved and foreseeable cumulative projects in the area would exacerbate regional landfill capacity issues in the future. The proposed General Plan's contribution would be cumulatively considerable and this impact would be significant.			

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NI = No Impact

TABLE ES-2

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.14 Transportation and Circulation			
3.14-1 The proposed General Plan may result in traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards. Because it is not certain that project-specific mitigation measures would reduce impacts to a less-than-significant level, this is a <i>significant and unavoidable impact</i> .	S	3.14-1 Future projects shall incorporate project-specific mitigation measures to reduce traffic impacts.	SU
3.14-2 The proposed General Plan's Planned Roadway Improvements would improve mobility and safety for all modes, fulfilling the proposed General Plan's goals and policies regarding safety and provision of a multi-modal circulation system. This is a <i>less-than-significant impact</i> .	LS	3.14-2 None required.	LS
3.14-3 Implementation of the proposed General Plan would produce higher demand for transit service, potentially exceeding the capacity of transit service providers. This is a <i>significant and unavoidable impact</i> .	S	3.14-3 None available.	SU
3.14-4 Implementation of the proposed General Plan would provide enhanced facilities to serve pedestrians and bicyclists, increasing connectivity and safety for these modes. Therefore, the project would result in <i>no impact</i> .	NI	3.14-4 None required.	NI
3.14-5 The proposed General Plan would reduce the potential for conflicts at rail/roadway crossings, improving safety for all modes. Therefore, the result would be <i>no impact</i> .	NI	3.14-5 None required.	NI

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NI = No Impact

TABLE ES-2

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.14-6 The proposed General Plan would increase congestion and reduce travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials). This is a <i>significant and unavoidable impact</i> .	S	3.14-6 None available.	SU
Cumulative Impacts			
The proposed General Plan would contribute to traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards.			
Implementation of the proposed General Plan would contribute to higher demand for transit service, potentially exceeding the capacity of transit service providers.			
The proposed General Plan would contribute to increased congestion and reduced travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials).			
3.15 Visual Resources			
3.15-1 Development activities associated with the proposed General Plan could have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of the site and its surroundings. Though project-specific mitigation measures would be implemented, this remains a <i>significant and unavoidable impact</i> .	S	3.15-1 None available.	SU
3.15-2 The development of the proposed General Plan could create a new source of substantial of light or glare that would adversely affect day or nighttime views in the area. Though all available mitigation would be implemented, this remains a <i>significant and unavoidable impact</i> .	S	3.15-2 a. All street lighting shall be directed downward and shielded to prevent light spill onto surrounding properties, sky glow, and glare. b. The City shall restrict the use of high level outdoor lighting for new homes, particularly along the hillside ridges. c. Landscaping shall be incorporated along internal roads and near off-site homes to reduce spill light emanating from vehicles and buildings.	SU

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NI = No Impact

TABLE ES-2

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		d. The City shall require design review of any project containing reflective glass or metal building materials that exceed 50 percent of any building surface or the first three floors.	
Cumulative Impacts			
<p>The development associated with the proposed General Plan, in combination with cumulative development could result in the obstruction of existing scenic views and the adverse alteration of the existing visual character. The proposed General Plan would generate a considerable contribution to this impact, which would be significant.</p>			
<p>The development associated with the General Plan would generate buildings, vehicles, and structures that would emit lighting and glare impacts onto local receptors within the cumulative context. This would be a significant cumulative impact with considerable contribution from the proposed General Plan.</p>			

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NI = No Impact

1. INTRODUCTION

PROJECT BACKGROUND AND OVERVIEW

This Program Environmental Impact Report (EIR) has been prepared on behalf of the City of Richmond in accordance with the California Environmental Quality Act (CEQA) of 1970 (as amended) to evaluate the environmental impacts associated with the policies and development program of the proposed Richmond General Plan. The City of Richmond is located in the western portion of Contra Costa County adjacent to Interstate 80 (I-80). This chapter outlines the purpose of and the overall approach to the preparation of the EIR on the proposed General Plan. The City of Richmond is the lead agency and is responsible for ensuring the General Plan complies with CEQA. A detailed project description is provided in Chapter 2, Project Description.

PURPOSE OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

This Draft EIR has been prepared pursuant to the policies and development program identified in the proposed General Plan and provides three primary purposes identified below:

- The EIR provides the City of Richmond with a programmatic evaluation of the physical impacts associated with the proposed General Plan and its alternatives, in compliance with the requirements of CEQA.
- The EIR informs the City of Richmond City Council, Planning Commission, and the general public about the physical environmental impacts associated with the goals and policies of the General Plan prior to the taking of a formal action on the plan. The EIR serves as an additional technical resource document for the local decision-makers responsible for reviewing and potentially adopting the General Plan.
- The EIR provides local decision makers with information necessary to make informed decisions about appropriate amendments to goals, policies, and implementing actions identified in the General Plan, by providing a clear discussion of the environmental impacts associated with the plan and prescribing effective and feasible mitigation. This additional technical information aims to make the General Plan a self mitigating document where possible.

The proposed General Plan consists of goals, policies, and implementing actions that guide the future growth of the City of Richmond within the proposed change areas (see Project Description for a detailed discussion). The City has determined that maximum buildout (that is the full development of the City at the highest densities allowed by the land use designations described in Project Description), given economic conditions and proposed General Plan policies is neither reasonable nor feasible. Therefore, this Draft EIR evaluates the potential impacts of the adoption of the proposed General Plan given a reasonable rate of growth through the year 2030. This EIR will also be used as a reference for subsequent environmental review of specific plans, infrastructure improvements, zoning amendments, impact fees, and development proposals.

CEQA requires that a local agency prepare an EIR on any discretionary action it proposes to approve that may have a significant physical effect on the environment. The purpose of an EIR is not to recommend approval or denial of a project, but to provide decision-makers, public agencies, and the general public with an objective and informational document that fully discloses the potential environmental effects of a proposed project. The EIR process is specifically designed to objectively evaluate and disclose potentially significant direct, indirect, and cumulative impacts of a proposed project; to identify alternatives that reduce or eliminate a project's significant effects; and to identify feasible measures that mitigate significant effects of a project. In addition, CEQA requires that an EIR identify those adverse impacts that remain significant after mitigation.

This EIR serves as a Program EIR under CEQA Guidelines section 15168. As a Program EIR, this document provides a more general analysis of those elements that are proposed as part of the General Plan, as fully described in the Project Description. As a Program EIR, this document focuses on the overall effects of the proposed General Plan within the proposed change areas. The analysis does not examine the effects of any potential site-specific projects that may occur during the lifespan of the proposed General Plan. Further, the nature of general plans is such that many proposed policies are intended to be more qualitative, with specific details to be determined upon development of a specific project. No development or subdivision maps are being requested as a part of this project. All future development and map applications will be subject to project-specific CEQA review. Any impacts associated with subdivision or development that are not fully evaluated within the scope of this EIR may require further environmental analysis.

GENERAL PLAN PROCESS AND PUBLIC PARTICIPATION

The General Plan update was initiated in the spring of 2006. In order for the General Plan to accurately address community needs and concerns, the City embarked on an intensive public outreach process, focused on gathering input from residents, businesses, property owners, City staff, and local decision-makers. The public outreach effort included the use of the "Plan Van" public outreach vehicle, community meetings and workshops, technical advisory and staff advisory committee meetings, and the presentation of plan alternatives (prepared by City staff and consultants). In order to ensure that the ideas generated at the public workshops and advisory meetings were incorporated into the plan, the City created a website www.cityofrichmondgeneralplan.org dedicated to monitoring the progress of the General Plan and summarizing the community input on the plan. A total of ten public workshops were held prior to the release of the Draft General Plan.

EIR PROCESS

In accordance with CEQA regulations, the Notice of Preparation (NOP) was released February 1, 2008 for agency and public review. The NOP comment period closed on March 2, 2008. The NOP was distributed to responsible agencies and interested parties. The purpose of the NOP was to provide notification that an EIR for the project was being prepared and to solicit guidance on the scope and content of the document. A copy of the NOP and comments received on the NOP are included as Appendix A and Appendix B, respectfully. A public scoping meeting was held on

February 28, 2008. Responsible agencies and members of the public were invited to attend and provide input on the scope of the EIR.

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the lead agency on the Draft EIR's accuracy and completeness. The 45-day public review period for the Draft EIR will be from **February 14, 2011 through March 31, 2011 at 5:00 PM**. All comments or questions regarding the Draft EIR should be addressed to:

Hector Rojas, Associate Planner
City of Richmond Planning Division
450 Civic Center Plaza
Richmond, CA 94804-1630
Phone: (510) 620-6662
Fax: (510) 620-6858
Email: hector_rojas@ci.richmond.ca.us

Upon completion of the public review period, a Final EIR will be prepared that will include written comments on the Draft EIR received during the public review period and the City's responses to those comments. The Final EIR will also include the Mitigation Monitoring Program (MMP). The Final EIR will address any revisions to the Draft EIR made in response to public comments. The Draft EIR and Final EIR together will comprise the EIR for the proposed project.

LEAD, RESPONSIBLE AND TRUSTEE AGENCIES

Lead Agency

In conformance with sections 15050 and 15367 of the State CEQA Guidelines, the City of Richmond is the "lead agency," which is defined as the "public agency which has the principal responsibility for carrying out or disapproving a project," for preparation of the proposed Richmond General Plan EIR. The lead agency is also responsible for scoping the analysis, preparing the EIR, and responding to comments received on the Draft EIR. Prior to making a decision to approve a project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

Responsible Agencies and Trustee Agencies

Responsible agencies are state and local public agencies, other than the lead agency, that have some authority to carry out or approve the project or a portion of the project for which a lead agency is preparing or has prepared an EIR.

Trustee agencies under CEQA are designated public agencies with legal jurisdiction over natural resources that are held in trust for the people of California and that would be affected by a project, whether or not the agencies have authority to approve or implement the project.

Because the proposed project is a general plan, there are no agencies other than the City of Richmond that have approval or permitting authority for the plan's adoption. Implementation of the proposed General Plan would involve many additional responsible agencies depending upon the specifics of the nature of subsequent projects. The following are some of the agencies that could be required to act as responsible agencies for subsequent projects under the proposed General Plan:

- California Department of Fish and Game
- State Lands Commission
- State Department of Parks and Recreation
- State Water Resources Control Board
- Regional Water Quality Control Board
- Bay Area Air Quality Management District
- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- Caltrans
- East Bay Municipal Utilities District
- Contra Costa County Local Agency Formation Commission (LAFCo)
- West Contra Costa Unified School District

REQUIRED PERMITS AND APPROVALS

Project approval requires the City of Richmond to approve the proposed project and to affirm compliance with other agency requirements. Below are summarized the discretionary actions sought by the project that the City of Richmond will consider during its review.

- Certification of this EIR
- Adoption of a Mitigation Monitoring Plan

The EIR will be used to support subsequent actions, including:

- Rezones
- Subdivision maps
- Community Plans
- Specific Plans
- Special Planning Districts
- Special Permits
- Design Review Actions
- Zoning Administrator Actions

- Preservation Actions
- Planning Actions
- Infrastructure and Public Facilities siting and project approvals
- Other related actions

PUBLIC REVIEW OF DRAFT EIR AND LEAD AGENCY CONTACT

The City has provided public notice of the document's availability for public review and invites comment from the general public, agencies, organizations, and other interested parties. Copies of the Draft EIR are available at the following locations:

City of Richmond Planning Division
Richmond City Hall, Second Floor
450 Civic Center Plaza
Richmond, CA 94804-1630
(Open to the public from 8:30 a.m. to 4:00 p.m.)

City of Richmond General Plan Website
www.cityofrichmondgeneralplan.org

The public review and comment period is 45 days. Comments may be submitted both in written form and orally at the public hearing. Notice of the time and location of the hearing will be published prior to the hearing. All comments or questions regarding the Draft EIR should be addressed to:

Hector Rojas, Associate Planner
City of Richmond Planning Division
450 Civic Center Plaza
Richmond, CA 94804-1630
Phone: (510) 620-6662
Fax: (510) 620-6858
Email: hector_rojas@ci.richmond.ca.us

SCOPE OF THIS EIR

This EIR is a "Program EIR," pursuant to section 15168 of the CEQA Guidelines. A Program EIR examines the environmental impacts of an overall area that may contain a series of subsequent projects. This type of EIR focuses on the changes in the environment that would result from implementation of the plan.

The City of Richmond, as lead agency, determined that this EIR address the following technical issue areas:

- Land Use
- Demographics
- Air Quality

- Biological Resources
- Climate Change
- Cultural Resources
- Geology, Soils, and Minerals
- Hazards and Hazardous Materials
- Hydrology
- Noise
- Parks and Recreation
- Public Services
- Public Utilities
- Traffic and Circulation
- Visual Resources

The specific topics evaluated are described in each of the technical sections presented in Chapter 3.

DOCUMENTS INCORPORATED BY REFERENCE

CEQA Guidelines section 15150 permits documents of lengthy technical detail to be incorporated by reference in an EIR. Specifically, section 15150 states that an EIR may “incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public...” Incorporated documents are to be briefly summarized in the EIR and be made available to the public for inspection or reference. The following documents are incorporated by reference and are available for review at the City of Richmond Planning Department, 450 Civic Center Plaza, Richmond CA 94804:

- **2010 City of Richmond 2030 Draft General Plan.** The City of Richmond 2030 Draft General Plan, also referred to as the proposed General Plan, is the proposed action being evaluated in this EIR.
- **Miraflores Draft EIR.** The Miraflores Housing Development EIR evaluated the redevelopment of an approximately 14-acre site with up to 336 dwelling units in a mix of affordable and market-rate housing, resulting in a population of approximately 971 residents.
- **San Pablo Avenue Specific Plan.** The San Pablo Avenue Specific Plan provides guidance for development along San Pablo Avenue from El Cerrito to Richmond.
- **East Bay MUD 2040 Water Demand Study.** EBMUD provided a water supply and water demand study for the entire service area, including the City of Richmond, assuming planned growth through 2040.

HOW TO USE THIS REPORT

This report includes the following chapters: Project Description, Summary, Environmental Analysis (Setting, Impacts, and Mitigation Measures), CEQA Considerations, Alternatives, References, Report Preparation, and Appendices. The content of each of these elements is summarized below.

The **Executive Summary** Chapter (Chapter ES) presents an overview of the results and conclusions of the environmental evaluation. This section identifies impacts of the proposed project and available mitigation measures.

The **Project Description** Chapter (Chapter 2) describes the location of the project, existing conditions in the project area, and the nature and location of specific elements of the proposed project, as well as requested project approvals.

The **Environmental Analysis** Chapter (Chapter 3) includes a topic-by-topic analysis of impacts that would or could result from implementation of the proposed project or alternatives. The analysis is organized in topical sections. Each section is organized into three major subsections: Environmental Setting (existing conditions), Regulatory Setting, and Impacts and Mitigation Measures, including cumulative impacts and mitigation measures.

The **CEQA Considerations** Chapter (Chapter 4) discusses other important long-term issues required by CEQA: unavoidable adverse impacts, irreversible environmental changes, growth inducement, and a summary of cumulative impacts.

The **Alternatives** Chapter (Chapter 5) includes a description of the project alternatives. An EIR is required by CEQA to provide adequate information for decision makers to make a reasonable choice between alternatives based on the environmental aspects of the proposed project and alternatives. The impacts of the alternatives are qualitatively compared to those of the proposed project. This chapter also identifies the environmentally superior alternative.

The **Report Preparation** Chapter (Chapter 6) includes a list of preparers of the Draft EIR.

The **References/Persons or Organizations Consulted** (Chapter 7) used throughout the Draft EIR are identified in this chapter.

The **Appendices** contain a number of reference items providing support and documentation of the analyses performed for this report.

2. PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

INTRODUCTION AND BACKGROUND

The purpose of this EIR is to evaluate the potential environmental impacts of the proposed *Richmond General Plan Update*. A city's general plan is its constitution for future growth and development, typically over the next 20 years or so; it establishes the framework for population and job growth, providing public services and facilities, and protecting and enhancing the environment. In order to ensure thorough analysis of potential environmental impacts, this EIR assumes that the City will adopt a land use map allowing for significant development. The City may adopt a land use map that would provide for less intensive development than analyzed in this EIR. In that case, the environmental impacts would be less significant than those analyzed in this EIR.

California Government Code section 65300 *et seq.* mandates that all cities prepare a General Plan that establishes policies and standards for future development, housing affordability, and resource protection. State law encourages cities to keep general plans current through regular updates. Further, each city's general plan must include the following seven elements: Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety. Additional elements may be included in the General Plan, at the discretion of the City. Beyond the seven state-required general plan elements, Richmond's comprehensive General Plan Update includes 11 additional elements covering topic areas deemed especially critical to the community. These topics include: economic development; education and human services; urban design; community facilities and infrastructure; energy and climate change; growth management; parks and recreation; community health and wellness; arts and culture, historic resources; and national historical park. Table 2-1 shows the required and optional elements of Richmond's proposed General Plan Update.

This chapter provides background information regarding the regional location of Richmond's Planning Areas, General Plan objectives, key themes and components, and the basis for the environmental analysis. Additional details are provided in the General Plan document.

REGIONAL LOCATION AND PLANNING AREA

Regional Location

The City of Richmond is located in the nine-county San Francisco Bay Area in west Contra Costa County (see Figure 2-1: Project Location). Major nearby Bay Area cities and employment centers include the City of Oakland, 9 miles to the south; the City of San Francisco, 17 miles west; and the City of San Jose, 50 miles south. Richmond's land mass forms a promontory that stretches into the San Francisco and San Pablo bays. This shoreline defines a significant portion of the City's borders to the north, west, and south. Neighboring San Francisco and Marin counties provide attractive backdrops from Richmond across the Bay. The cities of El Cerrito, San Pablo, and Pinole, as well as unincorporated areas of the County border Richmond to the north and east; and the Berkeley Hills, San Pablo, and Sbrante ridges frame the eastern edge of the City.



Source: Richmond General Plan, 2009.

FIGURE 2-1
Project Location



General Plan Elements	Required	Optional
Economic Development		•
Education		•
Land Use	•	
Urban Design		•
Circulation	•	
Housing	•	
Community Facilities and Infrastructure		•
Open Space	•	
Conservation	•	
Energy and Climate Change		•
Growth Management		•
Parks and Recreation		•
Community Health and Wellness		•
Public Safety	•	
Noise	•	
Arts and Culture		•
Historic Resources		•
National Historical Park		•

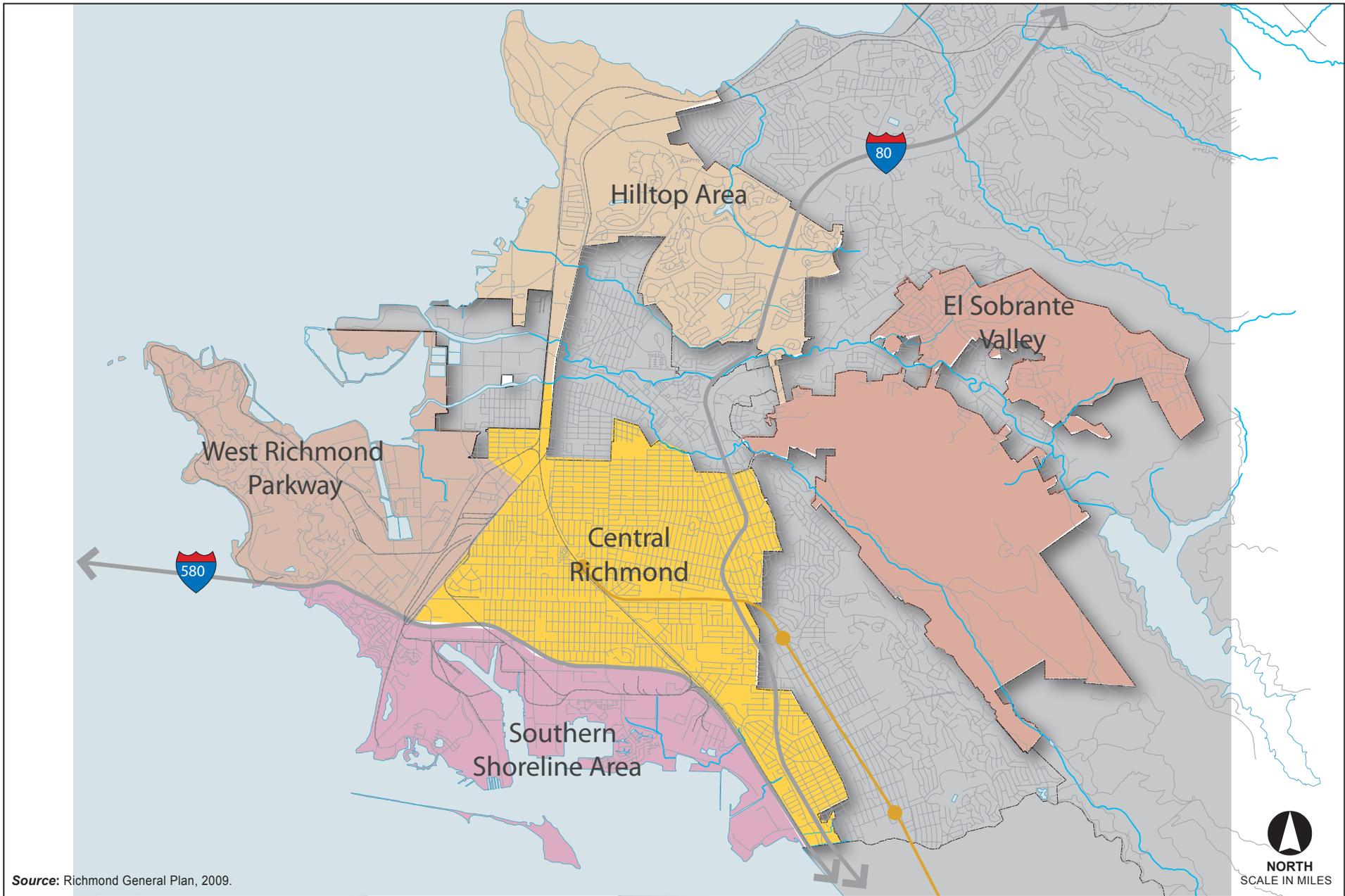
Planning Areas

Richmond's City limits cover a geographically dispersed area that stretches from the San Francisco and San Pablo bays to the San Pablo and Sobrante ridges. Many areas within the City have distinct land use composition, community character and ecological conditions that require tailored strategies for shaping the development pattern, provision of community services and programs, infrastructure investment and redevelopment potential. For purposes of the General Plan, the City is organized into five planning areas: Central Richmond; Hilltop; El Sobrante Valley; Southern Shoreline; and West Richmond Parkway (see Figure 2-2: Planning Areas in Richmond). These planning areas were established during the course of Plan development to provide a common geographic reference among community members, City staff and others engaged in the planning process. These areas are defined below.

Central Richmond – the Central Richmond area refers to Downtown Richmond and the neighborhoods of Shields-Reid, Richmond Triangle, Forest Park, Atchison Village, Santa Fe, Coronado, City Center, Belding Woods, North & East, Metro Richmore Village, Pullman, Cortez/Stege, Park Plaza, Laurel Park, East Shore, Panhandle Annex and Richmond Annex.

Hilltop – the Hilltop area encompasses the Hilltop Mall, regional open space such as the Point Pinole Regional Shoreline and the neighborhoods of Parchester Village, Hilltop Village, Hilltop Bayview, Hilltop Green, and Fairmede/Hilltop.

El Sobrante Valley – the El Sobrante Valley includes regional open space such as the Wildcat Canyon Regional Park and the neighborhoods of Hasford Heights, Greenridge Heights, May Valley, El Sobrante Hills, Greenbriar, Carriage Hill North, Countryside, and Carriage Ridge South.



Source: Richmond General Plan, 2009.



FIGURE 2-2
Planning Areas in Richmond

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Richmond GPU EIR

Southern Shoreline Area – the southern shoreline area covers industrial areas located south of Interstate 580, the University of California Field Station, regional open space such as the Miller/Knox Regional Shoreline, the port and the neighborhoods of Point Richmond, Marina Bay, and Southwest Annex.

West Richmond Parkway – the area west of the Richmond Parkway includes the San Pablo Peninsula and industrial areas west of Garrard Boulevard.

PURPOSE AND OBJECTIVES OF THE PROPOSED GENERAL PLAN

CEQA Guidelines section 15124(b) requires a description of project purpose and objectives. The proposed General Plan is intended to respond directly to changes experienced in Richmond since the preparation of the last General Plan in 1994 and to provide guidance for community development over the next 20 years. The Land Use Diagram (see Figure 2-3: Proposed General Plan Land Use Diagram) designates the proposed general location, distribution, and extent of land uses within the City.

General Plan Objectives

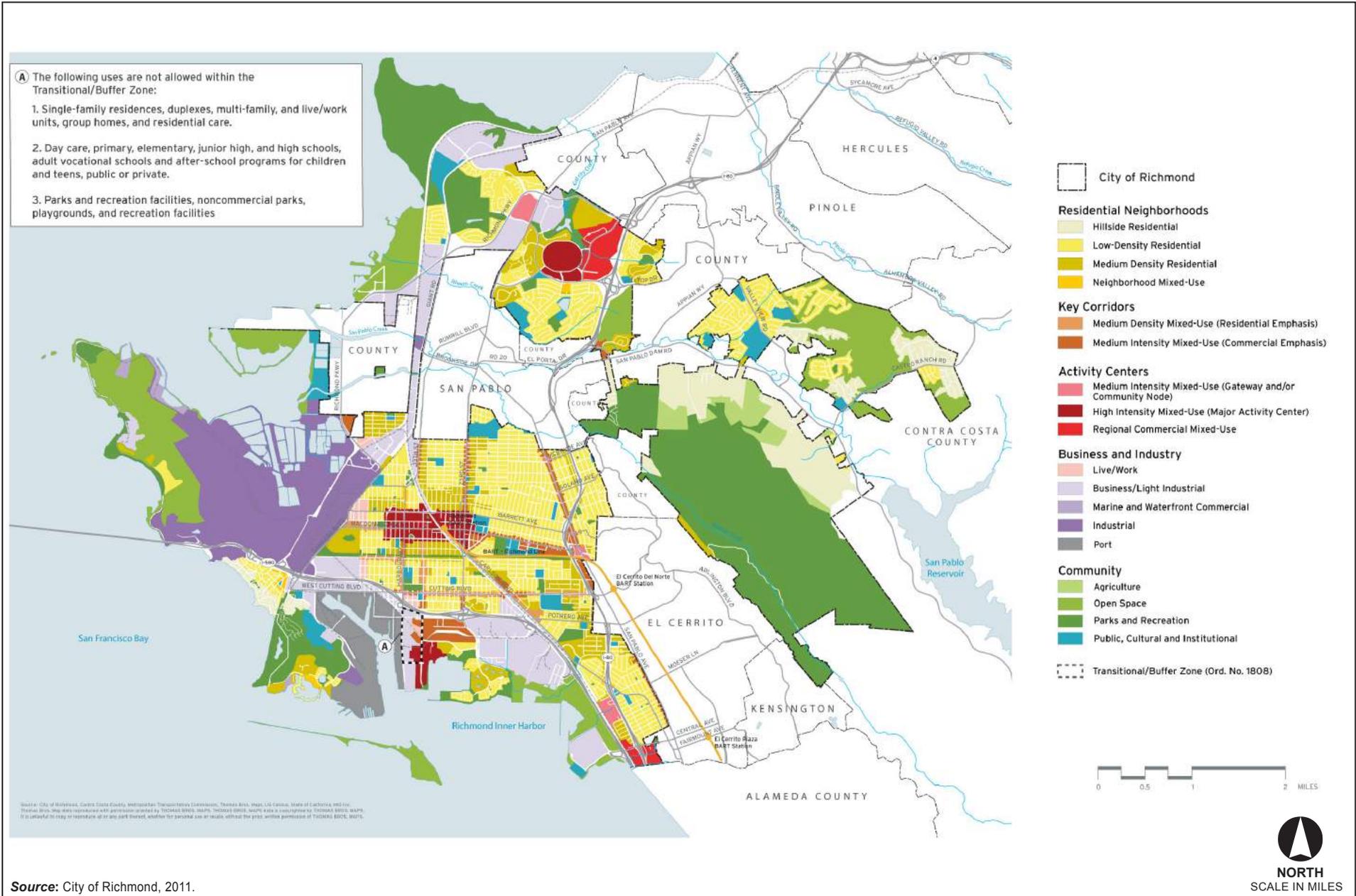
The proposed Richmond General Plan objectives address issues related to physical development, growth, and conservation of resources in the City. Richmond's General Plan expresses the community's vision and goals for the future. The Plan aims to:

- Present strategies and specific implementing actions to achieve the community's overarching vision and long-term goals;
- Establish a basis for determining whether specific development proposals and public projects align with the community's vision and long-term goals;
- Empower City departments, other public agencies, and private developers to design projects that will enhance community character and sustain and improve quality of life in accordance with particular values and principles defined in the General Plan;
- Provide a basis for developing more detailed plans and implementing programs such as the Zoning Ordinance, capital improvement plans, facilities plans, community needs assessments, and specific plans; and
- Guide public agencies that work with the City, such as school districts, regional boards, or state agencies, as well as private investors, as they contemplate future actions in the area.

Overview of the General Plan Elements

Following are brief descriptions of the purpose of each of Richmond's General Plan elements.¹

1 The Richmond General Plan has combined some of the categories shown in Table 2-1: Land Use and Urban Design, Open Space and Conservation, and Public Safety and Noise.



Source: City of Richmond, 2011.

FIGURE 2-3
Proposed General Plan Land Use Diagram



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1. The **Economic Development Element** establishes direction for short and long-term economic growth, guiding elected officials, employers and other community members as they plan for the future. It includes a range of strategies to sustain businesses and industries, diversify the economic base, accommodate job growth and increase access to employment for Richmond residents.
2. The **Education and Human Services Element** provides direction to improve educational opportunities and support social and emotional well-being through human service offerings. The Element seeks to ensure that Richmond residents have equitable access to a diverse range of educational opportunities and resources that are fully integrated with the City's long-term quality-of-life goals.
3. The **Land Use and Urban Design Element** presents a framework for governing future decisions about allowable, context-appropriate land use and desirable development patterns. Overarching goals focus on providing a vibrant urban core, active public spaces and enhanced neighborhood character in the context of balanced and compatible uses.
4. The **Circulation Element** seeks to ensure efficient mobility and access for all residents, workers and visitors through a safe, interconnected, multimodal transportation system. Goals, policies and implementing actions will guide management of transportation systems in a progressive, responsible and well-balanced way.
5. The **Housing Element** establishes a framework for protecting, maintaining and expanding quality and affordable housing options for current and future residents. It also seeks to provide adequate housing for groups with special needs and promote integrated neighborhoods that support families, seniors and people of all incomes.
6. The **Community Facilities and Infrastructure Element** presents a framework for the City to provide services, amenities and infrastructure for today's residents as well as future generations. Policies and implementing actions seek to responsibly improve educational and human service facilities, physical infrastructure and a range of public utilities and services to best meet community needs as Richmond grows.
7. The **Conservation, Natural Resources and Open Space Element** is designed to protect, maintain and enhance Richmond's natural resources and open spaces, and balance current community resource needs with critical conservation endeavors to benefit the common good.
8. The **Energy and Climate Change Element** provides strategic direction for the City to promote mitigation, sustainability and adaptation in response to Richmond's impact on climate change. The Element identifies goals, policies and implementing actions to address energy conservation, renewable energy production and use, sustainable business development, responsible community revitalization and reduction of climate change impacts in Richmond.

9. The **Growth Management Element** provides a framework for effective coordination of land use, transportation and infrastructure. This Element outlines a strategy to promote compact urban development, protect open space and provide adequate infrastructure and services to accommodate future community needs in Richmond.
10. The **Parks and Recreation Element** provides direction for developing and maintaining a comprehensive system of quality parks, recreational facilities, programs, support services and open space. General Plan goals, policies and implementing actions are designed to preserve resources and enrich parks and recreational offerings.
11. The **Community Health and Wellness Element** establishes a critical path for improving conditions that will foster the physical health and emotional well-being of Richmond residents. The Element defines healthy living indicators, reviews current conditions in Richmond relative to those indicators, and sets forth specific policies and implementing actions tailored to critical health needs in the community.
12. The **Public Safety and Noise Element** seeks to minimize risks posed by environmental and human-caused hazards that may impact Richmond residents' health and welfare. These include crime, geologic and seismic hazards, flooding, fires, hazardous materials and noise.
13. The **Arts and Culture Element** presents Richmond's approach to integrating arts and culture into everyday community life, thereby strengthening Richmond's unique character and identity.
14. The **Historic Resources Element** provides a framework for preserving, restoring and leveraging Richmond's historic assets to maintain the City's sense of place and ensure that these assets can be enjoyed by current and future residents and visitors.
15. The **National Historical Park Element** establishes a framework for fully developing the Rosie the Riveter/World War II Home Front National Historical Park. The National Historical Park honors and preserves Richmond's history and commemorates the millions who worked on the wartime home front.

Characteristics of the Proposed General Plan

Richmond has few remaining opportunities for new greenfield development to accommodate growth. Consequently, the City has responded to increasing demand for growth through infill development in Downtown, along commercial corridors and on underutilized brownfield parcels within the City's industrial areas. A preliminary assessment suggests that there are more than 1,200 acres of vacant and underutilized land in Richmond that may be available for infill development.

The City is composed of several types of areas and the proposed General Plan includes an overarching development strategy for Richmond that includes stable areas, conservation areas, and 16 "change areas" in which it is anticipated that there will be new uses, development and redevelopment. While the policies and guiding principles of the General Plan may lead to

environmental impacts in all areas of the City, the most substantial changes are expected in those 16 change areas.

Land uses in the vast majority of the City are expected to remain stable. Many of the stable areas of the City are residential neighborhoods. However, areas that are not designated for a change in land use may benefit from improvements, such as community facility and infrastructure renovations or upgrades and the inclusion of neighborhood-serving retail, where appropriate.

Areas of the City with significant natural habitat, open space, parks and recreational resources, and agricultural lands that have been identified for conservation, preservation, and environmental rehabilitation are designated as priority conservation areas. Resources in these areas are valued by the community and protected by the City and other public and regulatory agencies.

Richmond's "change areas" are deemed most suitable for a shift in intended use as compared to existing conditions, and may experience significant changes in land use and development character under this General Plan. They largely represent areas that are underutilized, have incompatible land uses, high potential for redevelopment, or are inconsistent with current community priorities. Each of these areas has specific geographic and land use characteristics that demand a more focused approach to land use regulation, infrastructure investment, services and redevelopment. The change areas are described below.

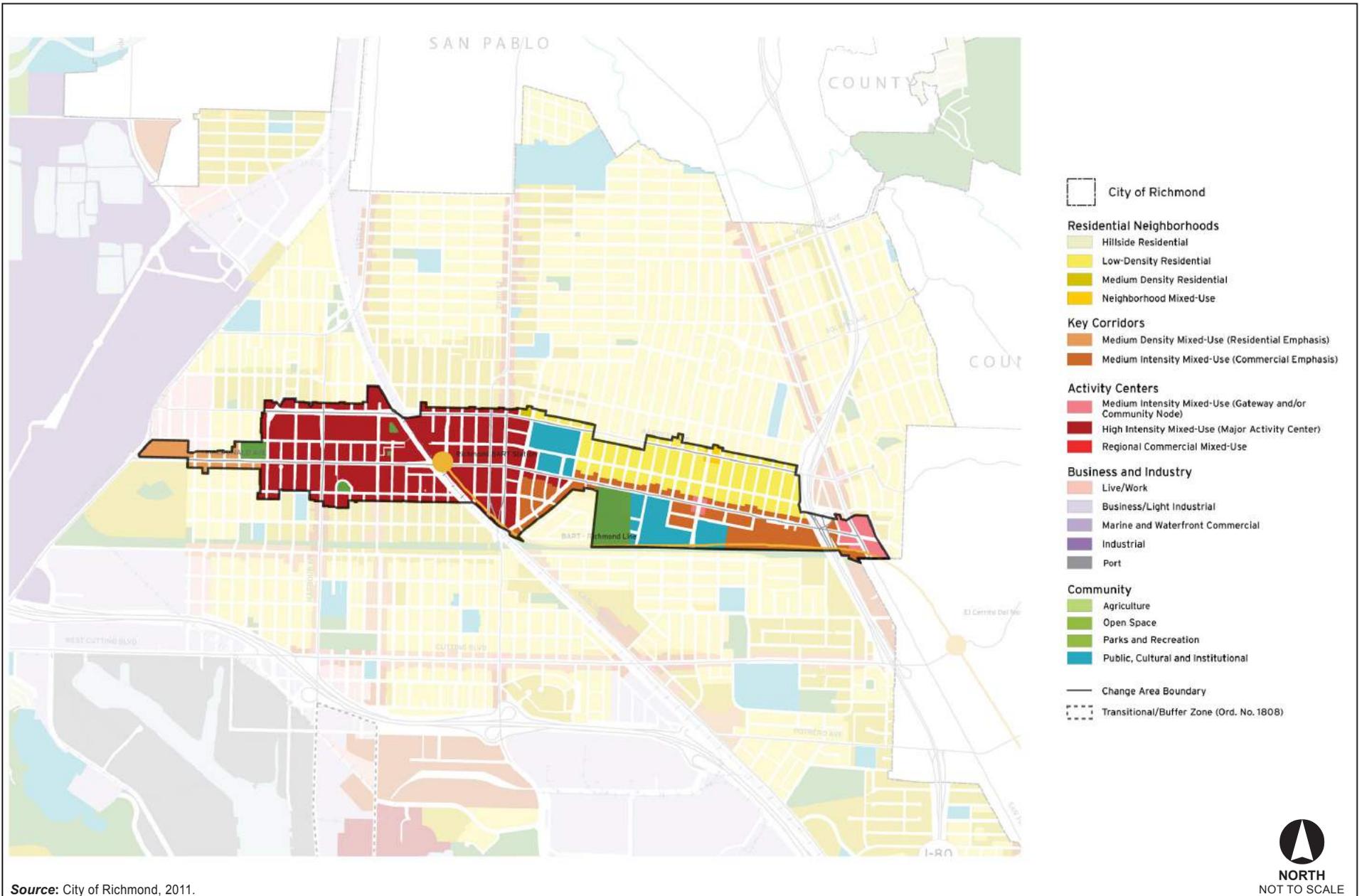
Proposed Change Areas

Change Area 1: Downtown/Macdonald Avenue

The Downtown/Macdonald Avenue change area (Figure 2-4) includes the Civic Center, the Richmond BART/Amtrak Station, Kaiser Permanente Hospital, a number of historic buildings, and many public and cultural facilities. Downtown has a strong mix of uses including civic, commercial, and residential. Civic uses include public buildings and community facilities such as the City Hall, auditorium, a senior center, arts center and a library. Commercial uses are primarily located along Macdonald Avenue, Harbor Way, and 23rd Street. Residential uses include single family homes, townhomes, apartments, and senior housing.

Downtown is envisioned as a major activity center that builds upon Richmond's unique history to serve as the economic and cultural heart of the City. Anticipated land uses in this change area are described below.

- The area between 6th Street and 24th Street, from Bissell Avenue to Barrett Avenue, as well as the Civic Center, to be designated as High-Intensity Mixed-Use (Major Activity Center) to promote a higher-intensity mix of uses with an urban character in the Downtown.
- Macdonald Avenue between the Civic Center and Interstate 80 to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to promote mid-rise mixed-use development with commercial uses at street level along corridors and in upper levels at key intersections.



Source: City of Richmond, 2011.



FIGURE 2-4
Change Area 1 – Downtown/Macdonald Avenue

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The area east of 24th Street and south of the Civic Center to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to provide a transition area between Downtown and single-family residential areas to the east.

- The area west of Downtown along Macdonald Avenue to be designated as Medium-Density Mixed-Use (Residential Emphasis) to promote mid-rise multifamily housing with commercial uses at street level along corridors and in upper levels at key intersections.
- The area between Barrett Avenue and Macdonald Avenue east of Downtown to Interstate 80 to be designated as Low-Density Residential to reflect the predominantly single-family nature of the area. The land use will allow the preservation of existing multifamily housing or its redevelopment to current standards if densities are kept the same.

Change Area 2: Hilltop

The Hilltop Area (Figure 2-5) is located in the northern part of the City, primarily bounded by Interstate 80 and Hilltop Drive. This area is currently characterized by auto-oriented development including the Hilltop regional shopping mall with nearby medium-density housing. The area is accentuated with hills and gullies. Hilltop Lake and Garrity Creek are located just outside the area's boundary.

The vision for Richmond's Hilltop Area is to continue growing as a highly visible and accessible regional district for retail and employment, blended with a mix of higher-density residential development. Anticipated land uses in this change area are described below.

- The Hilltop Mall and the area between Hilltop Mall Road and Hilltop Drive south and east of the mall are proposed as High-Intensity Mixed-Use (Major Activity Center) to promote the transformation of the area from a suburban, low-intensity auto-oriented retail center to a stand-alone urban center. The new vision would encourage the establishment of higher-intensity office, retail, and entertainment uses along with higher-density residential. This development could occur on the existing parking area that surrounds the mall. Parking structures would accommodate displaced parking and a mix of high-intensity uses would complement and re-energize the mall.
- The area on either side of Blume Drive to be designated as Regional Commercial Mixed-Use to promote a mix of regional retail, office, and housing and to provide a transition to adjacent residential areas.
- The area west and north of the Mall designated as Medium-Density Residential to reflect the existing multi-family residential uses.

Change Area 3: Ford Peninsula in Marina Bay

The Ford Peninsula in Marina Bay (Figure 2-6) is located in the southern part of the City, and is bounded by Interstate 580 to the north, the Port of Richmond to the west, and the San Francisco Bay to the south and west. Large industrial and office buildings characterize the Ford Peninsula area in Marina Bay. A dominant feature on the Ford Peninsula in Marina Bay is the Ford Motor Company Assembly Plant, a historic brick building that has been redeveloped with a mix of retail and light industrial uses and is a part of the Rosie the Riveter/World War II Home Front National Historical Park.

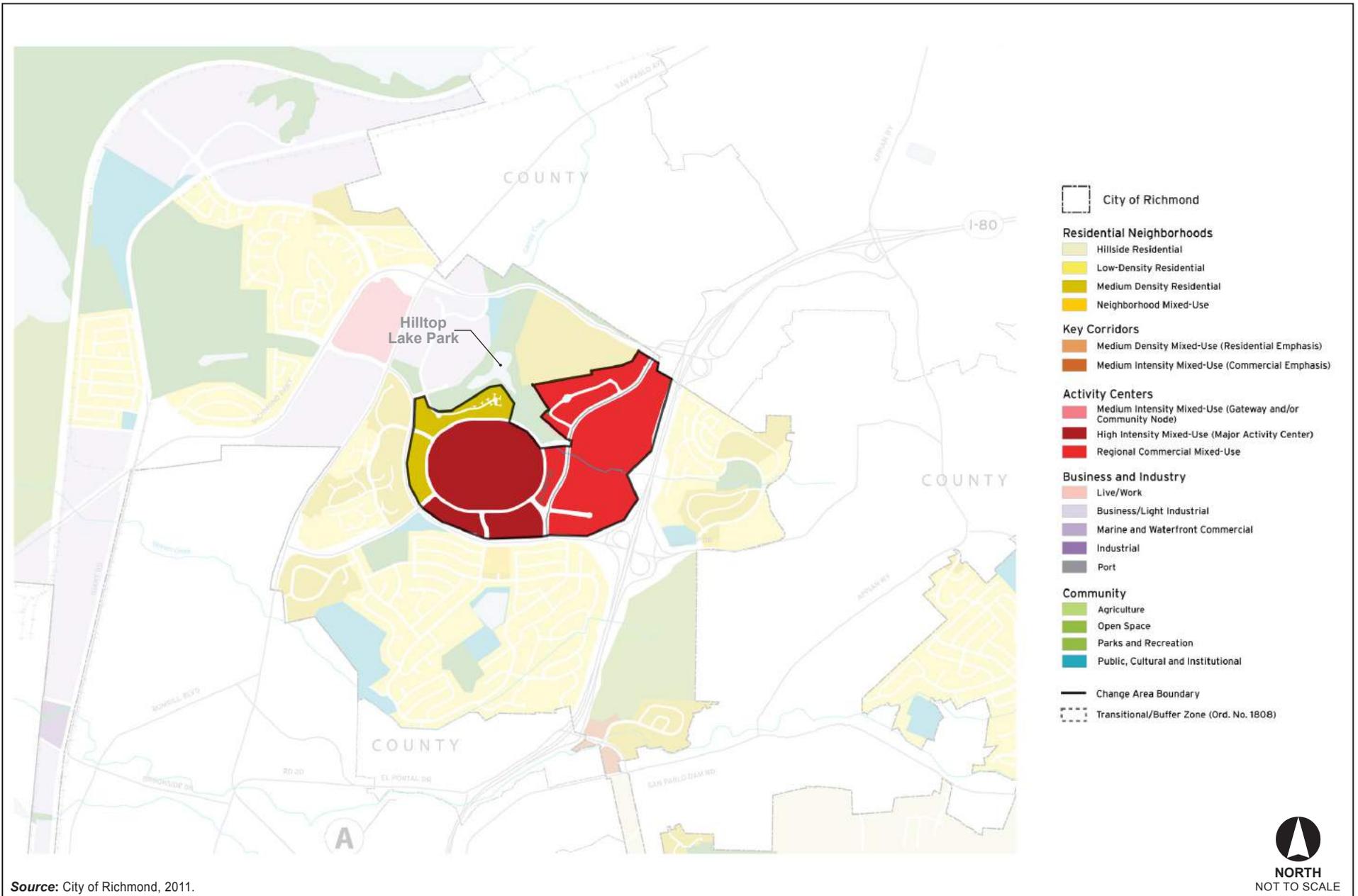


FIGURE 2-5
Change Area 2 – Hilltop

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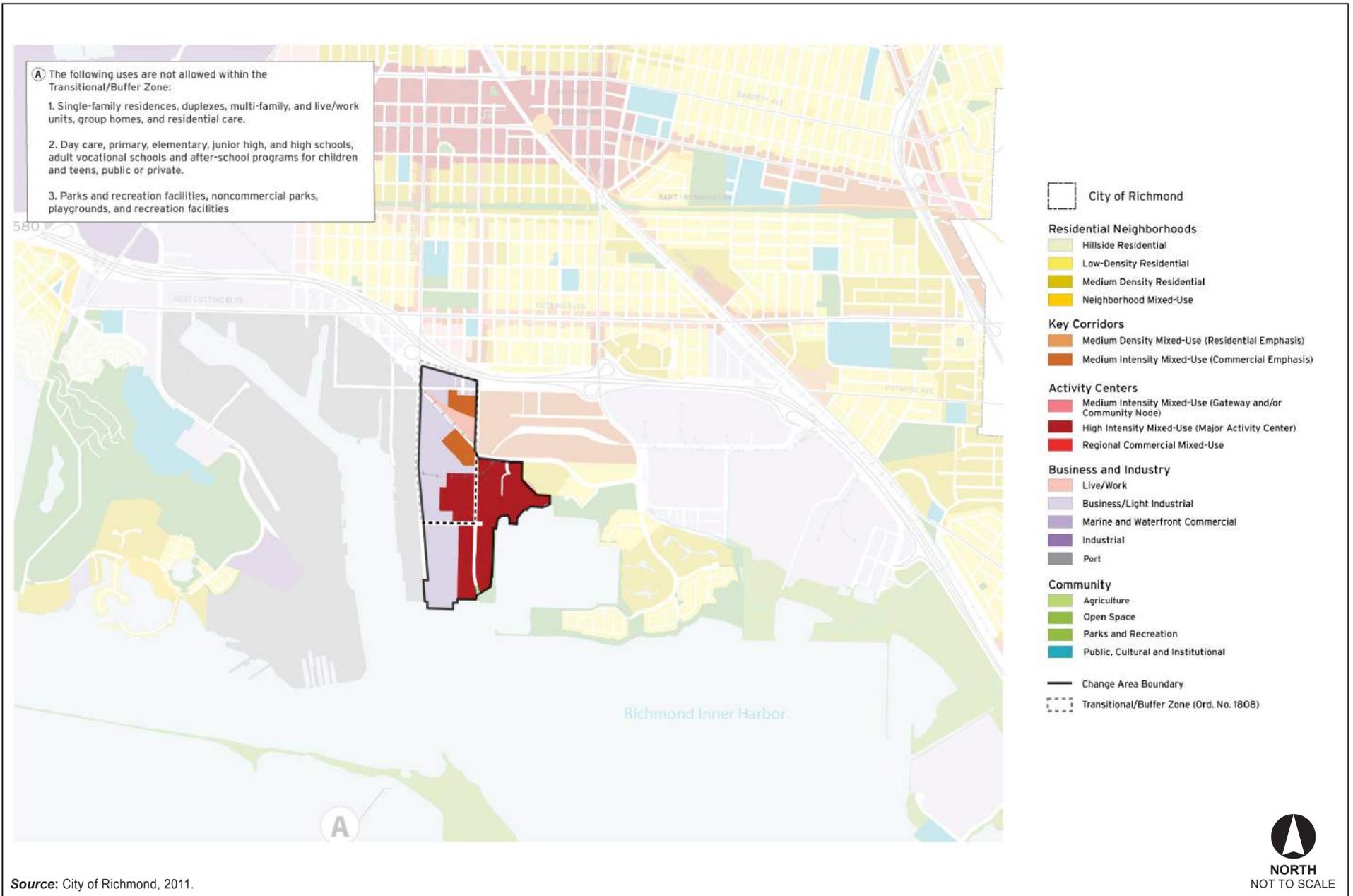


FIGURE 2-6
Change Area 3 – Ford Peninsula in Marina Bay



The eastern section of the Ford Peninsula in Marina Bay is envisioned as a mixed-use waterfront district around the marina that takes advantage of the proposed ferry terminal, easy access to regional highways, waterfront location and dramatic views and nearby employment.

The western section is envisioned as a revitalized working port serving the region and providing employment. Anticipated land uses in this change area are described below.

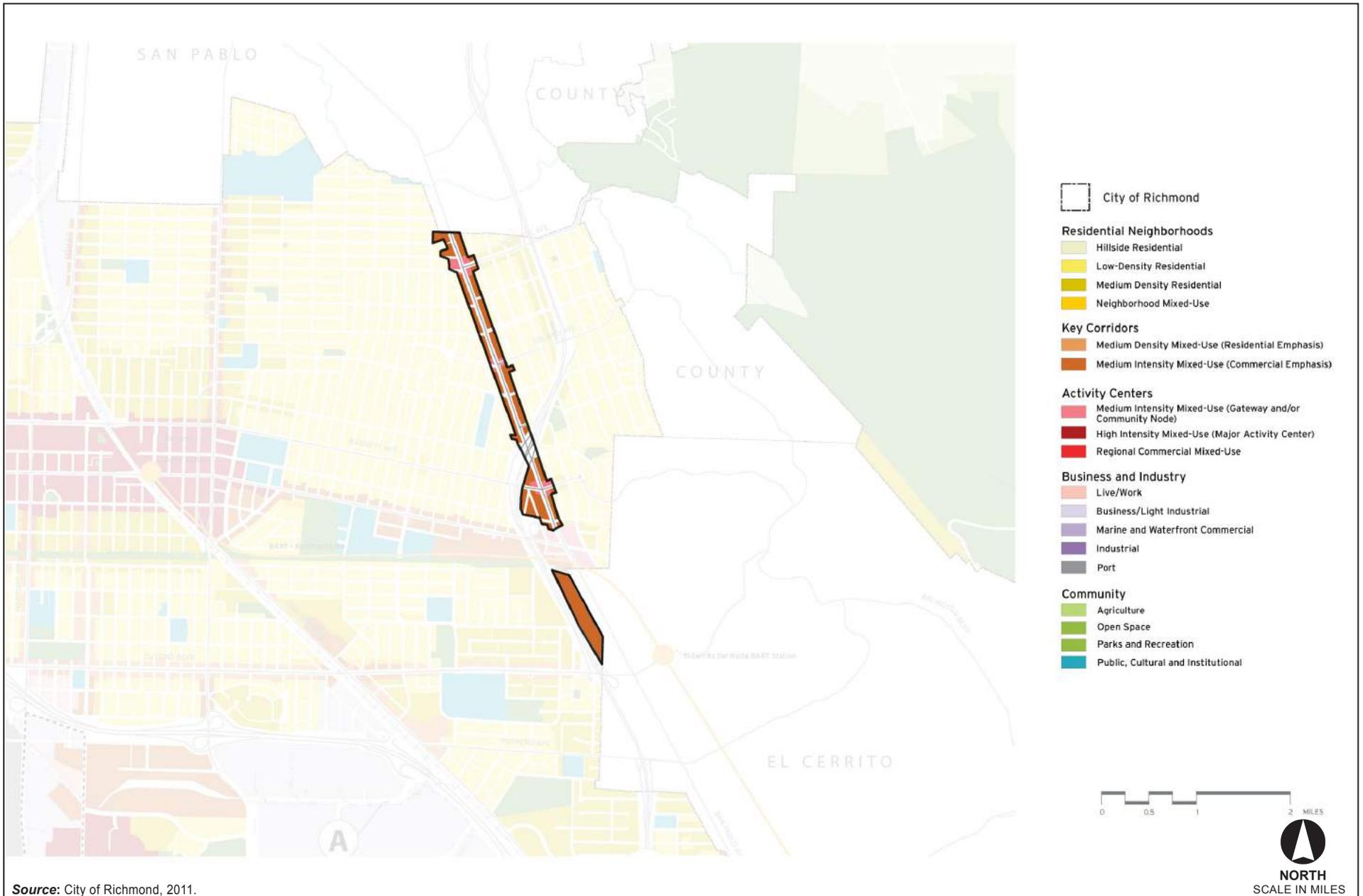
- The area south of Regatta Boulevard on either side of Marina Way South to be designated as High-Intensity Mixed-Use (Major Activity Center) to promote a mix of high-density residential, commercial, retail, office, and entertainment uses on the eastern edge of the peninsula.
- Parcels north of Hall Avenue and west of Marina Way South to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to take advantage of the nearby proposed ferry terminal and to create a contiguous mixed-use and pedestrian-oriented street environment along Marina Way South.
- Large parcels fronting on Harbor Way South are designated as Business/Light Industrial to complement adjacent Port uses, create employment opportunities, and provide transition to the mixed-use development along Marina Way.

Change Area 4: San Pablo Avenue Corridor

The San Pablo Avenue Corridor (Figure 2-7) extends from Richmond's border with the City of El Cerrito north to the border with the City of San Pablo. San Pablo Avenue is a regionally significant route, connecting cities across Contra Costa and Alameda counties. Character-defining features of the San Pablo Avenue Corridor include an abundance of multimodal transit options, a wide range in the scale and massing of buildings, and a variety of commercial and residential uses.

San Pablo Avenue is envisioned as a transit-oriented, mixed-use corridor with multiple community activity nodes around BART stations and key intersections. This corridor would include improvements and additions to the roadway, private areas and community amenities to support a more vibrant corridor that knits together uses and neighborhoods on both the west and east sides of the corridor. Anticipated land uses in this change area are described below. The San Pablo Avenue Specific Plan recently adopted by the cities of Richmond and El Cerrito provide further land use specificity for parcels facing this corridor.

- Parcels at the intersection of San Pablo Avenue with Barrett, Solano, and McBryde avenues to be designated as Medium-Intensity Mixed-Use (Gateway and/or Community Node) to mark entry into Richmond.
- The areas between these major intersections to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis). Development would be three stories or less to reflect nearby lower-intensity residential neighborhoods. The preferred format for mixed-use development includes residential uses on upper floors with flexible ground floor spaces that could accommodate a variety of uses including office, retail and residential, depending on market demand. Commercial ground floor setbacks of five to ten feet would accommodate transitional spaces that may be used for outdoor shop display areas, office entry plazas, or restaurant/café seating. Residential ground floor setbacks of 15 to 25 feet could include



Source: City of Richmond, 2011.

FIGURE 2-7
Change Area 4 – San Pablo Avenue Corridor



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landscaped privacy buffers to screen residents from the high volumes of traffic on the corridor.

Change Area 5: 23rd Street Corridor

The 23rd Street Corridor (Figure 2-8) extends from Interstate 580 north to Richmond's border with the City of San Pablo. Two key subareas of the 23rd Street Corridor exist on either end of Downtown. The corridor north of Downtown is the heart of diverse ethnic communities in Richmond and supports a wide range of locally owned businesses. The length of the corridor south of Downtown is primarily residential in nature with some low-intensity commercial uses.

23rd Street is envisioned as a major north-south corridor that serves both as a key access route through the City and as a destination with a unique identity. North of Downtown, the 23rd Street Corridor could build on its cultural diversity as a character-defining element and as an economic development resource to become a vibrant center for community-oriented businesses and events. South of Downtown, 23rd Street residential uses could diversify and intensify with mixed-use commercial at the street level and enhanced pedestrian and bicycle connectivity. Anticipated land uses in this change area are described below.

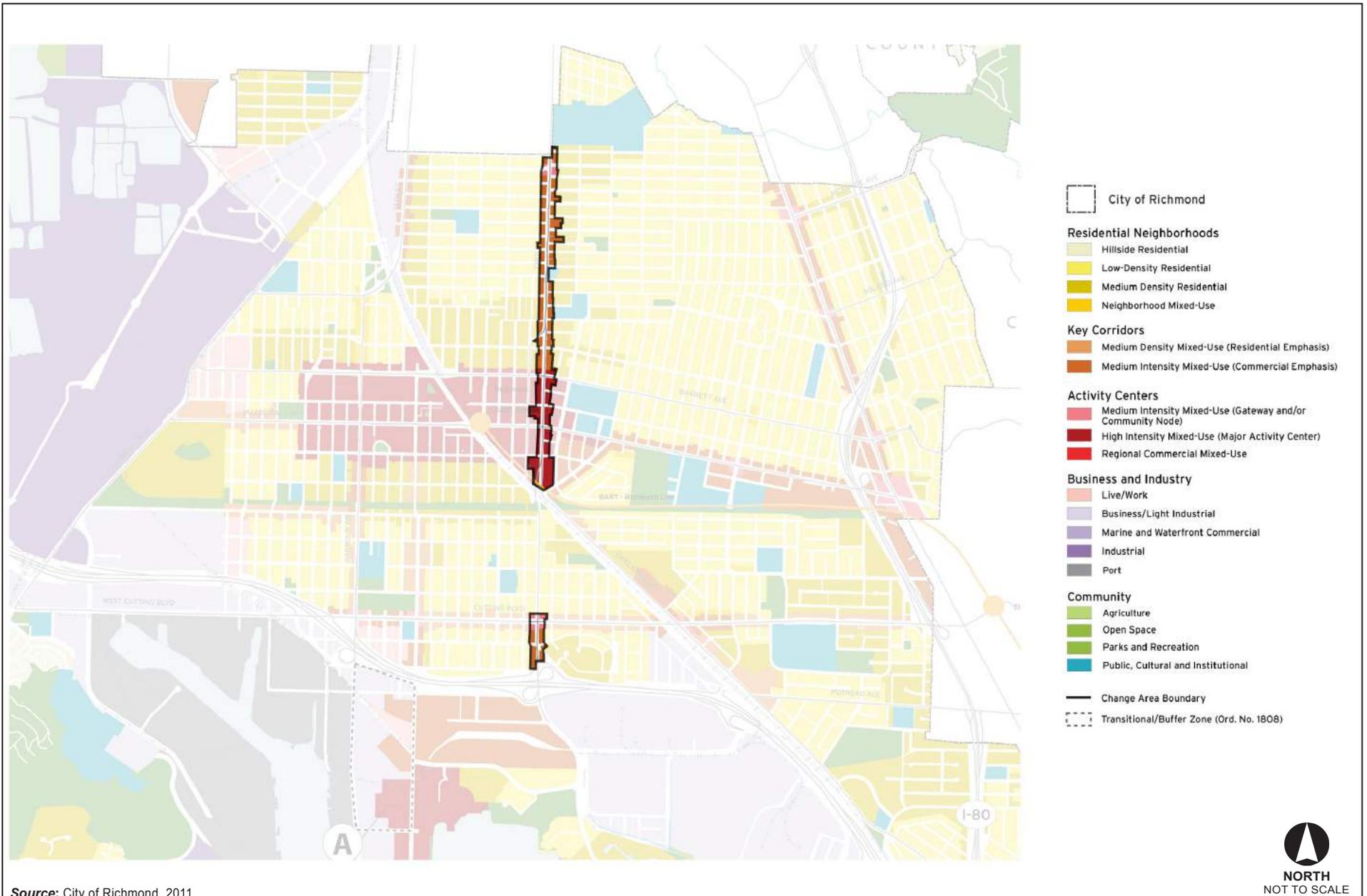
- The area north of the Downtown to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to provide strong building edges that enhance the sense of enclosure along the street.
- Parcels along 23rd Street between Macdonald Avenue and Cutting Boulevard to be designated as Low-Density Residential to maintain compatibility with the adjacent residential neighborhood.
- The area south of Cutting Boulevard to be designated as Medium-Density Mixed-Use (Commercial Emphasis).

Change Area 6: Marina Way Corridor

The Marina Way Corridor (Figure 2-9) extends from Interstate 580 into Downtown and is one of the key north-south streets connecting Downtown and the southern shoreline. Existing major uses include lower-intensity residential, multi-unit housing at Nystrom Village, and industrial and commercial development such as car repair uses and offices. Marina Way is currently characterized by fast-moving traffic. The width of the right-of-way varies along the length of Marina Way from 50-foot wide in the Downtown area to 80-foot wide south of Ohio Street.

Marina Way is envisioned as a major gateway street that connects Downtown with the planned activity center and ferry terminal at the Ford Peninsula in Marina Bay. Marina Way has the potential for street improvements that support walkability to accommodate pedestrians and bicyclists while attracting new infill mixed-use residential developments. Anticipated land uses in this change area are described below.

- The area south of Cutting Boulevard to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to capitalize on its proximity to the Ford Peninsula in Marina Bay.

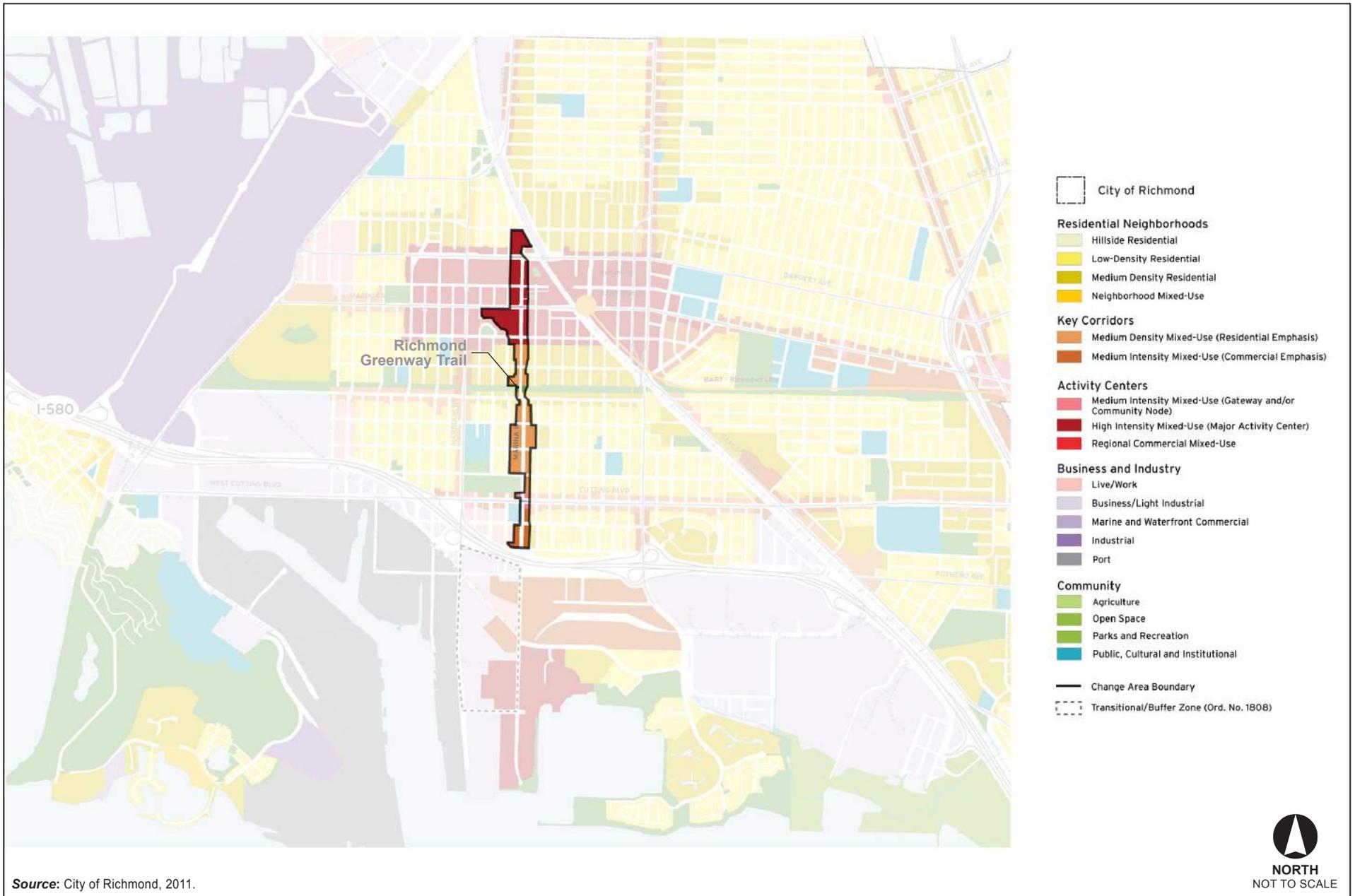


Source: City of Richmond, 2011.



FIGURE 2-8
Change Area 5 – 23rd Street Corridor

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Source: City of Richmond, 2011.



FIGURE 2-9
Change Area 6 – Marina Way Corridor

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- The area from Cutting Boulevard to Bissell Avenue to be designated as Medium-Density Mixed-Use (Residential Emphasis) to promote higher-density residential development with a retail component along Marina Way south of the Downtown.

Change Area 7: Cutting Boulevard Corridor

The Cutting Boulevard Corridor (Figure 2-10) begins west of Interstate 580 near Point Richmond and extends east to San Pablo Avenue. The corridor supports a mix of water-related industrial uses, commercial and residential uses. The wide right-of-way originally designed for fast-moving traffic serves as access to regional routes such as Interstates 580 and 80, as well as major City streets such as Harbour Way, 23rd Street, 37th Street, and Carlson Boulevard. Key community facilities along the corridor include Kennedy High School and open spaces such as Martin Luther King Jr. Memorial Park and John F. Kennedy Park. Uses along the three-mile corridor cluster into three distinct segments or subareas:

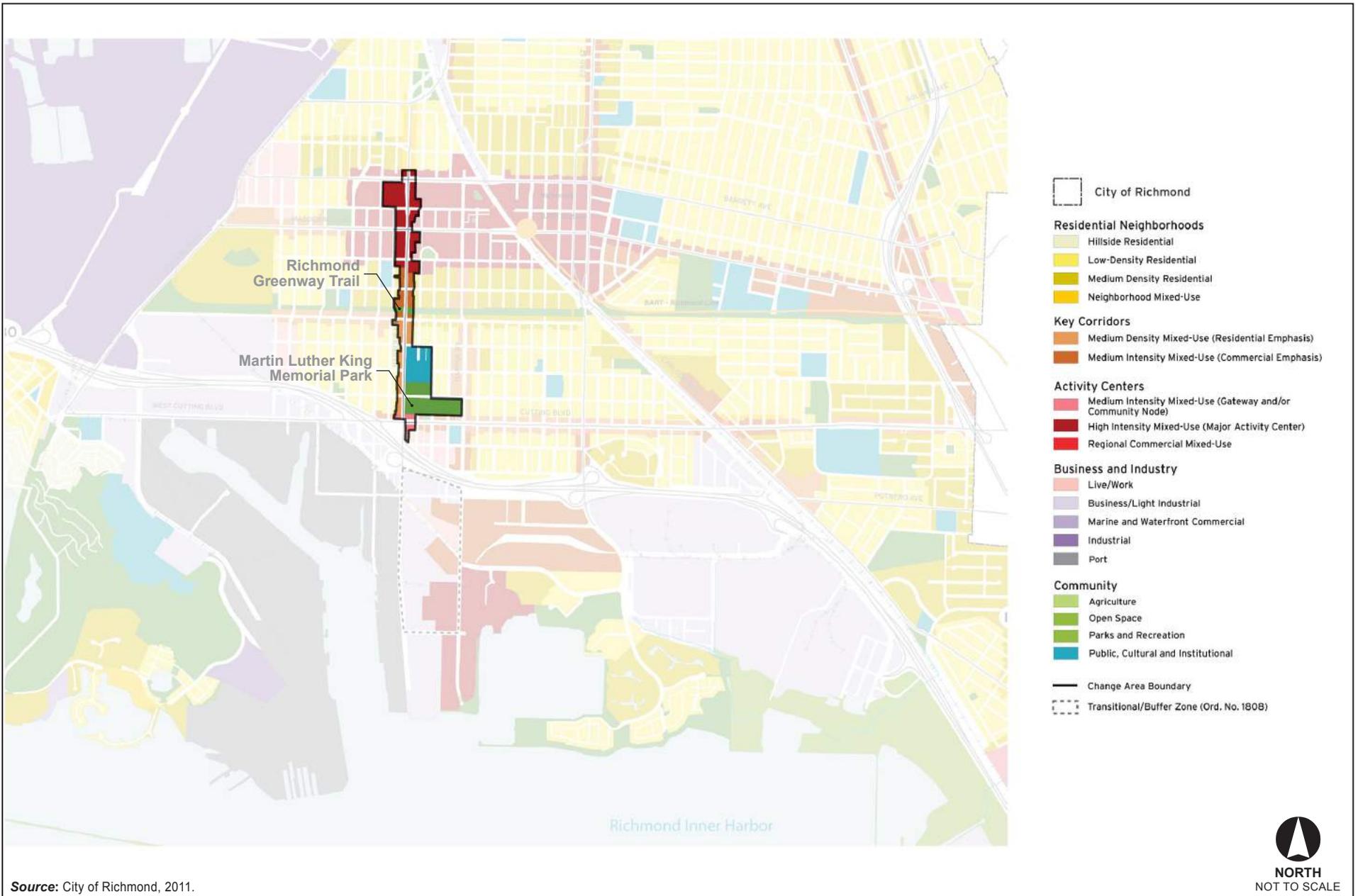
- West Subarea - Primarily an auto-oriented maritime and water-related industrial segment (south of Interstate 580), to be designated as Business/Light Industrial to reflect current uses in this area.
- Central Subarea - Mixed-use residential and commercial segment (between Interstate 580 and Carlson) to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) east of 31st Street and at the intersection of Cutting Boulevard with Harbour Way, Marina Way, and 23rd Street. Areas between the intersections to be designated as mixed-use with residential emphasis. Mixed-use designations would encourage redevelopment of parcels with residential uses on upper floors and commercial uses on the ground floor.
- Eastern Subarea - Residential segment with a pedestrian-friendly multi-way boulevard (east of Carlson) to be designated as Medium-Density Mixed-Use (Residential Emphasis) to provide transition to adjacent residential areas.

Change Area 8: Harbour Way Corridor

The Harbour Way Corridor (Figure 2-11) extends from Interstate 580 to Downtown and is a major vehicular connection between Downtown and the Ford Peninsula area in Marina Bay. The corridor carries four lanes of high traffic volume and typically fast-moving traffic that present a barrier to the overall connectivity of the neighborhoods on either side. Key public uses such as the Martin Luther King Jr. Memorial Park and the Community Center are located along the corridor as well as some low-intensity commercial uses.

The Harbour Way Corridor is envisioned as a medium-intensity, mixed-use commercial corridor that reconnects the neighborhoods to the east and west of the street by minimizing negative traffic impacts. The corridor would serve both as a regional connector street that carries high volumes of traffic and as a key gateway to the Downtown. Anticipated land uses in this change area are described below.

- The area north of Ohio Avenue to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to promote commercial uses on the ground floor with residential uses on the upper floors.



Source: City of Richmond, 2011.



FIGURE 2-11
Change Area 8 – Harbour Way Corridor

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- The area south of Ohio Avenue to be designated as Medium-Density Mixed-Use (Residential Emphasis) to provide transition to adjacent residential neighborhoods.

Change Area 9: Ohio Avenue Corridor

The Ohio Avenue Corridor (Figure 2-12) is located between 23rd Street (to the east) and 1st Street (to the west), extending one-half block north towards the Richmond Greenway, and one-half block south of Ohio Avenue. It currently serves as a primary east-west bicycle and pedestrian connection through the City. Mixed uses include primarily residential between 23rd Street and Marina Way, and a mix of industrial and residential uses between Marina Way and 1st Street, transitioning to primarily light manufacturing and warehouse uses west of 1st Street.

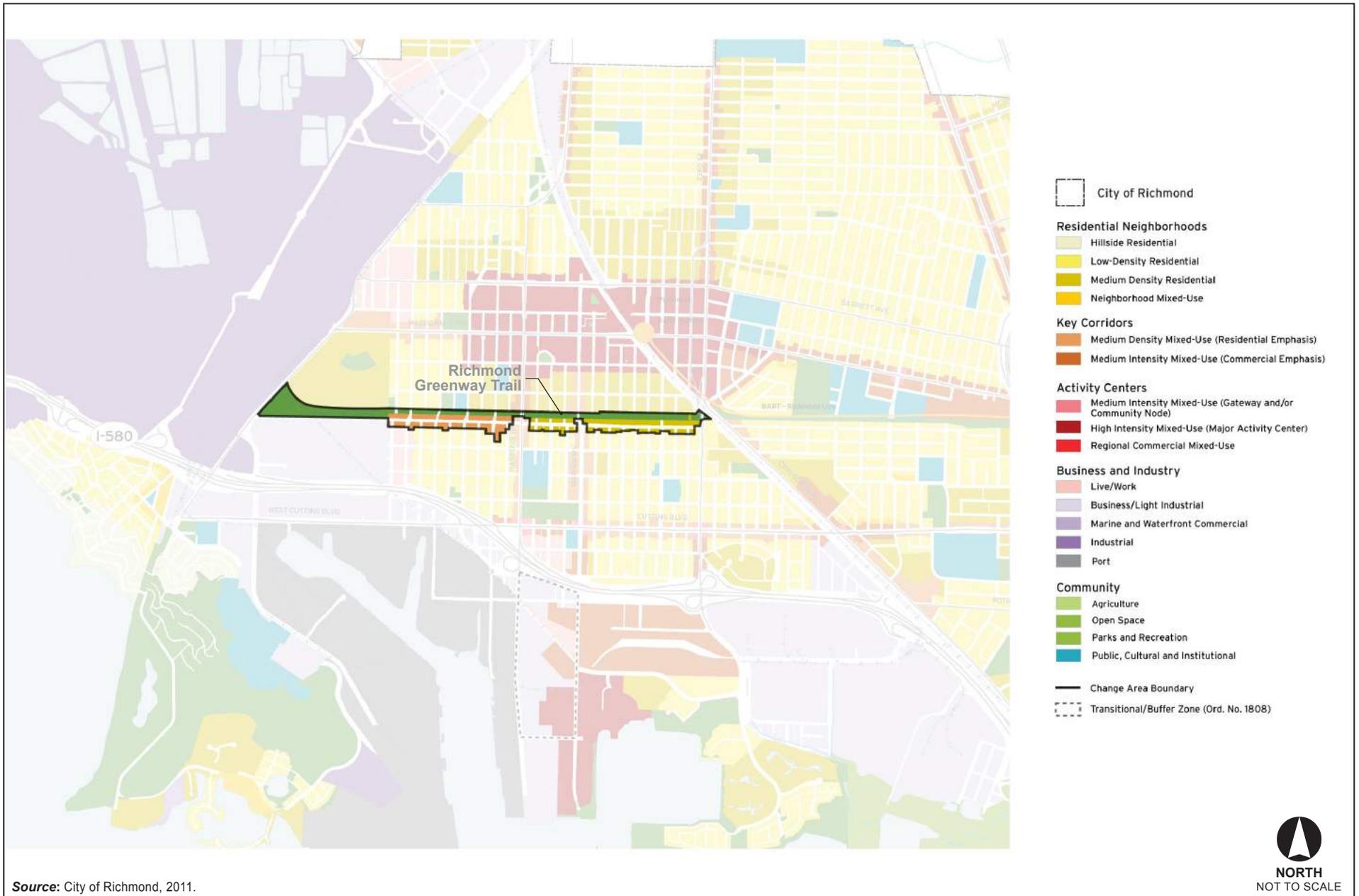
Ohio Avenue is envisioned as a mixed-use street with unique built and open space assets. The corridor's varied mix of buildings is complemented by a rich network of public open spaces that vary in size and character, as well as proximity to the Richmond Greenway. Anticipated land uses in this change area are described below.

- The area from 1st Street to Harbour Way to be designated as Medium-Density Mixed-Use (Residential Emphasis). This area would be characterized by mixed-use residential development that co-exists with neighborhood-serving retail at major intersections such as Harbour Way.
- The area from Harbour Way to 23rd Street to be designated as Medium-Density Residential to complement the adjacent residential neighborhood.

Change Area 10: Carlson Boulevard Corridor

Carlson Boulevard (Figure 2-13) serves as the primary connection between the Richmond Annex Neighborhood and the Downtown. The corridor is composed of three existing subareas that present opportunities for different types of treatment:

- South-Western Subarea – A segment with a mix of industrial and residential uses south of Cutting Boulevard and between Carlson Boulevard and 30th Street to be designated as Business/ Light Industrial to maintain the existing mix of light manufacturing and warehouses uses.
- North-Western Subarea – A segment largely composed of industrial uses and underutilized storage east of 23rd Street and between Ohio and Maine Streets to be designated as Business/ Light Industrial to maintain consistency with existing light industrial uses.
- Eastern Subarea – A segment with a mix of civic, commercial, and residential uses including single-family homes, apartments, and townhomes to be designated as Medium-Density Mixed-Use (Residential Emphasis) south of Cutting Boulevard and north of Florida Avenue. Parcels between Cutting and Florida that face Carlson to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to maximize the potential for higher-density mixed-use development on the large underutilized parcels.



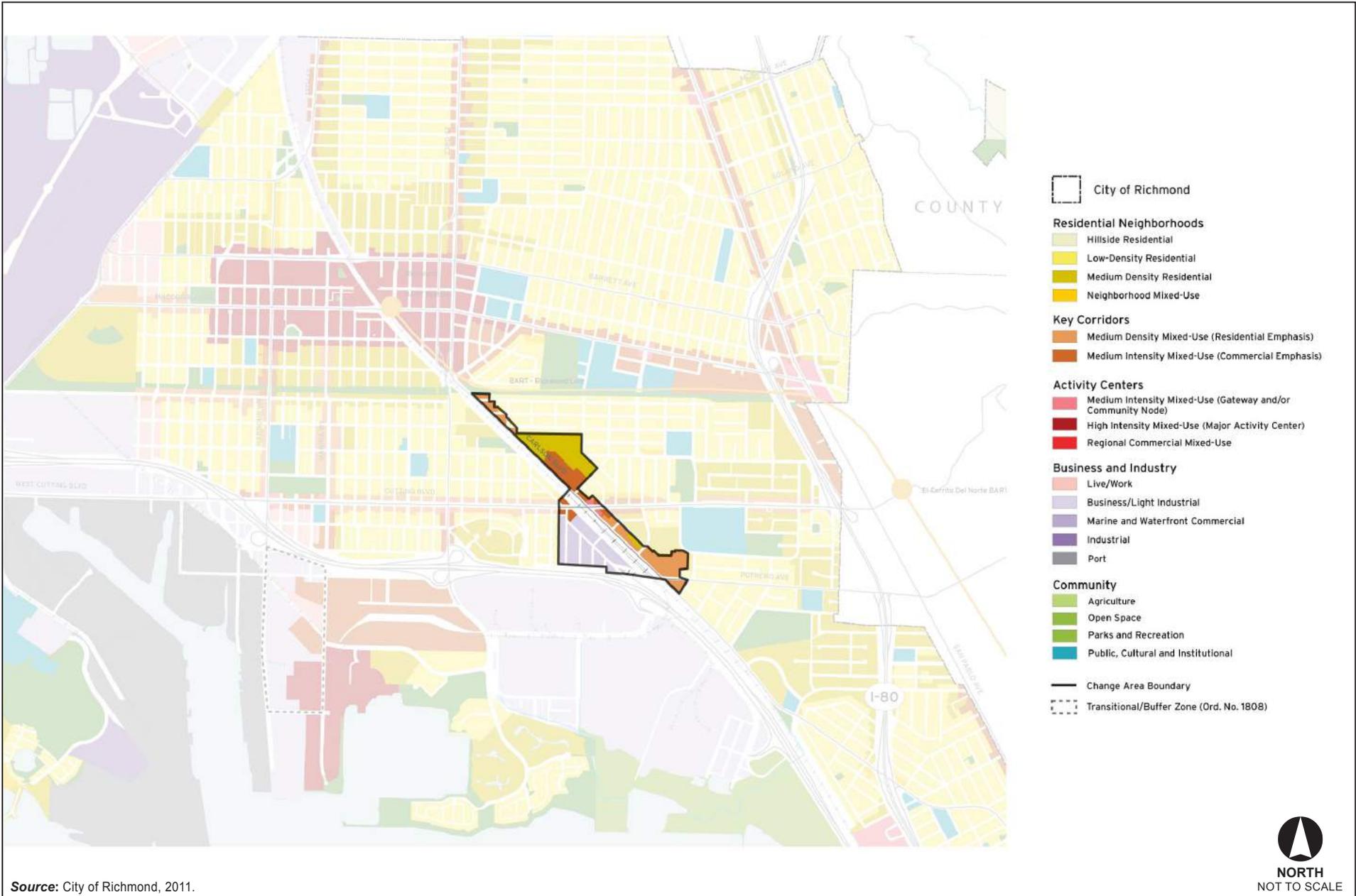
Source: City of Richmond, 2011.



FIGURE 2-12
Change Area 9 – Ohio Avenue Corridor

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Source: City of Richmond, 2011.



FIGURE 2-13
Change Area 10 – Carlson Boulevard Corridor

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Change Area 11: Northern Parkway

The Northern Parkway Area (Figure 2-14) is located north of the Hilltop Area and south of the Richmond Parkway. This area includes commercial businesses, pharmaceutical research facilities, single-family and multifamily residential uses, retail and commercial offices. Wide, curvilinear multi-lane arterial streets bisect the area, including San Pablo Avenue and Hilltop Drive. The Parkway's typical development pattern includes: large blocks, expansive surface at the street edge, and a significant proportion of blank walls facing the right-of-way, many as part of gated apartment complexes. Major assets in this neighborhood are the undulating topography, the YMCA, and proximity to Hilltop Lake and Park.

The Northern Parkway is envisioned as a residential and employment generating area that builds upon its wide variety of uses to create enriching public areas that are well-connected to the different built and open space destinations in and around the district. Anticipated land uses in this change area are described below.

- The area north of Hilltop Drive and west of San Pablo Avenue to be designated as Medium-Intensity Mixed-Use (Gateway and/or Community Node) to recognize the existing residential and commercial uses.
- The areas south of Hilltop Drive and east of San Pablo Avenue are designated as Business/Light Industrial to promote employment generating uses along the Richmond Parkway.

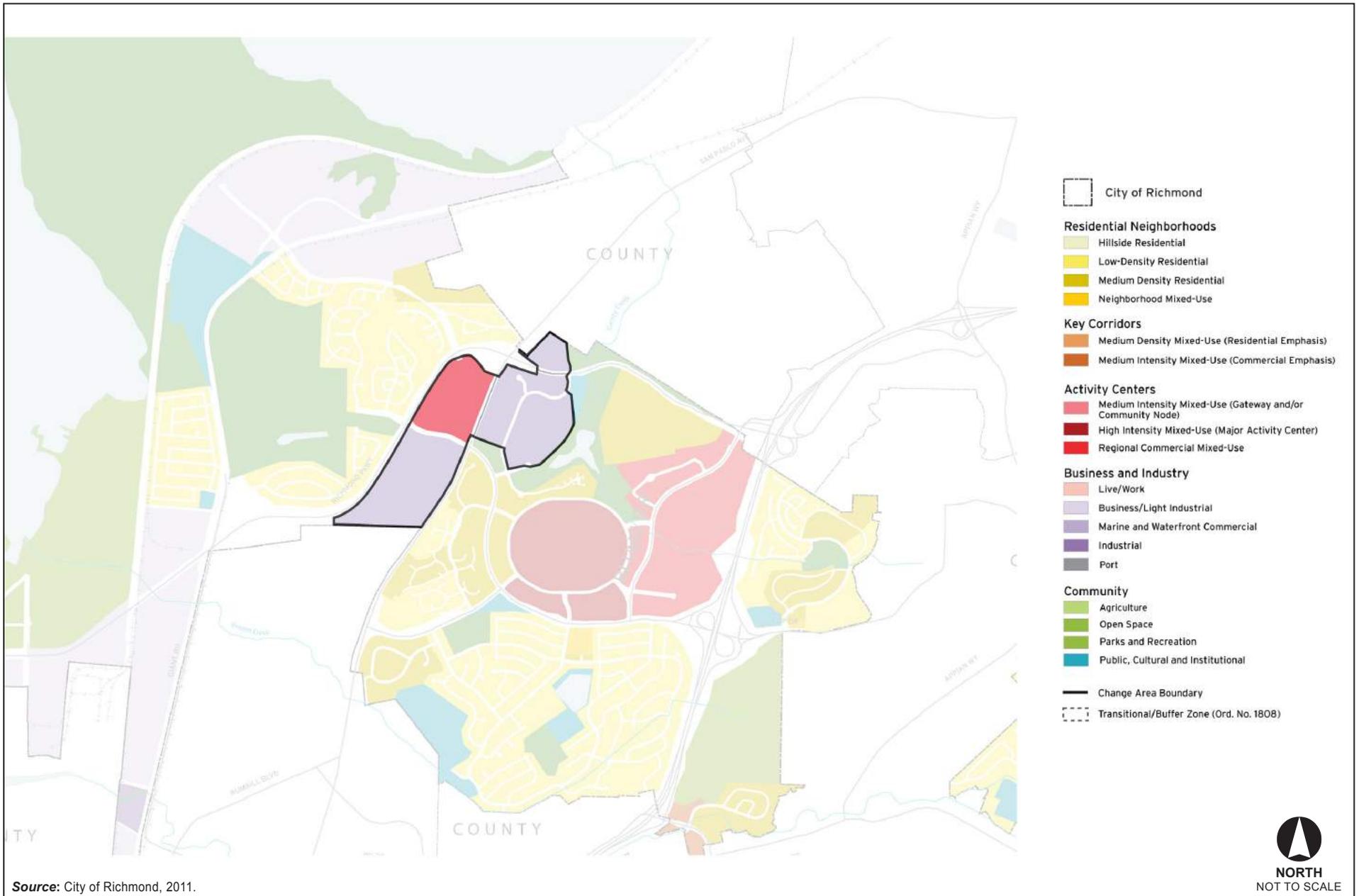
Change Area 12: Northshore

The Northshore Area (Figure 2-15) is located south of Point Pinole Regional Park, west of Parchester Village and between San Pablo Bay and the Richmond Parkway. This bayfront area enjoys sweeping views of San Pablo Bay and is representative of historic San Francisco baylands, with marshlands and uplands along the shoreline. Portions of the area have been identified as important habitat for endangered plant and wildlife species. The area lacks infrastructure and has remained undeveloped with the exception of an outdoor shooting range.

The Northshore Area is envisioned as open space, restored and protected to continue its historic function as vital habitat and provide enhanced opportunities for public access and recreation.

Change Area 13: San Pablo Peninsula Area

The San Pablo Peninsula Area (Figure 2-16) is the easternmost peninsula of the City and includes Point San Pablo and Point Molate. The area is characterized by vacant and underutilized land adjacent to a mix of heavy and light industrial uses, open spaces and the Point San Pablo Yacht Harbor. A significant amount of the area is devoted to parks and open spaces. The overall character of the peninsula is defined by a natural undulating topography. Large groves of eucalyptus trees on steep slopes further contribute to the character of the area. The built environment varies dramatically. Architecturally-distinctive buildings including the historic Winehaven development and the East Brothers Lighthouse add to the overall sense of history in the area. The scale and design of these buildings are in contrast to the industrial tanks on the southwestern end of the peninsula.



Source: City of Richmond, 2011.



FIGURE 2-14
Change Area 11 – Northern Parkway

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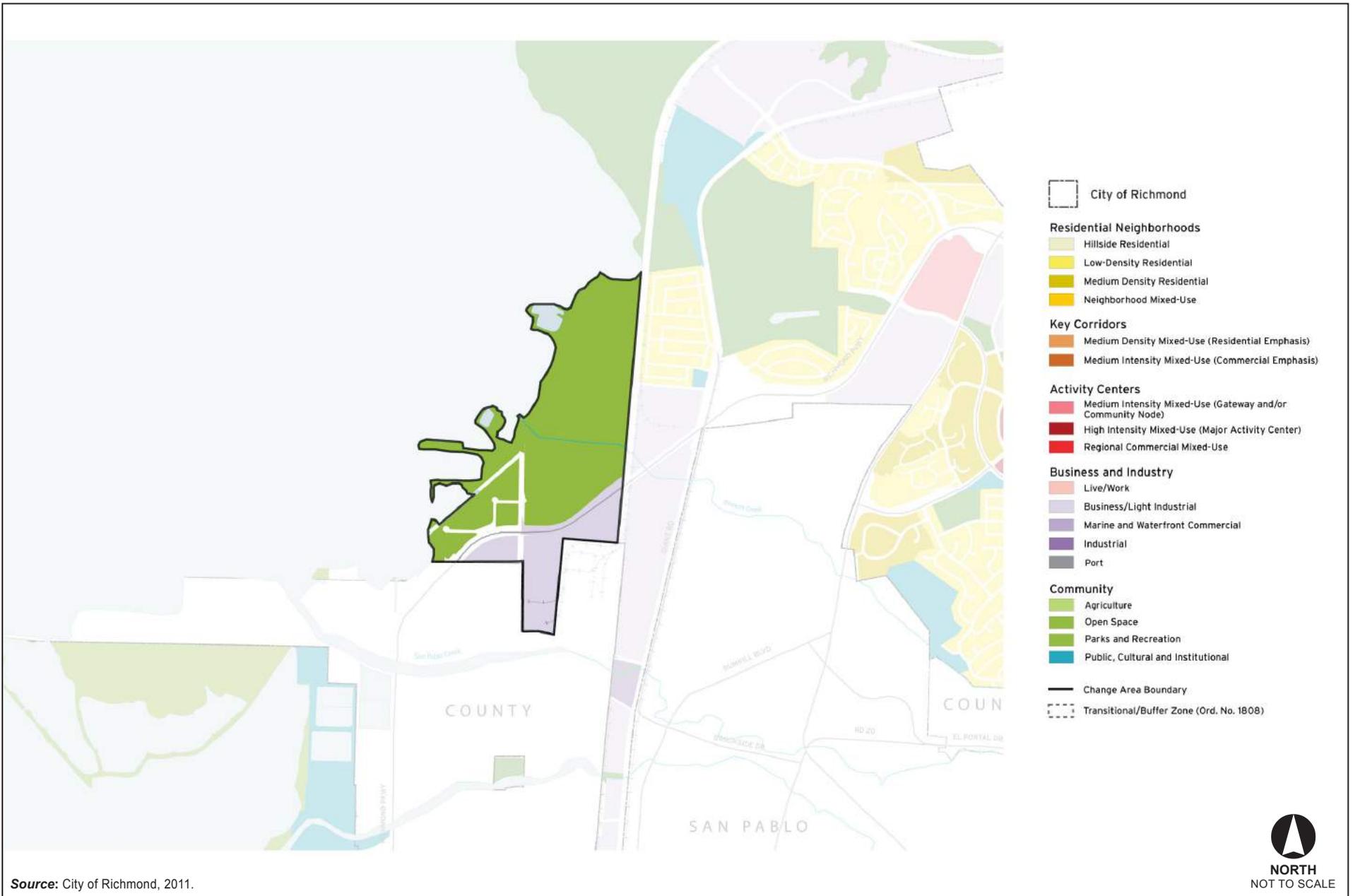
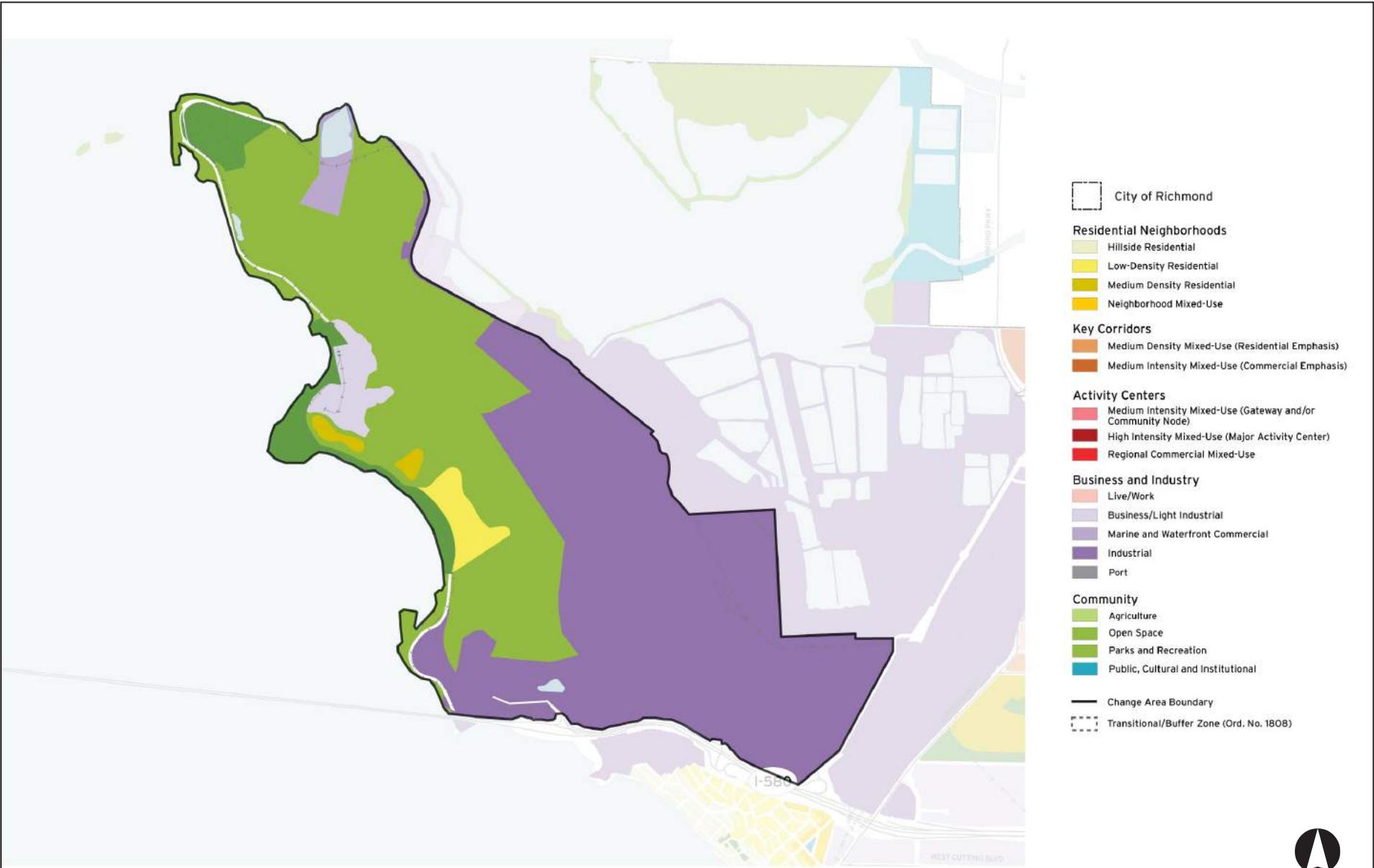


FIGURE 2-15
Change Area 12 – Northshore

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Source: City of Richmond, 2011.



FIGURE 2-16
Change Area 13 – San Pablo Peninsula

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There is very limited infrastructure and access to this area and the vast open space. The only publicly accessible road to the peninsula is via an off-ramp from Interstate 580 that connects to Western Drive.

The San Pablo Peninsula Area is envisioned as a new mixed-use neighborhood that takes advantage of its exceptional location and historical resources to enhance the City's economic base and expand open space and recreational opportunities. The City envisions the site recreating the vitality, commerce, and activity reminiscent of its era as a winery and village. Anticipated land uses in this change area are described below.

- The former Point Molate Navy Fuel Depot area to be designated as a combination of Business/Light Industrial, Medium-Density Residential, Low-Density Residential, Open Space and Parks and Recreation to reflect the conceptual land uses in the adopted 1997 Point Molate Reuse Plan.
- Point San Pablo and the yacht harbor in the north to be designated as Marine and Waterfront Commercial to promote recreational and water-oriented retail and commercial uses.

Change Area 14: Port Priority Use Area

The Port Priority Use Area (Figure 2-17) is oriented in a horseshoe configuration around Santa Fe Channel, an inlet of the San Francisco Bay. Located in the southern part of the City just east of Miller/Knox Regional Shoreline, the area is roughly bounded by Harbour Way on the east, Cutting Boulevard on the north, and Canal and Seacliff boulevards to the west. The Port Priority Use Area is defined by port-related uses including warehouses, storage tanks, shipbuilding slips, marine terminals, freight loading and unloading, ship repair, and private and public port areas. The area is traversed by numerous railroad spurs.

The Port Priority Use Area is anticipated to remain a major hub of port and related industrial uses with focus on strengthening overall economic viability of the Port of Richmond. Anticipated land uses for this change area are described below.

- The large parcel east of Miller/Knox Regional Shoreline and the area between Interstate 580 and the railroad tracks to be designated as Business/Light Industrial to support adjacent port and industrial uses.
- The Port Priority Use Area to be designated as Port to recognize and reflect the Port's continuing role as a major hub of port and related industrial uses.
- The undeveloped area west of the Point Potrero Marine Terminal to be designated as Medium-Density Residential to provide a transition from port-related use to the adjoining residential neighborhood along Seacliff Drive.

Change Area 15: Regatta/Marina Bay

The Regatta/Marina Bay area (Figure 2-18) is bounded by Regatta Boulevard to the west and south, Interstate 580 to the north, and Marina Way to the west and Sycamore Avenue to the east. A mix of large-scale office, light industrial, and some commercial development defines the character of the area.



Source: City of Richmond, 2011.

FIGURE 2-17
Change Area 14 – Port Priority Use Area



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Regatta/Marina Way is envisioned as part of a new and vibrant mixed-use community node that enjoys convenient access to Interstate 580 to the north, and proximity to the waterfront and planned ferry terminal to the south. The primarily high-intensity, transit-oriented neighborhood maximizes unique bay views and complements adjoining Ford Peninsula development with strong pedestrian connections to the waterfront. Anticipated land uses for this change area are described below.

- The area east of Marina Bay Parkway to be designated as Business/Light Industrial to promote employment-generating uses.
- The area west of the parkway to be designated as Medium-Intensity Mixed-Use (Commercial Emphasis) to complement development around the planned ferry terminal in the Ford Peninsula area in Marina Bay.

Change Area 16: Southern Gateway

The Southern Gateway area (Figure 2-19) is located to the south of Interstate 580 and east of Regatta Boulevard. The area is composed of several large-scale parcels that house industrial and office uses including Campus Bay Business Park and the Harbour Front Tract. The existing network of streets accommodates the co-existence of pedestrians, bicyclists, trucks, and automobiles within the public right-of-way. Relatively narrow streets, including Seaver Avenue (Dido Albert Federowich Memorial Drive), South 49th Street, and South 50th Street, help to create a distinctive, vibrant, and active industrial area.

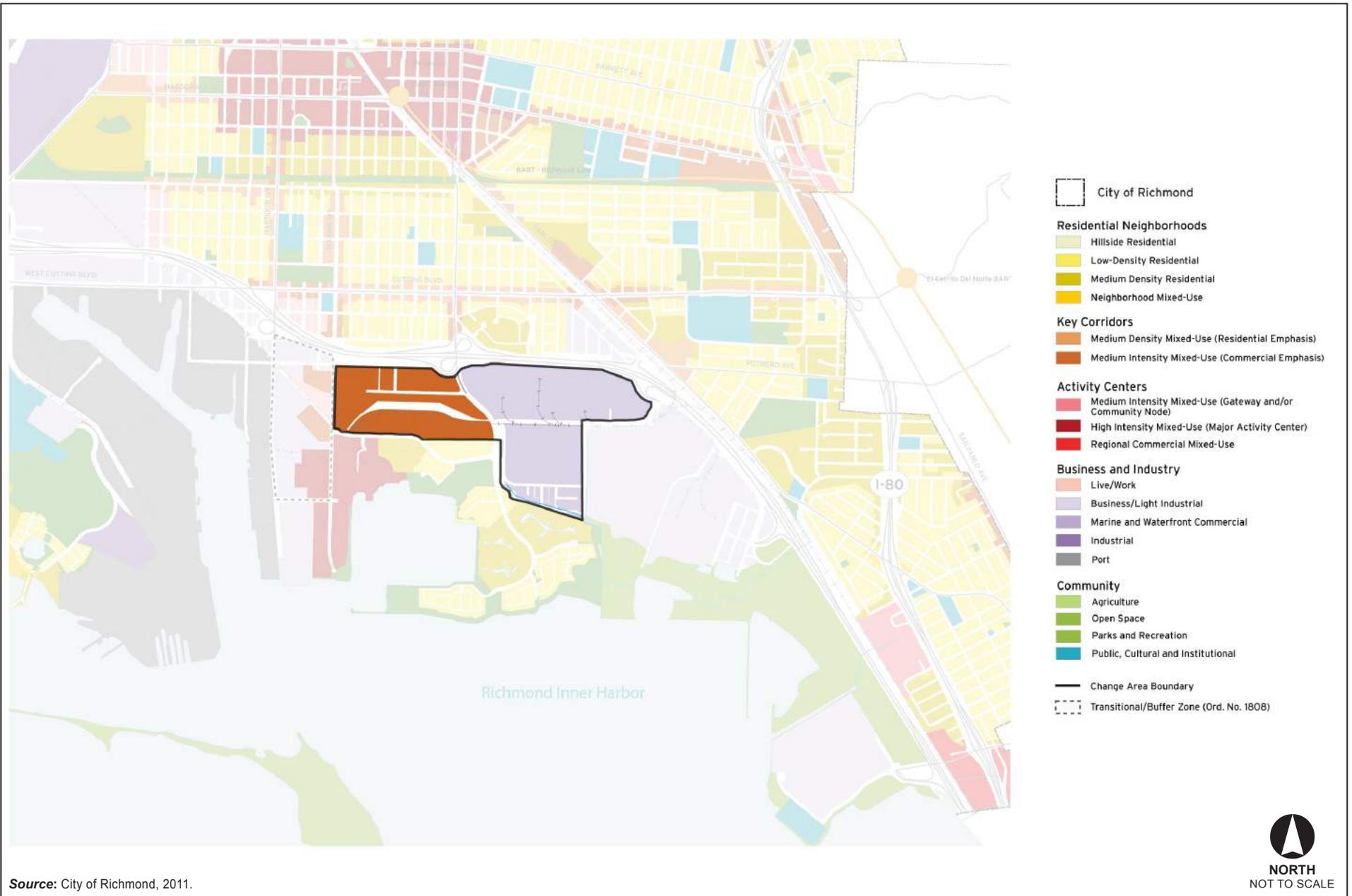
The Southern Gateway area is envisioned as a revitalized area that would include a mixture of high-intensity light industrial and commercial uses anchored by a large-scale research and development campus at the University of California Field Station. The Plan envisions a vibrant mix of new and existing uses that would harmonize with ecologically-sensitive areas, maximizing Bay views and providing efficient connections to regional transportation routes, including Interstates 80 and 580, as well as the multimodal San Francisco Bay Trail. The entire area would be designated Business/Light Industrial in order to achieve this vision.

General Plan Land Use Map and Land Use Classifications

The Land Use Element of the General Plan describes the land use map for the City, land use classifications, and buildout projections.

General Plan Land Use Map

The land use framework of the proposed General Plan Land Use Element is illustrated in the Land Use Map (Figure 2-3: Proposed General Plan Land Use Diagram). The Land Use Map designates the proposed general location, distribution, and extent of land uses within the City through buildout, which is expected by about 2030.



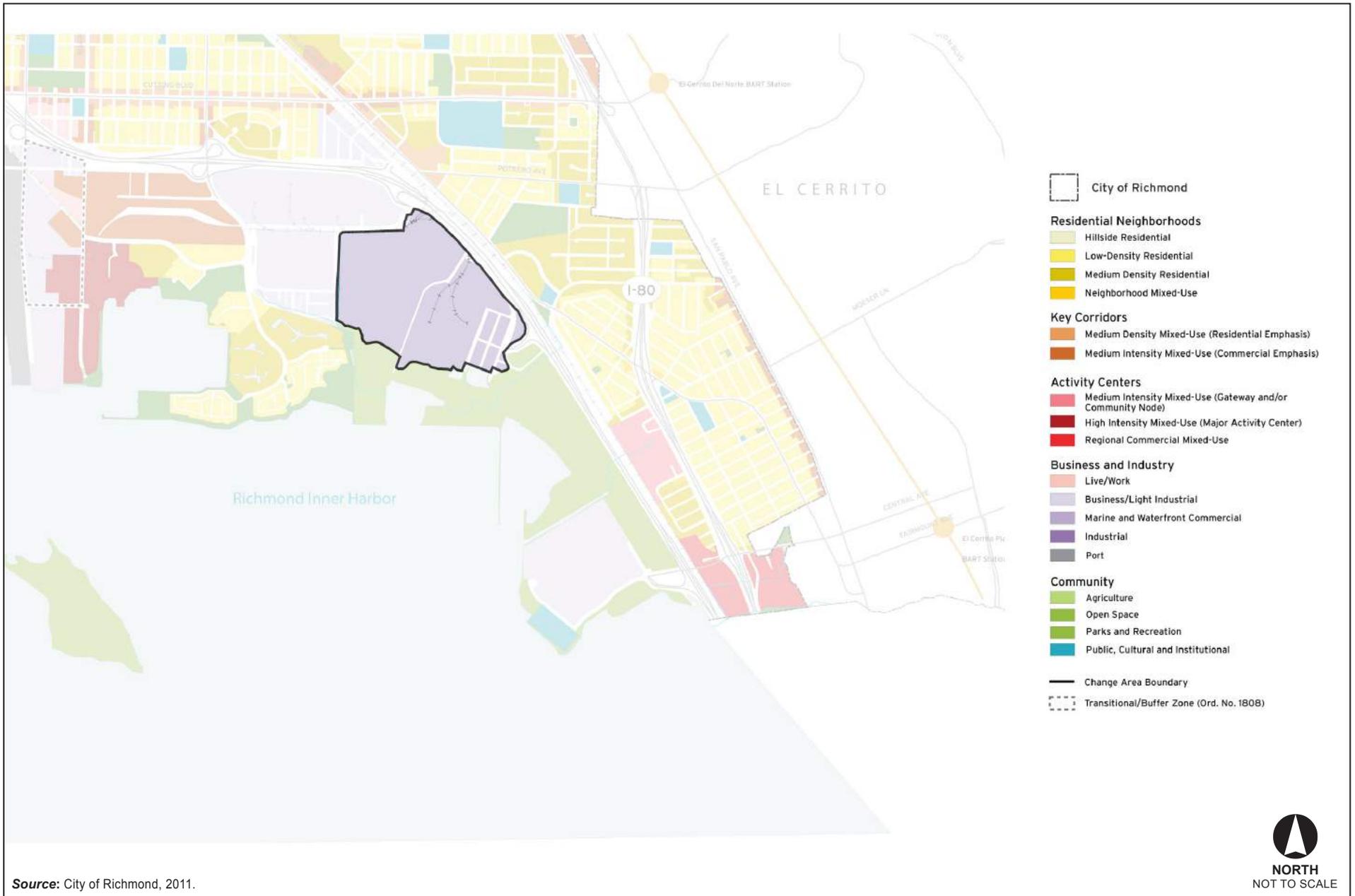
Source: City of Richmond, 2011.

FIGURE 2-18
Change Area 15 – Regatta/Marina Bay



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Source: City of Richmond, 2011.



FIGURE 2-19
Change Area 16 – Southern Gateway

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General Plan Land Use Classifications

Proposed General Plan land use classifications are organized into the following broad categories: residential neighborhoods; corridors; activity centers; business and industry; community; and planned area districts. These categories are described below.

Residential Neighborhoods

Richmond has a diverse array of residential neighborhoods that include multi-family and single-family housing. Infill development could expand housing options in key corridors and create mixed-use areas with neighborhood-serving retail and commercial developments. Residential land use designations would encourage the development of complete, accessible, and diverse neighborhoods. Within the general residential neighborhood category are Hillside Residential, Low-Density Residential, Medium-Density Residential, and Neighborhood Mixed Use, described below.

Hillside Residential

The Hillside Residential land use designation would include attached and detached single-family housing on subdivided parcels and clustered multi-family residential on developable portions of hillside parcels. Hillside development would address key environmental challenges and constraints, such as steep slopes and soil erosion. Neighborhood mixed-use development would be allowed at neighborhood nodes.

Low-Density Residential

The Low-Density Residential land use designation would include attached and detached single-family residential development in level to moderately sloping areas. Neighborhood mixed-use development would be allowed at neighborhood nodes. Existing multi-family residential structures would be able to remain and be improved without increasing densities, or revert to single-family residential uses if consistent with topographical constraints.

Medium-Density Residential

The Medium-Density Residential land use designation would include single- and multi-family housing types such as one- to three-story garden apartments, historic bungalows and cottages on small lots, townhouses, and stacked flats. Neighborhood mixed-use development would be allowed at neighborhood nodes.

Neighborhood Mixed-Use

The Neighborhood Mixed-Use land use designation would include residential and neighborhood-serving retail uses such as shops, markets, professional offices, boutiques, barber shops, beauty salons, and restaurants. Residential development above ground floor commercial would be strongly encouraged. Development would be emphasized at neighborhood nodes.

Corridors

Richmond has several key corridors that serve as major routes of travel in the City and support a wide range of retail and community amenities as well as housing on adjacent parcels. Land use planning and major improvements in these areas would create a network of vibrant, mixed-use, higher density pedestrian and transit-oriented corridors that link major community centers in the City. This category would include two mixed-use classifications that vary according to residential or commercial emphasis.

Medium-Density Mixed-Use (Residential Emphasis)

The Medium-Density Mixed-Use (Residential Emphasis) land use designation would primarily include mixed-use development with commercial uses encouraged at street-level along corridors. However, residential-only development would be allowed and could include condominiums, townhouses, or apartments. Commercial-only development would be prohibited. Projects with commercial components would be required to also include a residential component. New development would be required to have a pedestrian-oriented building design with minimal setbacks and parking located to the sides or rear of buildings.

Medium-Intensity Mixed-Use (Commercial Emphasis)

The Medium-Intensity Mixed-Use (Commercial Emphasis) land use designation would primarily include mixed-use development with commercial or office/light industrial uses encourage at street-level along corridors. This classification would be distinguished from the Medium-Density Mixed-Use (Residential Emphasis) land use classification in that it would allow residential-only or commercial-only development. Residential uses could include condominiums, townhouses or apartments and commercial uses could include small to large-scale retail or office. New development would be required to have a pedestrian-oriented building design with minimal setbacks and parking located to the sides or rear of buildings.

Activity Centers

Richmond enjoys a central Bay Area location, strong regional transit connectivity and existing infrastructure. These assets provide important opportunities to enhance, revitalize, and develop new activity centers to serve both residents and visitors. Activity Centers are intended to be pedestrian and transit-friendly community hubs characterized by mixed-use and higher-density development capable of generating revenue and creating jobs, while providing services and amenities to residents, businesses, and visitors. This category includes three mixed-use classifications.

Medium-Intensity Mixed-Use (Community Nodes and Gateways)

The Medium-Intensity Mixed-Use (Community Node and Gateways) land use designation would include mid-rise, mixed-use development at key community nodes and gateways with commercial uses strongly encouraged at street-level. New development would be required to have a pedestrian-oriented building design with setbacks allowing for public amenities and parking located behind buildings.

High-Intensity Mixed-Use (Major Activity Center)

The High-Intensity Mixed-Use (Major Activity Center) land use category would include mid- and high-rise mixed-use development at major activity centers to serve the community and region. Office, retail, entertainment, and residential uses are allowed. Areas with this designation would be characterized by streets with minimal setbacks, wide sidewalks, and public spaces that cater to pedestrians and transit riders. Medium-Intensity Mixed-Use (Commercial Emphasis) is allowed within this land use designation.

Regional Commercial Mixed-Use

The Regional Commercial Mixed-Use land use designation would include mixed-use development characterized by compact and pedestrian-friendly environments. Office, retail, and residential uses would be allowed in mid-rise buildings.

Business and Industry

Richmond has a diverse local economy that includes a port, heavy and light industry, research and development, regional and local retail, agriculture, and commercial services. Businesses and industry are important parts of the regional economy and contribute to the City's tax base, local employment opportunities, and a balanced community. Land use regulations in the business and industry category are intended to encourage positive business growth and support economic development.

Live/Work

The Live/Work land use designation would include lofts and apartments connected to small-scale production spaces as well as office and storefront retail in transitional areas where it could be demonstrated that the use would not conflict with adjacent uses.

Business/Light Industrial

The Business/Light Industrial land use designation would include commercial and institutional uses, such as a large-scale research and development campus, light industrial, industrially-related storage and distribution, and office uses.

Research and development would include uses involved in basic and applied research. Research and development uses include a mix of research facilities, corporate offices, clean manufacturing, and support services in a coordinated and high-quality, aesthetic environment. Research and development uses can range from incubator facilities for start-ups and growing tech/research companies to established research corporations. Campus settings with coordinated buildings and pedestrian environments would be strongly encouraged.

Light Industrial/Assembly comprises lower-intensity industrial uses that require a finished product consisting of small machine parts or electronic equipment, the manufacturing or assembling of small products within a business and elements of wholesale and storage of products in a manner and

character that does not create significant negative impacts to the environment or surrounding area. Components of office and/or research and development are preferred, and such uses may include commercial support uses as a secondary element.

Marine and Waterfront Commercial

The Marine and Waterfront Commercial land use designation would support water-oriented businesses such as boat repair, recreation equipment rentals, water transit, marinas, services, restaurants, and water-related storage and office uses.

Industrial

The Industrial land use designation would support activities that require large parcels for manufacturing, assembly, and storage of goods. These areas are located to accommodate specific industrial needs such as convenient freeway and freight rail access. This land use may allow for office, warehousing and civic uses such as corporation yards and water treatment plants.

Port

The Port land use designation supports activities related to a working waterfront including port terminals, warehousing, commercial fishing, ship repair, and related office uses.

Community

Richmond has a wide range of parks, open spaces, and civic uses that serve a diverse range of community needs. Natural areas such as the shoreline, hills, wetlands and creeks offer opportunities for preservation, conservation, recreation, and interpretation. Public facilities provide opportunities for social and community development. Land use planning should aim to improve these amenities and enhance accessibility for all City residents. The community category includes four designations.

Open Space

The Open Space land use designation includes wetlands, mudflats, creek corridors, and other natural preservation areas in the City. It also includes private lands that are subject to conservation easements. Land use planning would provide for appropriate and limited public access to protect and conserve natural resources in these areas.

Parks and Recreation

The Parks and Recreation land use designation includes publicly-owned local and regional parks as well as privately owned recreational facilities, such as golf courses. This designation allows small-scale recreation-supporting commercial uses, such as rental shops, bike repair facilities, small restaurants, interpretation centers, and museums.

Public, Cultural and Institutional

The Public, Cultural and Institutional land use designation includes public, semi-public, and educational uses, such as civic facilities, community centers, libraries, hospitals, and schools.

Agriculture

The Agriculture land use designation includes land for grazing, crop production, small-scale farming, and community gardens, while allowing some residential development.

Density/Intensity Standards

The General Plan land use map and development standards indicate a maximum permissible density/intensity of development, but do not guarantee that development projects will be approved for the maximum density or intensity applicable at that location. Land use classifications - shown as color/graphic patterns, letter designations, or labels on the Land Use Map - specify a range for housing density and building intensity for each type of designated land use. Residential density is expressed as a minimum and maximum number of housing units per net acre (that is, exclusive of existing public streets and other rights-of-way), and for non-residential and mixed uses a maximum permitted floor area ratio (FAR) to net site area is specified. FAR is a broad measure of building bulk that controls both visual prominence and traffic generation. In addition to density/intensity standards, some land use classifications stipulate allowable building types as well (such as single- or multi-family residential) to respect community design considerations.

As noted above, the density/intensity standards do not imply that development projects will be approved at the maximum density or intensity specified for each use. Development regulations consistent with proposed General Plan policies and/or site conditions may reduce development potential within the stated ranges — for example steep slopes, floodplains, designated setbacks and other standards designed to ensure compatibility with the surroundings and address physical site constraints may limit maximum attainable densities. Table 2-2 shows maximum density, intensity, and height by land use classification.

RICHMOND GENERAL PLAN LAND USE DESIGNATION DEVELOPMENT DENSITY AND INTENSITY SUMMARY	
Land Use Designation	Density (DU/AC) Intensity (FAR) Maximum Height (FT)
Residential Neighborhoods	
Hillside Residential	Up to 5 du/ac Not applicable Up to 35 feet
Low-Density Residential	5 to 15 du/ac Not applicable up to 35 feet
Medium-Density Residential	10 to 40 du/ac Not applicable up to 35 feet

TABLE 2-2	
RICHMOND GENERAL PLAN LAND USE DESIGNATION DEVELOPMENT DENSITY AND INTENSITY SUMMARY	
Land Use Designation	Density (DU/AC) Intensity (FAR) Maximum Height (FT)
Neighborhood Mixed-Use	10 to 30 du/ac 0.25 to 0.5 FAR up to 45 feet
Key Corridors	
Medium-Density Mixed-Use (Residential Emphasis)	15 to 50 du/ac up to 0.5 FAR up to 45 feet
Medium-Density Mixed-Use (Commercial Emphasis)	Up to 50 du/ac 0.25 to 1.0 FAR 15 to 55 feet
Activity Centers	
Medium Intensity Mixed-Use (Community Nodes and Gateway)	Up to 75 du/ac 0.5 to 2.0 FAR 15 to 55 feet
High-Intensity Mixed-Use (Major Activity Center)	Up to 125 du/ac] 1.0 to 5.0 FAR 15 to 135 feet
Regional Commercial Mixed-Use	Up to 50 du/ac 0.5 to 2.0 FAR 15 to 55 feet
Business and Industry	
Live/Work	15 to 50 du/ac 0.25 to 0.5 FAR up to 55 feet
Business /Light Industrial	Not applicable 0.25 to 3.0 FAR up to 55 feet
Marine Waterfront Commercial	Not applicable 0.25 to 1.0 FAR up to 100 feet
Industrial	Not applicable 0.25 to 2.0 FAR up to 55 feet
Port	Not applicable 0.25 to 1.0 FAR up to 100 feet
Community	
Open Space	Not applicable Up to 0.5 FAR Up to 35 feet
Parks and Recreation	Not applicable Up to 0.5 FAR Up to 35 feet
Public, Cultural, and Institutional	Not applicable Up to 1.0 FAR Up to 45 feet
Agriculture	Up to 0.20 du/ac Not applicable Up to 35 feet
Source: Richmond General Plan Update 2030.	

General Plan Buildout Projections

Full development under the proposed General Plan is referred to as “buildout.” Although the proposed General Plan applies an approximately 20-year planning horizon (to 2030), the Plan is not intended to specify or anticipate when buildout will actually occur; nor does the designation of a site for a certain use necessarily mean the site will be built/redeveloped in the next 20 years. In fact, due to the large amount of underutilized land in the City of Richmond, it is unlikely that the City would build out within the plan horizon. Therefore, to determine a more realistic projection for future development in the City, population and job growth were estimated using a “regional share” approach for the horizon year 2030 and that methodology assumed that Richmond would capture some percentage of the projected regional growth in Contra Costa County.² Between 1980 and 2005, Richmond’s share of regional population growth was 8.39 percent. The Association for Bay Area Governments (ABAG) projects Richmond will capture 10.91 percent of regional growth. However, because of the goal to stimulate higher intensity development within the City, this EIR assumes that Richmond will capture an even greater percentage of regional population growth—13 percent. The number of jobs that would be generated was calculated based on ABAG projected ratio of jobs to population for Richmond in 2030 (0.48 jobs per person). Based upon this methodology, the proposed General Plan could result in an increase in population of 30,147 and an additional 22,488 jobs. It is estimated that the Plan would add approximately 15,548 housing units in the City.

As previously discussed, the General Plan focuses on 16 change areas within the City where future growth is most likely to occur. Land uses in the remaining areas of the City, many of which are residential areas, are expected to remain stable. These stable areas are not designated for a change in land use, and though they may experience some development over the planning horizon, any changes are expected to be minor and would not constitute substantial changes to the land use mix in the City. Consequently, the growth projections are focused upon those areas in which development is most likely to occur.

Table 2-3 shows the existing acres within the City, based upon zoning, and the breakdown by change area. Table 2-4 shows the proposed General Plan designations for the City and for the change areas. As demonstrated in the following tables, the proposed General Plan would not result in substantial changes in residential or agricultural areas in the City, since so little of these designations occur in change areas. As noted above, most of the changes in designations would occur in the change areas.

Approvals

The General Plan project requires City Council certification of this EIR, adoption of a Mitigation Monitoring Program (MMP) and a statement of overriding conditions and approval of the Richmond General Plan Update.

2 MIG, Inc., *Methodology for Land Use Alternatives Analysis in the Environmental Impact Report*, July 17, 2009.

TABLE 2-3			
EXISTING ZONING ACREAGE IN THE CITY OF RICHMOND AND CHANGE AREAS			
		Citywide	Change Areas
Neighborhood Commercial	C-1	58.93	25.82
General Commercial	C-2	252.48	173.13
Regional Commercial	C-3	386.34	276.67
Central Business	CB	123.74	117.36
Coastline Commercial	CC	50.77	7.33
Community and Regional Recreational	CRR	5571.93	766.71
Exclusive Agriculture	EA	325.31	0
Industrial/Office Flex	M-1	606.42	501.72
Light Industrial	M-2	792.15	392.89
Heavy Industrial	M-3	2181.72	1778.75
Marine Industrial	M-4	495.50	478.78
Multi-Family: Residential	MFR-1	602.02	46.55
Multi-Family: Medium Density Residential	MFR-2	21.59	0
Multi-Family: High Density Residential	MFR-3	236.47	92.52
Planned Area	PA	787.12	117.88
Public and Civic Uses	PC	435.41	46.26
Single Family: Rural Residential	SFR-1	237.06	0
Single Family: Very Low Density Residential	SFR-2	477.96	0
Single Family: Low Density Residential	SFR-3	2227.19	38.37
Single Family: Low Density Residential/Exclusive Agriculture	SFR-3/EA	13.96	0
Tiscornia Estates Specific Plan	TESP	6.75	0
Undefined		662.55	82.17
	Total	16,553.38	4,942.41
Source: MIG, Inc., 2009.			

TABLE 2-4		
PROPOSED GENERAL PLAN LAND USE ACREAGE		
	Citywide (Acres)	Change Areas (Acres)
Residential Neighborhoods		
Hillside Residential	678.17	0
Low Density Residential	2504.32	76.53
Medium Density Residential	1122.23	324.33
Neighborhood Mixed-Use	53.82	1.33
Corridors		
Medium Density Mixed-Use (Residential Emphasis)	84.13	65
Medium Intensity Mixed-Use (Commercial Emphasis)	353.19	290.17
Activity Centers		
Medium Intensity Mixed-Use (Gateway and/or Community Node)	16.88	16.88
High Intensity Mixed-Use	599.37	389.16
Regional Commercial Mixed-Use	210.3	112.59
Business and Industry		
Live Work	49.35	23.25
Business / Light Industrial	1884.63	1420.56
Marine and Waterfront Commercial	51.53	0
Industrial	985.82	693.39
Port	439.01	440.93
Agriculture	536.52	0
Community		
Open Space	2121.83	837.14
Parks and Recreation	4385.76	200.14
Public, Cultural and Institutional	476.52	51.01
	16,553.38	4,942.41
Source: City of Richmond, 2011.		

After the General Plan is approved, the City will initiate amendments to the Zoning Ordinance and other sections of the Municipal Code to achieve consistency with the adopted General Plan. The Zoning Ordinance would further define land use designations and the performance standards applicable to the land use designations. Additional approvals may include:

- Adoption of financing or fee programs for public infrastructure.
- Construction of public infrastructure projects or consideration of private development requests for infrastructure projects such as transit and roadway improvements, water distribution facilities, wastewater facilities, drainage improvements, other capital improvements, and natural resource preservation and/or restoration.
- Development applications that are consistent with the General Plan and all applicable provisions of the Zoning Ordinance and would not cause any environmental impacts not analyzed in this document.

3. ENVIRONMENTAL SETTING AND ANALYSIS

3.0 INTRODUCTION TO THE ANALYSIS

ENVIRONMENTAL SETTING, IMPACT ANALYSIS, AND MITIGATION

This chapter of the Draft EIR provides information on the existing environmental setting within the City of Richmond, as well as an analysis of potential environmental impacts that could occur with implementation of the proposed General Plan. The analysis is organized by environmental issue area. CEQA does not treat project consequences relating solely to land use, socio-economic, or population, employment, or housing issues as direct physical impacts on the environment. This chapter, therefore, presents Land Use and Demographics as informational sections that provide the setting for land use and population-related changes that could occur under the proposed General Plan Update. To the extent that land use and population-related changes resulting from the proposed General Plan Update could result in physical environmental effects, those effects are addressed in the appropriate sections in this chapter.

This document focuses on the overall effects of the proposed General Plan within the City; the EIR does not examine the effects of the potential site-specific projects that may occur in the future under the General Plan. The nature of general plans is such that many proposed policies are intended to be general, with details to be determined during implementation. Therefore, this EIR assumes that specific development projects and infrastructure improvement proposals submitted to the City of Richmond will necessitate an independent environmental assessment consistent with the requirements of CEQA. Thus, many of the impacts and mitigation measures can only be described in this EIR in general or qualitative terms.

The proposed General Plan is intended to be self-mitigating in that the policies and programs of the proposed Plan are designed to mitigate environmental impacts. This EIR shows how the impacts of future development in the City of Richmond will be mitigated through compliance with existing regulations and implementation of the policies and programs of the proposed General Plan. Any residual impact after implementation of these proposed policies and programs is measured against the significance criteria established for each impact area. Depending on the issue area, the significance criteria are identifiable quantitative, qualitative, or performance thresholds beyond which the proposed project would be considered to result in a significant effect.

This EIR represents the best effort to evaluate the potential environmental effects of the proposed General Plan given its long-term planning horizon. It can be anticipated that conditions will change over this planning horizon; however, the assumptions used are the best available at the time of preparation and reflect existing knowledge of patterns of development and travel patterns.

The proposed General Plan EIR is based on the assumption that all policies in the proposed General Plan will be implemented and all development will be consistent with the proposed General Plan Land Use Diagram. It is also assumed that during the 20-year lifespan of the Plan, the potential for development within the City will not be fully realized. Key elements of the proposed General Plan include accommodating growth within the City through infill of vacant and underutilized parcels and

providing better connectivity between and within neighborhoods. It is assumed that development will occur incrementally through growth management policies that ensure urban growth is balanced with infrastructure improvements and natural resources conservation over the next 20 years. Another key assumption of the General Plan EIR is that development under the proposed General Plan (as defined in Chapter 2, Project Description) will occur over 20 years. It is understood that development under the proposed General Plan will be incremental and the timing of development will be influenced by market conditions. While the proposed General Plan includes policies intended to control the degree and location of growth, it does not include developmental phases because phases cannot be predicted with accuracy.

FORMAT OF THE ENVIRONMENTAL ANALYSIS

Environmental Setting

According to section 15125 of the CEQA Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the “baseline condition” against which project-related impacts are compared. Normally, the baseline condition is the physical condition that exists when the Notice of Preparation (NOP) is published. CEQA Guidelines recognize that the date for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over time, use of an environmental baseline measured at a time other than the date of the NOP is reasonable and appropriate when the result is a more accurate or conservative environmental analysis.

The NOP for the proposed project EIR was published on March 2, 2008. Consistent with CEQA Guidelines section 15125, each of the technical sections of this EIR contains a description of the physical setting at the time of the NOP. For most issue areas, impacts associated with implementation of the proposed project are measured against the existing conditions at the time the NOP was published.

However, the General Plan does not propose specific projects or the phasing of any of the development allowed in the General Plan. Therefore, this Program EIR does not speculate as to the timing of future development relative to infrastructure improvements that are currently planned or would be required to serve development. In practice, development associated with implementation of the proposed General Plan would occur incrementally throughout the planning horizon of the General Plan and, as this development occurs, the City would implement proposed General Plan policies to ensure adequate infrastructure is in place to serve the proposed development. Consequently, while the underlying analysis relies upon the existing conditions as a baseline, for issue areas either directly or indirectly related to infrastructure, project-level impacts are analyzed against future conditions that consider anticipated population growth, as well as, in some cases, infrastructure improvements. This differs from an existing plus project approach, which would assume an improbable scenario in which development of the General Plan would increase the population and demand for infrastructure and services, without necessary improvements called out in the General Plan to serve that development. The policies related to infrastructure provision are described in the technical sections in the EIR. Of particular note is Policy CF1.4, which requires that

new development provide proportionate facilities and infrastructure improvements as development occurs and that new developments must mitigate impacts or contribute adequate infrastructure to meet additional demand for roads, parks, schools, and utilities. Other policies that would reduce physical effects as development occurs include those related to improving bicycle, pedestrian, and transit circulation; maintaining adequate street capacity and reducing congestion for all modes of transportation on the street and freeway system; participating in regional circulation planning efforts to identify and advocate for improvements that enhance regional connectivity and mobility in the City; securing adequate facilities, equipment and personnel for police and fire; collaborating with neighboring jurisdictions and partner agencies; and maintaining and upgrading existing water, gas, electricity, telecommunications and cable infrastructure and associated programs and services. Except where noted in the technical sections, the impacts disclosed in the technical sections would not differ from the incremental effects under the existing plus project scenario, because the General Plan policies would ensure that infrastructure keeps pace with development.

Regulatory Setting

The Regulatory Setting provides a summary of regulations, plans, policies, and laws that are relevant to each issue area.

IMPACTS AND MITIGATION MEASURES

This section is further divided with a description of the methods of analysis and the standards of significance, as described below.

Methods of Analysis

This subsection identifies the methodology used to analyze potential environmental impacts.

Standards of Significance

Impacts are considered to be significant if they exceed established standards of significance. While the standards of significance are unique to each issue area, the classification of the impacts is uniformly applied in accordance with the following definitions:

Significant. An adverse and substantial effect on the environment, where even with application of proposed General Plan policies, it cannot be reduced to levels that are less than significant.

Less than Significant. An adverse effect that is not considered substantial. Many policies in the General Plan are designed to reduce environmental impacts. In this way, the General Plan is self-mitigating. The proposed General Plan policies that mitigate the potential impacts follow each impact analysis discussion.

No Impact. The project would result in no adverse impact.

Project Impacts and Mitigation Measures

This subsection describes the potential environmental impacts of the proposed project and, based upon the thresholds of significance, concludes whether the environmental impacts would be considered significant, potentially significant, or less than significant. Each impact is summarized in an “impact statement,” followed by a more detailed discussion of the potential impacts and the significance of each impact before mitigation.

The impact discussion assumes implementation of all applicable regulations and the extent to which those regulations would reduce the physical effects related to that specific topic. The analysis then considers proposed policies and implementing actions from the proposed General Plan and the extent to which those policies would have a mitigating effect. Note that the policies that are identified for a previous impact in the technical sections are referred to in subsequent impacts by number and title only. As discussed above, this EIR assumes the City of Richmond will implement the policies set forth in the General Plan. Consequently, although not all policies and implementing actions are prescriptive, thus requiring or disallowing certain actions, the impact analysis assumes that the intent of the policies would be implemented to protect resources. If, after compliance with applicable regulations and proposed policies and implementing actions, the proposed General Plan would result in significant physical impacts, mitigation measures are included to further reduce the impact, to the extent such measures are available and feasible.

Because the proposed General Plan is essentially a set of guidelines for projects that could occur within the timeframe of the General Plan, the Plan itself represents the cumulative development scenario for the reasonably foreseeable future in the City of Richmond. Therefore, the analysis presented in Chapter 3 generally represents a cumulative analysis of Richmond as a whole over the next 20 years. In instances where other cumulative development in neighboring jurisdictions or within the region as a whole could contribute to impacts generated by the proposed General Plan, those impacts, as well as the context, are discussed in the cumulative impact discussion that follows the project-specific impacts in each section.

The EIR analyzes development based upon growth projections adjusted to the General Plan horizon year of 2030, or an adjusted buildout scenario. This assumption is based on the concept that “buildout” of the proposed Richmond General Plan would not occur for many years beyond the 2030 horizon year (if at all). For the purposes of this EIR, analysis of development that is speculative and not reasonably foreseeable may result in impacts that are overstated and incorrect. For each impact, the analysis of the impact is based upon the General Plan horizon year and the amount of projected regional growth the City anticipates it could capture within the planning horizon (see Chapter 3.2, Demographics for the assumptions of regional growth captured). Conclusions about significance and mitigation identified are based on these projections. In each impact discussion, the EIR also includes a general discussion of the full implications of buildout of the General Plan. For some impact areas, including all of those that involve demand/capacity increases, it is acknowledged that the magnitude of additional demand that could occur under full buildout is greater than the demand of the development anticipated during the General Plan’s planning horizon. Where applicable, the DEIR acknowledges that capacity does not exist for that additional demand. It should

be noted, however, that the additional demand of full buildout of the Plan would occur in a time period beyond the horizon of the plan, and future planning efforts would address that growth, the implications of the growth, how to provide additional capacity if necessary to accommodate the growth. Environmental analysis will be conducted for those future plans as they are proposed.

3.1 LAND USE CONSISTENCY AND COMPATIBILITY

3.1 LAND USE CONSISTENCY AND COMPATIBILITY

INTRODUCTION

This section of the EIR analyzes the consistency of the proposed City of Richmond General Plan with existing land use plans and policies as well as land use compatibility with adjacent lands. CEQA Guidelines section 15125(d) states that the environmental setting of an EIR must discuss “any inconsistencies between the proposed project and applicable general plans and regional plans.”

If there are potential inconsistencies with other regional land use plans that could result in physical environmental effects, those effects are addressed in applicable technical sections in this EIR. The reader is referred to the respective technical sections for a discussion of any potential physical/environmental effects and potential incompatibilities that may be considered in the determination of physical environmental impacts. For example, land uses that produce excessive noise, light, dust, odors, traffic, or hazardous emissions may be undesirable when they intrude on places where people sleep and recreate (residences and parks). Therefore, some industrial or agricultural uses (which can produce noise and odors) would not be considered compatible with residential uses, unless buffers, landscaping, or screening can be used to protect residents from health hazards or nuisances. These potential incompatibilities are addressed in the applicable technical sections.

An EIR may provide information regarding social and economic issues, but CEQA does not recognize these issues as direct physical impacts on the environment. More specifically, CEQA Guidelines section 15131 states “[E]conomic or social effects of a project shall not be treated as significant effects on the environment.” A direct physical change in the environment is a change caused by and immediately related to the project (CEQA Guidelines section 15064(d)(1)). As noted above, this section does not identify environmental impacts due to plan inconsistencies that would not result in physical changes to the environment: physical impacts on the environment that could result from implementation of General Plan or project alternatives are addressed in the appropriate technical sections.

An NOP was circulated to the public to elicit comments on the contents of the EIR. Some comments on the NOP were received regarding the land use changes associated with the proposed General Plan; these changes are the subject of the analysis in the EIR. Comment letters associated with specific land use or planning issues that were received in response to the NOP (see Appendix A) referred to potential land use changes along the shoreline, specifically related to areas covered in the San Francisco Seaport Plan, and public access to the Bay. These issues are addressed below. Other comments requested specific information regarding existing and future land uses including but not limited to job density, job quality (including wages and benefits), vacancy rates, fiscal impacts, and land values, in order to assess impacts on jobs. While the proposed General Plan would include changes to land use designations in some portions of the City, it would be speculative at this time to attempt to identify which land uses would be developed to create or to eliminate jobs. Consequently, it would not be possible, until specific projects are proposed, to quantify the changes

in employees or types of jobs. While the proposed General Plan does include some assumptions about the level of development that would likely occur under the General Plan (see Chapter 2, Project Description which includes projections of the increases in population housing units, and number of jobs), the City cannot predict more specific changes, such as job density, job quality (including wages and benefits), vacancy rates, fiscal impacts, and land values. Therefore, these issues are not addressed in the EIR.

Proposed General Plan Policy Area Boundary

As shown on Figure 2-3 in Chapter 2.0, Project Description, the boundaries of the proposed General Plan include the existing City limits. The approximately 18,792-acre plan area covers an area where the City has formally adopted policies, and areas for which the 1994 General Plan designates specific land uses.

Existing Land Use Designations

The 1994 General Plan established an approximately 18,792-acre plan area to provide land use direction in and around the City. The 1994 General Plan includes land use designations for residential uses (very low-density residential, low-density residential, medium-density residential, and high-density residential), commercial uses (neighborhood retail, general commercial, regional office and/or shopping, City center, and water-related commerce and commercial recreation), industrial uses (industrial/office flex, light industry, heavy industry, and port/marine terminal/ship repair) and other uses (public and institutional, agriculture, open space, and water).

Existing Land Uses

Residential uses account for approximately 20 percent of the land area in Richmond. Approximately 70 percent of the residential uses are low density (5 to 9 dwelling units per acre) or very low density (0 to 5 dwelling units per acre). Low density residential is concentrated in Central Richmond, south of Hilltop Regional Shopping Center, in the El Sobrante Valley, and in the South area of the City on either side of Interstate 80. Very low density residential is primarily located in the hills and in Point Richmond. Medium density (9 to 28 dwelling units per acre) residential constitutes the second largest portion of the residential uses in Richmond, accounting for approximately 20 percent of all residential designated land. Medium density residential parcels are found in clusters in several areas of the City including Point Richmond, Central Richmond, along the El Cerrito border, the Brickyard Cove/Seacliff area, around the Richmond Country Club, and close to Hilltop Drive. Approximately 8 percent of the residential lands in Richmond are designated as high density (28 to 43 dwelling units per acre) residential.

Commercial uses account for approximately 4 percent of the land area in the City. Categories for commercial include Regional Office/Shopping, General Commercial, Neighborhood Retail, and Water Related Commerce and Commercial Recreation. Regional Office/Shopping provides for large-scale retail, high quality office, and mixed use development. Development in this category is primarily characterized by auto-oriented, department (or “big box”) stores with extensive parking and landscaping. Regional Office/Shopping land is consolidated along Interstate 80 near the Alameda

County boundary, at Hilltop Regional Shopping Center, near Point Pinole, and west of the junction of MacDonald Avenue and Interstate 80.

The current General Commercial use category supports a variety of commercial uses that are generally oriented to freeway traffic, such as gas stations and motels. The Neighborhood Retail use category is intended to support commercial uses that meet the retail needs of the immediate neighborhoods in which they are located. Small corner stores, local restaurants, and pedestrian-oriented services are typical uses found in areas designated as Neighborhood Retail.

Water Related Commerce and Commercial Recreation is the lowest intensity commercial use category in the 1994 General Plan. Land designated as Water Related Commerce and Commercial Recreation is located in groups along or near the shoreline. Pleasure boat marinas, boat sales, sail making, dry docks, and boat repairs are among the uses intended for this commercial use category.

Although Research and Development is not an official land use category in the 1994 General Plan, several large and small-scale research and development and/or biotech businesses are located south of Interstate 580 and along the Richmond Parkway in areas designated as industrial, commercial, or light industrial/office flex.

Industrial and port uses account for approximately 19 percent of the land area in Richmond, encompassing uses ranging from warehousing and biotech campuses to ship repair and petroleum refineries. These uses are concentrated along the City's shoreline and railroads, where they have been located for more than a century. However, the introduction of other land uses into the shoreline areas has begun to fragment the historical industrial and port land use pattern.

Light Industry includes uses such as light manufacturing, warehousing, research, commercial nurseries, and printing and publishing. Light Industry uses are primarily located close to Interstate 580, or adjacent to the railroads.

Heavy Industry uses are found on or near the land owned by Chevron, north of Interstate 580 and west of the Richmond Parkway, as well as along the waterfront near the Port of Richmond. Heavy Industry uses include oil refineries, storage yards, warehouses, machine shops, and other larger-scale heavy industrial uses.

Non-open space public land uses account for only approximately 2 percent of the total land area in Richmond. Parcels in this land use category are scattered throughout the City and host both local and regional public uses.

Open space uses comprise approximately 49 percent of the land area in the City, making it Richmond's largest overall land use category. Included in this category are preservation and resource areas, recreation lands, archeological and cultural resources, and other types of open space such as sanitary landfill and water. While much of Richmond's open space lands permit public recreation and provide for ecological preservation, many of the open space designations allow for uses including mineral excavation. The majority of parks and other open space are located at Richmond's periphery. Expansive areas of open space and parks are located in Wildcat Canyon,

Point Pinole, Point Molate, and the Miller/Knox Regional Shoreline near Ferry Point in the Point Richmond area. Smaller community-serving parks and recreation uses are located along the eastern portion of the Inner Harbor and scattered throughout the City.

Existing Land Use Plans

Many land use and urban design plans have been adopted by the City of Richmond. In addition to four specific plans (the City Center Specific Plan, Knox Freeway/Cutting Boulevard Specific Plan, North Richmond Shoreline Specific Plan, and Tiscornia Estate Specific Plan), four other plans are relevant to development in Richmond.

Macdonald Avenue Economic Revitalization Plan

The Macdonald Avenue Revitalization Plan is a conceptual plan adopted in 2004 to “provide a vision and a plan to promote and sustain economic development” along Macdonald Avenue, Richmond’s main downtown street. The plan is intended to guide long-term development along this corridor by providing revitalization strategies and a framework for investment. Opportunity sites, planning subareas, development prototypes, and streetscape improvements are identified and described in the plan.

Point Molate Reuse Plan

The Point Molate Reuse Plan is a conceptual land use plan adopted in 1997 to guide long-term civilian reuse of the Point Molate Navy Fuel Depot site in Richmond. The plan is intended to expand Richmond’s economic base, regional presence, and recreation opportunities through the creation of a new mixed-use neighborhood. The plan’s overall concept involves retaining and reusing many of the site’s historic buildings and constructing some new buildings while preserving open space areas. The Point Molate area is currently the subject of a joint environmental impact statement/environmental impact report (EIS/EIR) to address the environmental effects of a proposed 266-acre mixed-use tribal resort and casino project, or alternative use. The EIS/EIR was circulated for public review in July 2009 for a 105-day comment period that ended in October 2009.

Civic Center Master Plan

The Civic Center Master Plan was adopted in 2003 as a study of the feasibility of rehabilitating and replacing Civic Center structures and an implementation plan for the recommended alternative. The plan recognizes the Civic Center as a key component to the revitalization of Macdonald Avenue and downtown Richmond. The final plan includes recommendations for the Civic Center to remain at its existing site, the structures to be retained and rehabilitated, parking to be consolidated into a single structure, onsite public and open spaces to be renovated, and for private and public residential and mixed use development to be accommodated.

Shaping Our Future

Shaping Our Future is a regional planning effort coordinated by Contra Costa County. The outcomes of this effort are intended to be a unified, regional vision and implementation strategies for guiding

the next 30 years of growth in the County. Richmond's Hilltop area was used as a "test site" in a workshop meant to illustrate the potential for efficient land use.

BCDC San Francisco Bay Plan

The *San Francisco Bay Plan* was completed and adopted by the San Francisco Bay Conservation and Development Commission (BCDC) in 1968 and submitted to the California Legislature and Governor in January 1969. Since its adoption, the Bay Plan has been amended periodically and the Commission continues to systematically review the Plan to keep it current. The most recent update was February 2008. The two objectives of the Plan are to protect the Bay as a great natural resource for the benefit of present and future generations and to develop the Bay and its shoreline to their highest potential with a minimum of Bay filling.

Proposed Land Use Changes

Land uses in the vast majority of the City are expected to remain stable. Many of the stable areas of the City are residential neighborhoods. However, areas that are not designated for a change in land use may benefit from improvements, such as community facility and infrastructure renovations or upgrades and the creation of neighborhood-serving retail where appropriate. While the policies and guiding principles of the General Plan would apply to all areas of the City, the most substantial changes would be focused in "change areas" that would be targeted for new uses, development, and redevelopment.

Through community meetings, the General Plan team identified areas suitable for a shift in intended use from existing conditions and designated these change areas for significant changes in land use and development character under the proposed General Plan. They represent areas that are underutilized, have incompatible land uses, high potential for redevelopment, or are inconsistent with current community priorities. Each of the change areas is described in detail in Chapter 2.0, Project Description.

Regulatory Context

Federal

There are no specific federal regulations pertaining to land use consistency or compatibility that would be applicable to the proposed Richmond General Plan.

State

State law requires the preparation and periodic amendment of a General Plan. Certain elements of the Plan are mandatory. In addition to the mandatory elements, the City has chosen to include elements addressing local concerns, such as health and wellness and National Parks.

Local

Zoning

Zoning is the instrument that implements the land use designations in a General Plan. In addition to establishing permitted uses, zoning may also establish development standards relating to issues such as development intensity, building setbacks and height, and parking. Projects submitted for review and approval are evaluated by the City for consistency with the zoning code. Zoning must conform and be consistent with the General Plan pursuant to the Government Code.

Richmond Municipal Code Chapter 15.04 establishes zoning categories and their development criteria in the City. Zoning categories are designed to protect citizens and their homes and businesses from conflicting activities. For example, heavy industry cannot be conducted in a residential area. The City of Richmond currently has 20 zoning designations within its boundaries. Following adoption of the General Plan, the Zoning Ordinance would be updated to maintain consistency with the Plan.

LAND USE EVALUATION

Physical environmental impacts resulting from future development under the proposed General Plan are discussed in the applicable technical sections in this EIR. This section differs from impact discussions in that only plan or policy consistency issues are discussed, as opposed to a discussion of the physical impacts on the environment that could occur with development under the General Plan. This discussion complies with section 15125(d) of the CEQA Guidelines, which requires EIRs to discuss potential conflicts with local or regional plans as part of the environmental setting. Specifically, the following discussion analyzes the proposed General Plan for effects resulting in: 1) physically dividing an established community; 2) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project adopted for the purpose of avoiding or mitigating an environmental effect; or 3) short or long-term land use conflicts due to the placement of incompatible uses in proximity to one another.

Physical Division of an Established Community

The types of barriers or physical features that can divide a community include roads, freeways, railroads, transit lines (e.g., BART), and open space that is not developed for recreational use. Roads can both connect or divide communities: entire sections of the City are physically connected to the rest of the City by little more than a roadway, while other sections are disconnected from the rest of the City by roadways. The Richmond General Plan has been developed to include policies to restore its traditional compact neighborhoods: mixed-use, walkable, transit-oriented communities that allow residents comfortably to access nearby schools, parks, and community facilities. General Plan Goal LU2 *Create Healthy and Viable Neighborhoods* (see General Plan Element 3, Land Use and Urban Design), includes policies to promote mixed-income and integrated neighborhoods (Policy LU2.1), safe and walkable neighborhoods and inter-connected streets (Policy LU2.2), local-serving retail and public amenities (Policy LU2.3), and equitable distribution of community facilities and infrastructure (Policy LU2.4).

Policies

LU2.1 Mixed-Income and Integrated Neighborhoods. Promote mixed-income development and inclusion of affordable housing units in all neighborhoods. Encourage the integration of market rate housing with affordable units at the project level as well as at the neighborhood level. Affordable housing units should be located close to community and retail amenities such as parks, full-service grocery stores, local public transit stops, retail and public services.

LU2.2 Walkable Neighborhoods and Livable Streets. Promote safe and walkable neighborhoods and inter-connected streets through the design of streetscapes, public gathering places and all types of physical development. Provide pedestrian amenities such as sidewalks and street trees, transit and bike improvements, lighting and landscaping and appropriate traffic calming measures to ensure a safe pedestrian environment.

Support uses and public space improvements that generate street-level activity, create eyes-on-the-street, provide opportunities for community interaction and encourage a sense of collective ownership of common areas. Encourage mixed-use development that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and create incentives to remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used.

LU2.3 Neighborhood-Serving Goods and Services. Promote local-serving retail and public amenities at key locations within residential neighborhoods. Support development of small-scale neighborhood nodes that provide a range of neighborhood-serving retail, public amenities and services to residents within walking distance of their homes. Revitalizing Richmond's neighborhoods can reduce dependence on cars, improve access to daily goods and services, promote small business development, increase opportunities for social interaction, and reduce crime by increasing street use and natural surveillance.

LU2.4 Equitable Distribution and Access. Continue to promote equitable distribution of community facilities and infrastructure. Community facilities should continue to be located near residents in order to serve as neighborhood centers and maximize use. As Richmond grows, facilities will be sited to accommodate current and future residents. Prioritize the development of new, upgraded or revitalized parks; community facilities such as libraries, medical centers and schools; circulation and safety improvements; and infrastructure in neighborhoods that are currently underserved, have a high proportion of low-income households, and are impacted due to high crime and physical blight. Tailor improvements to the specific needs of residents in these neighborhoods.

Implementation of these policies would improve connectivity of neighborhoods. In addition, the General Plan incorporates a place-based land use approach and place-based system for streets and trails. The General Plan's place-based system tailors streets to priority modes of travel that complement the surrounding land use, street function, and desired neighborhood character. The approach also works with the system of parks and other General Plan elements to promote high-quality street and park design to influence the overall character and connectivity of public and private spaces throughout the City. The proposed General Plan has been designed as a cohesive plan to improve accessibility for all residents in existing and future neighborhoods. Consequently, the proposed General Plan would not physically divide an existing established community.

Conflicts with Existing Plans, Policies, or Regulations

The City of Richmond Zoning Code, Chapter 15.04 of the Richmond Municipal Code, is one of the primary means of implementing the General Plan. Adoption of the proposed General Plan would require updating the Zoning Code to be consistent with policies pertaining to land use, density/intensity of development, design and development, resource conservation, public safety, and other pertinent topics. After the General Plan is adopted, the City would update the Zoning Ordinance to be consistent with the Plan. The proposed General Plan includes new land use designations that would be reflected in the revised Zoning Ordinance. The proposed General Plan would not conflict with plans or policies that are designed to reduce environmental effects.

With regard to other plans in the City, the proposed General Plan includes Macdonald Avenue as a major activity corridor, which is consistent with the Macdonald Avenue Revitalization Plan's vision to promote and sustain economic development along Macdonald Avenue. Similarly, the proposed General Plan would not conflict with the objectives of the Civic Center Master Plan. The Point Molate area is identified in the proposed General Plan and is consistent with the Point Molate Reuse Plan and the proposals reviewed in the Point Molate EIR.

As discussed in Chapter 2, Project Description, the General Plan vision for Richmond's Hilltop Area is to become a highly visible and accessible regional destination for retail and employment, blended with a mix of higher-density residential development. This is consistent with the efficient land use shown in *Shaping Our Future*. The proposed General Plan would also not conflict with the *San Francisco Bay Plan*; the proposed General Plan allows development along the Bay and its shoreline, but also contains policies to protect the Bay. As noted above, a comment on the NOP questioned whether the proposed General Plan would result in land use changes along the shoreline, would result in conversions or differences in use or intensity that would be inconsistent with the San Francisco Seaport Plan. As discussed in Chapter 2, Project Description, any substantive land use changes in the proposed project would be focused in the change areas. The Ford Peninsula in Marina Bay (Change Area 3) includes changes in land use designations, but does not include changes in the priority use areas identified in the Seaport Plan.¹ Consequently, the proposed project would not be inconsistent with this plan. Because the proposed General Plan does not include changes to designations along the shorelines, public access to the Bay would not be limited and may be enhanced through implementation of the Plan.

Land Use Compatibility with Adjacent Lands

The intent of the proposed General Plan is to allow a mix of uses along key corridors and at focal points throughout the City where there is opportunity for revitalization and growth. These corridors and focal points account for most of the change areas (see Chapter 2, Project Description). The Plan envisions a diverse mix of pedestrian and transit-oriented uses and multi-use settings to stimulate increased activity and provide a wide range of goods and services. These mixed-use

1 San Francisco Bay Conservation and Development Commission and Metropolitan Transportation Commission, *San Francisco Bay Area Seaport Plan*, February 20, 2003, p. 33.

areas would allow for a transition to smaller-scale development in nearby residential neighborhoods, through reduced building heights and intensities and complementary character of new development.

While the proposed General Plan is intended to increase the mixed-use character in the urban core of the City, depending on the specific location of certain uses that could be developed under the proposed General plan, potential incompatibilities could occur. To the extent that there are specific incompatibilities associated with noise, odor, light, or traffic, these concerns are addressed in the appropriate technical sections of this Draft EIR. However, based on the analysis of the proposed General Plan, this EIR concludes that implementation of the development strategy to integrate uses within core areas within the City would not result in substantial land use incompatibilities.

REFERENCES

San Francisco Bay Conservation and Development Commission and Metropolitan Transportation Commission, *San Francisco Bay Area Seaport Plan*, February 20, 2003.

3.2 DEMOGRAPHICS

INTRODUCTION

This section of the EIR describes the existing population, employment, and housing characteristics in the City of Richmond, the West Contra Costa County Census Division, Contra Costa County, and the Bay Area Region. The purpose of this section is to identify, estimate, and evaluate population, employment, and housing changes that would be caused by development under the proposed General Plan and have the potential to cause physical environmental effects. Any physical environmental effects associated with the increase in population are discussed in the technical sections of this Draft EIR (sections 3.3 through 3.12). This section was prepared using data from the City of Richmond General Plan and Zoning Ordinances Update (1994), 2000 U.S. Census, Association of Bay Area Governments (ABAG) projections data, the California Employment Development Department (EDD), and Claritas (2006).¹

The information contained in this section is used as a basis for analysis of project and cumulative impacts in the technical sections of this EIR. However, changes in population and employment, in and of themselves, are generally characterized as social and economic effects, not physical effects on the environment. The California Environmental Quality Act (CEQA) provides that economic or social effects are not considered significant effects on the environment unless the social and/or economic effects are connected to physical environmental effects. A social or economic change related to a physical change may be considered in determining whether the physical change is significant (CEQA Guidelines section 15382). The direction for treatment of economic and social effects is stated in section 15131(a) of the CEQA Guidelines:

Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on physical changes.

The potential for the proposed General Plan to induce substantial population growth is addressed in Chapter 4, CEQA Considerations.

The proposed General Plan assumes that there will be population growth. To accommodate population growth, it includes infill and redevelopment, which could result in the replacement of some existing housing. While some housing could be removed as part of the General Plan, it is not anticipated that there would be substantial removal of housing, and replacement housing would be

1 As shown above, this chapter contains information from a variety of sources. Inclusion of any particular data is not intended to imply that any one source is right or wrong; the intent is to inform the reader of the growth trends in the region. Each of these sources uses different modeling and different assumptions to project growth, resulting in different projections. While there are differences in the final projections, the growth trend demonstrated by each of these sources is consistent.

constructed. Therefore, new housing would not have to be built outside of Richmond to accommodate the City's growth. This issue is not addressed further in the EIR.

ENVIRONMENTAL SETTING

Population

Regional Population

The City of Richmond is located in the nine-county San Francisco Bay Area in Contra Costa County. More specifically, the City is located in the West Contra Costa County Census County Division (CCD), a Census-based subdivision of Contra Costa County that includes the communities of Richmond, San Pablo, El Cerrito, Kensington, El Sobrante, Pinole, Hercules, Rodeo, and Crockett.² For the purposes of this section, U.S. Census data have been used for the years 1990 and 2000, while 2005 population estimates were obtained from Claritas, a private vendor.

The population in West Contra Costa County CCD grew 9.6 percent over 10 years, from approximately 213,268 residents in 1990 to 236,008 residents in 2000. During this same timeframe, Contra Costa County grew 15.3 percent and the Bay Area region as a whole grew 11.2 percent. Based on Claritas data, population growth continues throughout the region with West Contra Costa County growing 4.0 percent to 245,542 residents, Contra Costa County growing 7.1 percent, and the Bay Area region growing 2.4 percent over the five years from 2000 to 2005. Refer to Table 3.2-1 for a breakdown of population growth from 1990 to 2005.

Jurisdiction	1990	2000	% Change 1990–2000	2005 ^a	% Change 2000–2005
Richmond	87,425	99,216	11.9	102,654	3.5
West Contra Costa County CCD	213,268	236,008	9.6	245,542	4.0
Contra Costa County	803,732	948,816	15.3	1,016,131	7.1
Bay Area	6,023,577	6,783,760	11.2	6,944,895	2.4
Note: a. Estimated by Claritas. Source: U.S. Census 1990 2000; Claritas, 2006.					

According to ABAG Projections 2007, trends in population growth are expected to continue with Contra Costa County reaching a population of 1,255,300, and the Bay Area region reaching a population of 8,712,800 in 2030. Projections for the West Contra Costa County CCD are not available, since ABAG does not report data for this subregion. Population growth on both a County and regional level is projected to occur at a rate of 0.74 percent annually or 18.5 percent between 2005 and 2030 (see Table 3.2-2).

2 Excludes very small portions of Hercules, Kensington, and Richmond, which are included in a different CCD.

TABLE 3.2-2								
POPULATION, HOUSEHOLDS AND EMPLOYMENT PROJECTIONS: 2005 TO 2030								
Jurisdiction	2005	2010	2015	2020	2025	2030	Change from 2005 to 2030	Avg. Annual Growth (%/Actual)
City of Richmond								
Population	102,700	104,700	109,800	115,600	124,000	128,000	25,300	0.79/1,012
Households	35,710	36,850	39,140	41,530	44,650	46,460	10,750	0.92/430
Employment	41,050	43,730	47,860	52,420	56,660	61,220	20,170	1.32/807
Jobs/Household ratio	1.15	1.19	1.22	1.26	1.27	1.32	-	-
Contra Costa County								
Population	1,023,400	1,061,900	1,107,300	1,157,000	1,208,200	1,255,300	231,900	.074/9,276
Households	368,310	385,400	405,420	425,480	446,590	466,430	98,120	0.84/3,924
Employment	379,030	403,100	436,970	472,910	510,930	551,530	172,500	1.25/6,900
Jobs/Household ratio	1.03	1.05	1.08	1.11	1.14	1.18	-	-
Bay Area								
Population	7,096,100	7,412,500	7,730,000	8,069,700	8,389,600	8,712,800	1,616,700	0.74/64,668
Households	6,951,500	7,263,800	7,577,300	7,914,600	8,233,400	8,554,800	1,603,300	0.75/64,132
Employment	3,449,640	3,693,920	3,979,200	4,280,700	4,595,170	4,921,680	1,472,040	1.20/58,882
Jobs/Household ratio	0.50	0.51	0.53	0.54	0.56	0.58	-	-
Source: ABAG Projections 2007.								

City Population

As shown in Table 3.2-1, the U.S. Census reported that the population in the City of Richmond grew from 87,425 in 1990 to 99,216 in 2000, reflecting an 11.9 percent rate of growth over 10 years and an increase of 11,791 residents. During this time, Richmond's share of regional population growth (within Contra Costa County) was 6.0 percent. By 2005, the City's population grew to 102,654, a growth rate of 3.5 percent over 5 years or an annual growth rate of 0.70 percent. The 2005 population of the City of Richmond accounts for 10.1 percent of Contra Costa County's entire population. Population growth during this time (2000-2005) is consistent with growth experienced in West Contra Costa County CCD, and lower than growth experienced throughout Contra Costa County.

ABAG Projections 2007 projects population growth to continue at a similar rate, with the City growing from 102,700 residents in 2005 to 104,700 residents in 2010, 115,600 residents in 2020, and to 128,000 residents in 2030. Refer to Table 3.2-2 (Population, Households and Employment Projections: 2005 to 2030). Projected growth in the City would occur at a rate of approximately 0.74 percent annually or 18.5 percent total over 25 years, for an increase of 25,300 residents between 2005 and 2030. ABAG projects that the City of Richmond will capture 10.9 percent of the total anticipated population growth of 231,900 residents in the County, or 25,277 new residents.

Employment

Employment data for this section were taken from the Economic Trends and Market Analysis report prepared for the proposed project by Bay Area Economics in August 2006. These data were derived from information provided by the State of California Employment Development Department (EDD).

Regional Employment

The EDD maintains employment data for Contra Costa County. Based on the County's annual average jobs data, the County experienced a decline between 2001 and 2004 from 338,300 jobs to 337,500 jobs, a loss of 800 jobs.³ This slight loss in jobs in the County is consistent with the regional trends. As shown on Table 3.2-2, ABAG projects that employment in the County will grow to 466,430 jobs in 2030 from 379,030 jobs in 2005, an increase of 98,120 jobs over their 25-year planning horizon. This reflects a growth increase of 31.2 percent. Projected employment growth in the County is consistent with the percentage increase of growth throughout the Bay Area (29.9 percent).

City of Richmond Employment

Employment data for the City from 2001 to 2004 indicate that Richmond's job base, while relatively constant, did account for most of the job loss in the County between 2001 and 2004, with just a slight decline from 27,055 jobs in 2001 to 26,507 jobs in 2004, a loss of 548 jobs.⁴ This reflects a decline of 2 percent. This overall slight loss results from both gains in some industry sectors and losses in others, which is consistent with the shifts in local employment as Richmond follows regional trends of economic change. On an annual average basis (seasonally unadjusted), Richmond's labor force grew from 48,600 in 2000 to 50,100 in 2005, an increase of just over three percent. Unemployment in Richmond increased from an annual average of 5.8 percent in 2000, at the peak of the most recent economic cycle nationwide, to 7.8 percent in 2005.⁵ Based on the estimated number of jobs in the City in 2004 and the labor force estimates for 2005, the City has a ratio of 0.53 jobs per person in the labor force, or 0.43 jobs per person between the ages of 18 and 59.⁶

ABAG projects that employment in the City will increase by 20,170 jobs between 2005 and 2030 from 41,050 to 61,220. Based on ABAG's projected 2030 population of 128,000 and the 2030 employment of 61,220, the City's jobs-to-population ratio would be 0.48 jobs per person. ABAG projects that the City of Richmond will capture 11.7 percent of the total anticipated employment growth of 172,500 jobs in the County, or 20,183 jobs. With a population increase of 25,300 and job growth of 20,170, ABAG projects job growth to be approximately 80 percent of the population growth.

3 Employment Development Division (EDD). 2009. Labor Market Information Division. Contra Costa County, Industry Employment and Labor Force-Annual Average, March 2008 Benchmark. August 21.

4 Bay Area Economics. 2006. Richmond General Plan Update. Issues and Opportunities Paper 9: Economic Trends and Market Analysis, p. 9. August.

5 Bay Area Economics. 2006. Richmond General Plan Update. Issues and Opportunities Paper 9: Economic Trends and Market Analysis, p. 7. August.

6 Based on 26,507 jobs in 2004 and 60,925 persons between the ages of 18 and 59, as shown in Bay Area Economics. 2006. Richmond General Plan Update. Issues and Opportunities Paper 9: Economic Trends and Market Analysis, Appendix A, Table 2.

Housing

Regional Housing Supply

The housing supply in the Bay Area region continues to grow. West Contra Costa County CCD grew 4.9 percent between the years of 1990 and 2000. In 2005, the West Contra Costa County CCD had a housing inventory of 85,870 dwelling units, with 2,579 of these dwelling having been developed between the years 2000 and 2005. Between 1990 and 2000, Contra Costa County and the Bay Area region had grown at more substantial rates than the West Contra Costa County, with increases of 12.7 percent and 8.9 percent, respectively. Since 2005, housing growth has continued; however, as shown on Table 3.2-3, housing growth at a regional level has slowed considerably, while the County seems to continue to build more homes. The average household size in 2005 in West Contra Costa County is 2.83 persons per household (pph); Contra Costa County as a whole is 2.75 pph; and the greater Bay Area is 2.72 pph.

Jurisdiction	1990	2000	2005 ^a	%Change 1990–2000	% Change 2000–2005
Richmond	32,749	34,625	35,475	5.4	2.4
West Contra Costa County CCD	79,228	83,291	85,870	4.9	3.0
Contra Costa County	300,288	344,129	365,510	12.7	5.8
Bay Area	2,246,242	2,466,019	2,501,259	8.9	1.4

Notes:
a. Claritas estimate.
Source: US Census 1990, 2000; Claritas 2006.

According to ABAG Projections 2007, Contra Costa County's housing supply will grow to 466,430 housing units by the year 2030, an increase of 98,120 housing units between 2005 and 2030. It is projected that growth will occur at a rate of 0.84 annually.

City of Richmond Housing Supply

As shown in Table 3.2-3, the City of Richmond had approximately 34,625 housing units in 2000, which represents a 5.4 percent increase from the 1990 housing supply of 32,749 units. In 2005, the City's housing supply had grown 2.4 percent to 35,475 housing units, with the number of housing units growing by 850 over five years. The average household size in 2005 was 2.85 pph, which is consistent West Contra Costa County CCD and slightly greater than Contra Costa County and the Bay Area region. The majority of households in the City consists of families, accounting for a total of 65.7 percent of the City's housing supply and the remainder consisting of non-family households, such as single young adults and retired seniors.

As shown in Table 3.2-2, the City's housing supply is projected to grow to approximately 46,460 housing units, at a rate of approximately 0.92 percent annually. This is an increase of approximately 10,750 housing units over a 25 year period (2005-2030).

Jobs-Housing Balance

The concept of jobs/housing balance refers to the relationship of jobs to residences in a given community or area. Assuming a reasonable match between the affordability of housing and the incomes in the local market, if the number and proximity of residences is proportionate to the number and proximity of jobs, the majority of the employees would have the opportunity to work and reside in the same community. A well-balanced ratio of jobs and housing can contribute to reductions in the number of vehicle miles traveled because employment opportunities are in closer proximity to residential areas and employees would not have to commute as far. This reduction in vehicle miles traveled would also lower levels of air pollutant emissions, energy consumption, and congestion on area roadways and intersections.

Another important consideration in evaluating the jobs/housing balance is whether housing in the community is affordable to local employees. The availability of an adequate housing supply, presenting various price levels including those that are reasonably available to those holding jobs that are offered in the community, provides the potential to reduce the length of commutes between residences and work sites.

For instance, U.S. Census data collected in 2000 revealed that of the 41,574 Richmond residents who held a job in 2000, only 21.4 percent of these residents worked within the City. The remainder of residents worked elsewhere in Contra Costa County (17.0 percent), Alameda County (31.3 percent) and San Francisco County (16.8 percent). Of the 35,625 jobs in the City in 2000 counted by the Census,⁷ just 25 percent of these jobs were held by Richmond residents. The remaining jobs were held by in-commuters to Richmond, primarily from other communities in Contra Costa County and Alameda and Solano counties. Commuting patterns in the City are consistent with Contra Costa County as a whole, as well as other nearby cities such as Oakland and Concord.

Based on data collected from the EDD, in 2004 the City had a total 26,507 jobs within the City, which is not sufficient to employ all residents in the labor force, estimated at 50,100.⁸ With 35,475 housing units in the City, the jobs to housing ratio would be approximately 0.75. In 2004, Contra Costa County had a total of 340,300 jobs and a housing supply of 365,510 housing units,⁹ resulting in a job-housing ratio of 0.93. The implementation of the proposed General Plan could improve the City's job-housing ratios to be more in line with County statistics.

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- 7 EDD job numbers do not correspond exactly to data in the 2000 Census Transportation Planning Package, because EDD data include numbers from a later point in time and other potential data collection irregularities.
- 8 Bay Area Economics. 2006. Richmond General Plan Update. Issues and Opportunities Paper 9: Economic Trends and Market Analysis. p. 7 and Appendix B, Table 12: Richmond Change in Employment by Section, 2001-2004. August.
- 9 Bay Area Economics. 2006. Richmond General Plan Update. Issues and Opportunities Paper 9: Economic Trends and Market Analysis. p. 8. August.

Changes in Population, Employment and Housing

Proposed General Plan Update Population

Population growth associated with implementation of the proposed General Plan was determined using a “regional share” approach for the horizon year 2030. The methodology assumed that Richmond would capture 13 percent of the projected population growth in Contra Costa County. As shown in Table 3.2-2, between 2005 and 2030 the County is projected to grow by 231,900 residents. During this same time, ABAG projects the City of Richmond to grow by 25,300 residents, capturing 10.9 percent of projected population growth in the Bay Area region.

A primary goal of the proposed General Plan is to stimulate higher-intensity development within the City. Based on that goal, assumptions for future growth in the City were developed in which Richmond would capture a greater amount of regional population growth.¹⁰ The General Plan assumes the City would capture 13 percent of the County’s population growth, which would result in a population increase in the City of 30,147 between 2005 and 2030, for a total population of 132,847 residents in 2030.¹¹ Under this scenario, population growth would likely occur at a rate of 4 percent or 1,206 residents annually.

As stated above, increases in population are not, in and of themselves, considered physical environmental effects. Potential physical environmental effects resulting from the proposed project’s population growth are analyzed in the appropriate technical sections of this EIR. The extent to which the proposed General plan would induce growth is addressed in Chapter 4, CEQA Considerations.

Proposed Project Employment

The number of jobs that would be generated by implementation of the proposed General Plan Update was calculated based on ABAG’s projected ratio of jobs to population for Richmond in 2030 of 0.48 jobs per person. Using this ratio and the projected population of 132,847 residents, an additional 22,488 jobs would be created between 2005 and 2030 for a total of 63,538 jobs in the City in 2030. Employment growth would occur at rate of approximately 4 percent or 900 employees annually.

Proposed Project Housing Supply

Based on the anticipated housing need created by the increase in population and job opportunities in the City, implementation of the proposed General Plan Update would add approximately 15,548 housing units between 2005 and 2030, for a total housing supply in the City of 51,258 housing units.

10 MIG, July 2009, Methodology for Land Use Alternatives Analysis in the Environmental Impact Report, p. 2.

11 Calculated using 2005 population project (102,700) plus 13 percent of 231,900 (30,147) residents= 132,847 residents.

Proposed Project Jobs/Housing

As described above, the City would have a housing supply of 51,258 housing units and 63,538 jobs in 2030 based on the anticipated growth that would occur under the General Plan Update. Based on these numbers, the jobs to housing balance in the City would be 1.24 jobs per household.

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3.3 AIR QUALITY

INTRODUCTION

This section of the EIR evaluates the potential impacts on air quality resulting from the proposed Richmond General Plan. This includes the potential for the proposed General Plan to conflict with or obstruct implementation of the applicable air quality plan; to violate an air quality standard or contribute substantially to an existing or projected air quality violation; to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment; to expose sensitive receptors to substantial pollutant concentrations; or to create objectionable odors that would affect a substantial number of people. Data for this section was taken from the traffic data¹ prepared by Fehr & Peers (Appendix E), Bay Area Air Quality Management District *Draft Air Quality Guidelines*, other regulatory documents, and documents prepared for the City of Richmond.

No comment letters associated with air quality were received in response to the February 4, 2008 Notice of Preparation circulated for the General Plan. However, two comments regarding air quality were proffered during the public hearing for the Draft General Plan on February 28, 2008. Both comments, one by Sheryl Lane, representing Urban Habitat, and the second by Jennifer Lin, representing the East Bay Alliance for a Sustainable Economy, expressed concern with the potential for toxic impacts from increased industrial growth in the City.

Climate change is addressed separately in section 3.6 of this DEIR.

ENVIRONMENTAL SETTING

The City of Richmond is located in the nine-county San Francisco Bay Area in west Contra Costa County. It is located within the San Francisco Bay Area Air Basin (SFBAAB) under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by the Bay and its eastern boundary by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridgeline height of approximately 1,500 feet, a significant barrier to air flow. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills.

In this area marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west. At the northern end, near Richmond, prevailing winds are from the south-southwest.

Richmond, the northern-most city of this zone, is ten miles northeast of the Golden Gate. At the Air District's San Pablo meteorological station, 4 1/2 miles west-northwest of downtown Richmond, the

1 Fehr and Peers, *Traffic Data*, 2009.

prevailing direction is south-southwesterly with over 50 percent of the winds coming from the south through southwest sector. The average wind speed at this station is 11 mph.

Richmond's maximum summer temperatures average in the low 70s and minimums average in the mid-50s. In winter, maximums are in the high 50s to low 60s and minimums are in the low to mid-40s. Precipitation averages approximately 22 inches annually.

Air Pollutants

Air pollutant emissions within the basin are generated from stationary, mobile, and natural sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at an identified location and are usually associated with manufacturing and industry. Examples are boilers or other stationary combustion equipment that produce electricity or generate heat. Area sources are widely distributed and produce many small emissions. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, agricultural fields, landfills, and consumer products such as barbeque lighter fluid and hair spray. Construction activities that create fugitive dust, such as excavation and grading, also contribute to area source emissions. Mobile sources refer to emissions from on- and off-road motor vehicles, including tailpipe and evaporative emissions. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, trains, and construction equipment. Mobile sources account for the majority of the air pollutant emissions within the air basin. Air pollutants can also be generated by the natural environment, such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

To protect the health and welfare of people, the federal and state governments have identified five criteria air pollutants and a host of air toxics, established through the Federal Clean Air Act and the California Clean Air Act ambient air quality standards. The air pollutants for which federal and state standards have been promulgated and that are most relevant to air quality planning and regulation in the air basins include ozone, carbon monoxide, suspended particulate matter, sulfur dioxide, and lead. The federal and state air quality standards for these pollutants are shown in Table 3.3-1. In addition, Toxic Air Contaminants (TAC) are of concern in the air basins. Individual Air Pollutants and TACs are briefly described below.

Ozone is a gas that is formed when byproducts of internal combustion engine exhaust, volatile organic compounds (VOCs) (also referred to as reactive organic gases (ROG)), and nitrogen oxides (NO_x), undergo slow photochemical reactions in the presence of sunlight. Meteorological conditions that are needed to produce high concentrations of ozone are direct sunshine, early morning air stagnation in source areas, high ground surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable for ozone generation.

TABLE 3.3-1						
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS						
Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations					
	2007		2008		2009	
Ozone¹						
State 1-Hour \geq 0.09 ppm	0	days	0	days	2	days
State 8-Hour \geq 0.07 ppm	0	days	0	days	5	days
Federal 1-Hour $>$ 0.12 ppm	0	days	0	days	0	days
Federal 8-Hour $>$ 0.075 ppm	0	days	0	days	2	days
Max. 1-Hour Conc. (ppm)	74	ppb	84	ppb	106	ppb
Max. 8-Hour Conc. (ppm)	51	ppb	63	ppb	88	ppb
Carbon Monoxide¹						
State 8-Hour $>$ 9.0 ppm	0	days	0	days	0	days
Federal 8-Hour \geq 9.5 ppm	0	days	0	days	0	days
Max 1-Hour Conc. (ppm)	2.40	ppm	2.5	ppm	1.8	ppm
Max. 8-Hour Conc. (ppm)	1.20	ppm	1.3	ppm	1.1	ppm
Nitrogen Dioxide¹						
State 1-Hour \geq 0.25 ppm	0	days	0	days	0	days
Max. 1-Hour Conc. (ppm)	52	ppb	67	ppb	40	ppb
Annual Average Conc. (ppm)	12	ppb	12	ppb	9.3	ppb
Inhalable Particulates (PM₁₀)¹						
State 24-Hour $>$ 50 $\mu\text{g}/\text{m}^3$	2	days	0	days	0	days
Federal 24-Hour $>$ 150 $\mu\text{g}/\text{m}^3$	0	days	0	days	0	days
Max. 24-Hour Conc. ($\mu\text{g}/\text{m}^3$)	57	$\mu\text{g}/\text{m}^3$	44.0	$\mu\text{g}/\text{m}^3$	33	$\mu\text{g}/\text{m}^3$
Annual Average Conc. ($\mu\text{g}/\text{m}^3$)	20.6	$\mu\text{g}/\text{m}^3$	20.9	$\mu\text{g}/\text{m}^3$	17.4	$\mu\text{g}/\text{m}^3$
Inhalable Particulates (PM_{2.5})²						
Federal 24-Hour $>$ 35 $\mu\text{g}/\text{m}^3$	7	days	3	days	1	days
Max. 24-Hour Conc. ($\mu\text{g}/\text{m}^3$)	46.2	$\mu\text{g}/\text{m}^3$	60.3	$\mu\text{g}/\text{m}^3$	39.0	$\mu\text{g}/\text{m}^3$
Annual Average Conc. ($\mu\text{g}/\text{m}^3$)	8.4	$\mu\text{g}/\text{m}^3$	9.3	$\mu\text{g}/\text{m}^3$	8.4	$\mu\text{g}/\text{m}^3$
Notes:						
1. Data taken from the San Pablo - Rumrill Blvd Station for 2007 and 2008 and Concord-2975 Treat Blvd Station for 2009.						
2. Data taken from the Concord-2975 Treat Blvd Station for 2007, 2008, and 2009.						
ppm: parts per million; $\mu\text{g}/\text{m}^3$: micrograms per cubic meter						
Source: Bay Area Air Quality Management District Air Pollution Summaries (2007, 2008 & 2009);						

Carbon Monoxide (CO) is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, and motor vehicles operating at slow speeds are the primary source of CO in the Basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

Respirable Particulate Matter (PM₁₀) and Fine Particulate Matter (PM_{2.5}) consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen and windblown dust during windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.

Sulfur dioxide (SO₂) is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries. Although sulfur dioxide concentrations have been reduced to levels well below state and national standards, further reductions are desirable because SO₂ is a precursor to sulfates. Sulfates are a respirable particulate formed through the photochemical oxidation of SO₂.

Lead occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles; therefore, most lead combustion emissions are associated with off-road vehicles such as racecars. Other sources of lead include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.

Toxic Air Contaminants (TACs) refer to a diverse group of air pollutants that can affect human health, but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional. The California Air Resources Board (CARB) has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds, the most important being particulate matter from diesel-fueled engines.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in some areas with elevated ozone levels, such as Southern California, can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure while exercising is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent structural changes in the lungs.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

There is a consistent correlation between elevated ambient concentrations of respirable and fine particulate matter (PM₁₀ and PM_{2.5}) and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions that has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by respirable and fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM_{2.5} concentration levels have also been related to hospital admissions for acute respiratory conditions in children, school and kindergarten absences, a decrease in respiratory lung volumes in normal children, and increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM₁₀ and PM_{2.5}.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO₂ at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO₂ in healthy subjects. Larger decreases in lung functions are observed in individuals

with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO₂ considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO₂.

Sulfur Dioxide

A few minutes of exposure to low levels of SO₂ can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO₂. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO₂.

Animal studies suggest that despite SO₂ being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO₂ levels. In these studies, efforts to separate the effects of SO₂ from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead (Pb) exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures and death, although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of ROG_s that cause offensive odors poses a big challenge. Odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, the ROG_s that cause odors can stimulate sensory nerves to cause neurochemical

changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

Land Use Planning and Air Quality

Land use patterns and density of development affect the amount of air pollutants that are generated by communities. Complementary land uses that are dispersed throughout a community increase the number of motor vehicle trips and associated air pollutant emissions since opportunities to walk, ride bicycles, and use public transportation between such uses as homes and work/shopping are generally reduced. Higher density communities often mix residential uses with, or very near, commercial, business, and employment uses, thus reducing people's reliance on motor vehicles or the distance of vehicle trips. Compact, higher-density uses also produce less air emissions on a per unit basis from the use of natural gas for space and water heating. Higher density communities with a mix of residential, commercial, and business uses can also create localized concentrations of air pollutants or place people in close proximity to sources of TACs. As an example, commercial dry cleaners that use perchloroethylene (Perc) as the cleaning solvent, restaurants with char broilers, or gasoline service stations all have the potential to generate localized high concentrations of TACs. The specific TACs associated with each of these commercial uses are known carcinogens (Perc associated with dry cleaners, polycyclic aromatic hydrocarbons (PAHs) associated with char broiling, and benzene associated with gasoline service stations). In addition, material loading areas for commercial uses concentrate diesel-fueled delivery truck exhaust at those locations (diesel particulate matter, DPM, is a potent carcinogen and TAC). Careful planning of high-density mixed-use communities is needed to reduce potential exposure to localized high concentrations of TACs and air pollution.

The City of Richmond is an urbanized community that is almost fully built out, and subsequently is responding to increased demand through infill development. The proposed General Plan focuses on improving the nature and intensity of use within designated change areas. It is anticipated that these change areas would provide for new uses, development, and infill opportunities.

The SFBAAB is currently designated as a nonattainment area for state and national ozone standards and national particulate matter ambient air quality standards. SFBAAB's nonattainment status is attributed to the region's development history.

Existing Regional Air Quality Emissions

Measurements of ambient concentrations of criteria pollutants are used by the United States Environmental Protection Agency (EPA) and CARB to assess and classify the air quality of each air basin, county, or, in some cases, a specific developed area. The classification is determined by comparing monitoring data with national and California air quality standards (see Regulatory section below). If a pollutant concentration in an area is lower than the standard, the area is classified as being in "attainment." If the pollutant exceeds the standard, the area is in marginal, moderate, serious, severe, or extreme "nonattainment," depending on the magnitude of the air quality standard exceedance. If there are not enough data available to determine whether the standard is exceeded

in an area, the area is designated “unclassified.” At the federal level, the Basin is designated as nonattainment area for ozone. The Basin is in attainment for NO_x and SO₂.

At the state level, the Basin is an extreme nonattainment area for ozone and a nonattainment area for PM_{2.5} and PM₁₀. It is in attainment for the state CO standard, and it is in attainment for both the federal and state ambient air quality standards for SO₂, and NO₂, a subcategory of NO_x.² In an effort to monitor the various concentrations of air pollutants throughout the basin, the BAAQMD has established monitoring stations throughout its Districts. The City of Richmond monitoring station for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM₁₀ is located in San Pablo. PM_{2.5} is monitored at the Concord monitoring station.

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health. In order to protect the most sensitive persons from illness or discomfort with a margin of safety, the national and state ambient air quality standards have been set at levels where concentrations could be generally harmful to human health and welfare. Applicable ambient air quality standards are identified in Table 3.3-1.

Toxic Air Contaminants

Toxic air contaminants are airborne substances that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. Toxic air contaminants are different from the “criteria” pollutants previously discussed in that ambient air quality standards have not been established for them, largely because there are hundreds of air toxics and their effects on health tend to be local rather than regional.

Lifetime cancer risk is defined as the increased chance of contracting cancer over a 70-year period as a result of exposure to a toxic substance or substances. It is the product of the estimated daily exposure of each suspected carcinogen by its respective cancer unit risk. The end result represents a worst-case estimate of cancer risk. The California Air Resources Board has produced a series of estimated inhalation cancer risk maps based on modeled levels of outdoor composite toxic pollutant levels which are available on CARB’s website.³ The 2010 estimated map indicates that people in the area in and around the City of Richmond are exposed to an estimated inhalation cancer risk of more than 200-600 persons per million. These risk maps depict inhalation cancer risk due to modeled outdoor toxic pollutant levels, and do not account for cancer risk due to other types of exposure. The largest contributors to inhalation cancer risk are diesel engines.

2 California Air Resources Board, California Ambient Air Quality Standards, www.arb.ca.gov/research/aaqs/aaqs/aaqs.htm, accessed September 15, 2009.

3 California Air Resources Board, California Ambient Air Quality Standards, www.arb.ca.gov, accessed September 15, 2009.

Sensitive Receptors

Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems and young children whose lungs are not fully developed. According to CARB, sensitive receptors include children less than 14 years of age, persons over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The BAAQMD identifies the following as locations that may contain a high concentration of sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities.

Regulatory

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the air basins are discussed below.

Federal

U.S. Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants, including hazardous air pollutants (HAPs). It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The EPA also maintains jurisdiction over emissions sources outside state waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

State

California Air Resources Board

CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. CARB establishes emissions standards for motor vehicles sold in

California, consumer products (such as hair spray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

Local

Bay Area Air Quality Management District

The BAAQMD is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. The BAAQMD, a regional agency, works directly with the Association of Bay Area Governments (ABAG), the Metropolitan Transportation Commission (MTC), and local governments and cooperates actively with all federal and state government agencies. The BAAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emissions sources, and enforces such measures through educational programs or fines, when necessary.

BAAQMD published a document titled “BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans (1999 BAAQMD Guidelines, December 1999).”⁴ BAAQMD has recently released an update titled “California Environmental Quality Act Air Quality Guidelines June 2010”⁵ (BAAQMD CEQA Air Quality Guidelines), which replaces the 1999 BAAQMD Guidelines. In this latest document BAAQMD provides guidance and recommendations on the methodologies of analysis and suggested thresholds of significance that lead agencies can use when analyzing air quality impacts during CEQA review of projects.

The BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans (OAP) for the national ozone standard and clean air plans (CAP) for the California standard in coordination with the MTC and the ABAG.

With respect to applicable air quality plans, the BAAQMD prepared the 2009 Clean Air Plan to address nonattainment within the SFBAAB. The purpose of the 2009 CAP is to:

1. Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone;
2. Consider the impacts of ozone control measures on particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
3. Review progress in improving air quality in recent years; and
4. Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe.

4 Bay Area Air Quality Management District, www.baaqmd.gov/Divisions/Planning-and-Research/Planning-Programs-and-Initiatives/~/_media/8C1411130E9947DC939B618A43732FCF.ashx, accessed December 12, 2010.

5 Bay Area Air Quality Management District, *Draft Air Quality Guidelines June 2010*, <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>, accessed December 12, 2010.

Toxic Air Contaminants are pollutants that result in an increase in mortality, a serious illness, or pose a present or potential hazard to human health. Health effects of TACs may include cancer, birth defects, and immune system and neurological damage.

TACs can be separated into carcinogens and noncarcinogens, based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Non-carcinogenic TACs differ in that there is a safe level at which it is generally assumed that no negative health impacts would occur. These levels are determined on a pollutant-by-pollutant basis.

It is important to understand that TACs are not considered criteria air pollutants and thus are not specifically addressed through the setting of ambient air quality standards. Instead, the EPA and CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology (MACT or BACT) to limit emissions. MACT or BACT, in conjunction with additional rules set forth by the BAAQMD, establish the regulatory framework for TACs.

Method of Analysis

Construction

The proposed General Plan would include construction-related criteria air pollutant and precursor emissions from site preparation and building activities. Even if the plan includes the most recent BAAQMD-recommended Best Management Practices (BMPs) in its goals, policies, and objectives, construction-related criteria pollutant emissions would result in a temporarily significant impact on air quality.

BMPs include but are not limited to:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered;
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;
4. All vehicle speeds on unpaved roads shall be limited to 15 mph;
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible after grading. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, section 2485 of California Code of Regulations [CCR]). Clear signage regarding idling shall be provided for construction workers at all access points;

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation; and
8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the BAAQMD shall also be visible to ensure compliance with applicable regulations.

Operational

Long-term operational impacts on air quality are determined by land uses and the vehicle travel related with these uses. Both mobile and area source emissions will vary with the specific type of development. Even within the land use development subgroups of residential, industrial, and commercial, there is a varied range of potential air pollutant emissions. Since the exact nature and location of specific emission sources resulting from the proposed General Plan is unknown, emissions cannot be precisely estimated, so operational emissions are qualitatively assessed using the BAAQMD methodology for General Plan level analysis. The BAAQMD acknowledges that Plan-level projects cannot always be quantitatively evaluated and has established thresholds for qualitative analysis of Plan-level documents as discussed in the thresholds section below. One vital component to a qualitative analysis of operational air pollutant emissions is the population and employment growth rate for the project area. Population growth estimations are taken from the Demographics section of this document (see section 3.2) and the most recent issue of the Associations of Bay Area Governments Projections.⁶

Operational emissions would come from mobile and area sources. Mobile source emissions are generated by the motor vehicle trips associated with project operation. Area source emissions are generated by natural gas consumption for facility energy use, and from other sources associated with facility maintenance.

In addition to growth attributable to the proposed General Plan, the air quality analysis considers growth from outside of the City of Richmond, including growth related to traffic as discussed in Section 3.14, Transportation and Circulation. The analysis below is conservative, relative to an existing plus project approach, in that the ambient concentrations of pollutants to which proposed General Plan emissions would contribute are higher and could exceed standards even without emissions for the project.

Local Community Risk and Hazards

Industrial and port uses account for approximately 19 percent of all land uses in Richmond and include uses that range from warehousing and biotech campuses to ship repair and petroleum refineries. Light industry uses are primarily located close to Interstate 580, adjacent to the railroads, and in other industrial and commercial use areas. Heavy industry uses are predominantly found on

6 Association of Bay Area Governments, www.abag.ca.gov/planning/currentfcst, accessed December 12, 2010.

or near the land owned by Chevron, north of Interstate 580 and west of the Richmond Parkway, and in the areas near the port. Heavy industry uses include oil refineries, storage yards, warehouses, machine shops, and other larger-scale heavy industrial uses.

Toxic air contaminants of potential concern within the City of Richmond include diesel particulate matter emitted mostly from diesel-powered equipment during construction activities, and chemicals emitted from the industrial uses within the City. The Office of Environmental Health Hazards⁷ specifies procedures for evaluating cancer risk from pollutant exposure. Because cancer risks apply to continuous exposure over a 70-year time frame and DPM exposure from construction activities occur over a much shorter timeframe, construction emissions of DPM do not pose a measurable risk of cancer and are not discussed in this analysis.

Odor

Odor impacts can result from siting a new odor source near existing receptors or siting a new sensitive receptor near an existing odor source. Some land uses that have the potential to generate considerable odors include but are not limited to wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants.

Odor is analyzed with established screening level tables for evaluation for sensitive receptors located near several types of utilities and industrial facilities. These screening level tables include adequate special overlay zone distances between odor sources and sensitive receptors.

Local Carbon Monoxide Related Impacts

Emissions of ambient concentrations of CO have decreased dramatically in the SFBAAB with the introduction of the catalytic converter in 1975. No exceedances of the federal or state CO standards have been recorded in the City of Richmond since 1991. The SFBAAB, including the City of Richmond is currently designated as an attainment area for federal and state CO Standards. However, localized concentrations of CO still warrant consideration because CO does not readily disperse into the atmosphere. Occurrences of high localized CO concentrations, known as hotspots, are associated with stopped or very slow moving traffic, which most frequently occur at signalized or four-way stop intersections of high-volume roadways. For this reason, the BAAQMD Guidelines requires that the localized CO analysis focus on intersections anticipated to exceed the following criteria:

- a) Consistency with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
- b) Traffic volumes at affected intersections would not be increased to more than 44,000 vehicles per hour.

7 Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines, Air Toxics Hot Spots Program Guidance Manual for preparation of Health Risk Assessments, August 2003.

- c) Traffic volumes at affected intersections would not be increased to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway.)

The ambient air quality effects of traffic emissions were evaluated using the CALINE4 dispersion model and traffic volumes provided by Fehr and Peers, included in Appendix E of this EIR. CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants which disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments. For the purposes of this analysis, it is assumed that all roadways operating at a Level of Service (LOS) of D or worse have the potential to exceed the above thresholds. CO concentrations from ten roadway intersections determined to operate at Level of Service (LOS) D or worse in 2030 were analyzed using a simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations. All roadways that are expected to operate at LOS C or better, would generate lower CO concentrations as traffic generally travels in a stable manner under these conditions. Because intersection volumes were not available, volumes for intersections were determined from roadway segment volumes. To do this, roadway volumes were halved for each segment to derive approach volumes and a 25 percent increase was applied to each volume to allow for turning movements from the perpendicular segments.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

For the purposes of this EIR, implementation of the proposed General Plan, impacts on Air Quality are considered significant if the proposed project would do any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Local Plan Consistency

General Plans must show consistency with regional plans and policies affecting air quality to attain a less than significant impact on air quality. To be considered consistent with the regional air quality plan, a General Plan must be consistent with the most recently adopted Air Quality Plan. For a General Plan to be determined consistent with the Air Quality Plan, it must satisfy the following criteria:

- Reflect population growth for the jurisdiction that will not exceed the values included in the Current Air Quality Plan;
- Demonstrate that the rate of increase in vehicle miles traveled (VMT) for the jurisdiction is equal to or lower than the rate of increased population;
- Include reasonable efforts to implement the Air Quality Plan transportation control measures; and
- Establish Special Overlay Zones around existing and proposed land uses that emit TACs.

Contribution to Existing or Projected Air Quality Violations

Operational Thresholds

The buildout of long range plans such as General Plans have the potential to result in long-term operational impacts as determined by the continued increased operation of land uses allowed in the City and the vehicle emissions associated with these uses. All of the following criteria must be satisfied for the proposed plan to be considered consistent with the CAP and result in a less than significant determination.

- The plan must incorporate current CAP control measures as appropriate to the City of Richmond; and
- The rates of increase in VMT or vehicle trips within the City of Richmond is equal to or lower than the rate of increase in population within the proposed plan.

Construction Related Thresholds

Construction-related emissions of criteria pollutants are typically from site preparation such as excavation, grading, and clearing; exhaust from off-road equipment, material delivery trucks, and worker commute vehicles; vehicle travel on paved and unpaved roads; and other construction activities. Such construction-related emissions are typically short-term or temporary in duration. The BAAQMD does not have specific thresholds with respect to criteria air pollutants for Plan Level construction emissions; however, the BAAQMD does have recommended BMPs in place for project level analysis. Therefore, for the purposes of this analysis, the General Plan would be considered less than significant if construction activities conform to the BAAQMD recommended BMPs and future projects consistent with the land use designations in the General Plan individually analyze the air quality impacts of the construction activities.

Cumulatively Considerable Threshold

In order to assess cumulative impacts, the BAAQMD recommends that projects be evaluated to determine whether they would be consistent with the most recent Clean Air Plan performance standards and project-specific emissions thresholds. In the case of the proposed General Plan, air pollutant emissions would be cumulatively considerable if the new sources of emissions exceeded BAAQMD emissions thresholds at the project level.

Expose Sensitive Receptors to substantial pollutant concentrations.

Local Community Risk and Hazard

The individual projects that are included in the industrial development of the City have not been planned to the level of detail where pollution sources can be identified and emissions quantified. In the absence of specific project data, the BAAQMD Guidelines provide thresholds of significance for plan-level analysis. In order for General Plans to be considered less than significant with respect to potential TACs, special overlay zones need to be established around existing and proposed land uses that emit TACs. Special overlay zones should be included in the proposed plan policies and implementing ordinances. The thresholds of significance for plans with respect to TACs include:

- The Land Use Diagrams must identify:
 - Special overlay zones around existing and planned sources of TACs;
 - Special overlay zones of at least 500 feet on each side of all freeways and high-volume roadways.
- The plan must also identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of TACs and receptors.

Local Carbon Monoxide Thresholds

The BAAQMD currently recommends that projects with local carbon monoxide emissions that exceed any of the emissions thresholds in Table 3.3-2 should be considered potentially significant.

TABLE 3.3-2		
THRESHOLDS OF SIGNIFICANCE FOR LOCAL CARBON MONOXIDE EMISSIONS		
CAAQS Averaging Time	State Concentration (ppm)	Federal Concentration (ppm)
1-Hour	20.0	35.0
8-Hour	9.0	9.0
Notes: CAAQS = California Ambient Air Quality Standard; ppm = parts per million. Source: California Air Resources Board, www.arb.ca.gov/research/aaqs/caaqs/co/co.htm , 1989.		

Odor Thresholds

Special overlay zones need to be established around existing and proposed land uses that emit odors in order for plan level documents to be considered less than significant with respect to odors.

These overlay maps should be included as part of the proposed General Plan. Individual projects shall be evaluated based on the established BAAQMD screening levels to determine adequate special overlay zone distances between odor sources and receptors. A plan level assessment is determined to be less than significant with respect to odors if it complies with the following:

- The land use diagram must identify special overlay zones around existing and planned sources of odors; and
- The plan must identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of odors and receptors.

Project-Specific Impacts and Mitigation Measures

3.3-1 Implementation of the proposed General Plan could provide new sources of regional air emissions that would conflict with or obstruct implementation of the Clean Air Plan. Though all feasible mitigation measures would be implemented to reduce this impact, there is insufficient evidence to quantify the effect of those measures. Because it cannot be stated with certainty the mitigation would reduce the impact to a less-than-significant level, this impact would be considered *significant and unavoidable*.

The 2009 Clean Air Plan (CAP) discussed in the Regulatory Setting was prepared to accommodate growth, to reduce the high levels of pollutants within areas under the jurisdiction of BAAQMD, to return clean air to the region, and to minimize the impact of reduced air quality on the economy. Projects that are considered to be consistent with the CAP would not interfere with attainment because this growth is included in the projections used during the preparation of the CAP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the CAP would not jeopardize attainment of the identified air quality levels, even if they exceed the BAAQMD's recommended thresholds.

Projects that are consistent with the employment or population projections identified in the Projections⁸ 2007 report prepared by the ABAG are considered consistent with the CAP growth projections, since the 2007 Projections form the basis of the land use and transportation control portions of the CAP.

Another measurement tool in determining consistency with the CAP is to determine how a project accommodates the expected increase in population. Generally, if a project is planned in a way that results in the minimization of VMT, both within the project area and the surrounding area in which it is located, and minimizes air pollutant emissions, that aspect of the project is consistent with the CAP.

The BAAQMD CAP relies on population and employment projections supplied by ABAG. As the time frame for development anticipated in the proposed General Plan would be 2030, the CAP for the Basin may have to be updated to include accurate population and employment forecasts for the

8 Association of Bay Area Governments, Projections 2009.

City. Additionally, the improvements planned under the proposed General Plan would serve to accommodate anticipated growth within the City of Richmond and in the Bay Area. The update would increase the variety of uses available within the change areas of the City and work to decrease reliance on the automobile within the City by developing more residential areas that would allow employees to use other modes of transportation.

The existing VMT for the City of Richmond is 1,668,000. Development anticipated under the proposed General Plan would result in 2,503,000 VMT, an increase of slightly more than 50 percent, which is greater than the 21.95 percent population increase (from 107,000 in 2007 to 137,100 in 2030) over the proposed General Plan timeframe. The BAAQMD has instituted Transportation Control Measures (TCMs) in order to meet the requirements of the Bay Area Clean Air Plan and the California Clean Air Act. The TCMs are designed to reduce VMT and air pollution caused by automobiles and other transportation facilities including the maintenance and expansion of traffic signal timing programs and improving access to rail, constructing HOV and express bus lanes, and encouraging greater density development near transit centers. Contra Costa County has already incorporated a number of the TCMs into the existing transportation plan, and with the adoption of the Countywide Comprehensive Transportation Plan (CTP) of 2009, will include all feasible TCMs as indicated by the BAAQMD. With the implementation of these TCMs, all of the cities in Contra Costa County will be consistent with the transportation portion of the CAP. However, although the General Plan is consistent with the transportation portion of the CAP, the increase in VMT exceeds the increase in population. Therefore, according to the BAAQMD thresholds, the General Plan would result in a **significant** impact with respect to transportation.

The following policies incorporated into the proposed General Plan would reduce VMT within the City.

Policy

LU1 Higher-Density and Infill Mixed-Use Development. Provide higher-density and infill mixed-use development affordable to all incomes on vacant and underutilized parcels throughout the City. Ensure efficient use of land and existing circulation infrastructure by:

Promoting higher-density, transit-oriented and pedestrian-friendly development along key commercial corridors, at key intersections (community nodes and gateways); and

Supporting local-serving commercial activities in residential areas to provide needed services and amenities close to where people live and work without exposing people to unacceptable localized concentrations of TACs.

Actions

LU1.A Infill Development Incentive Program: Encourage infill development in targeted redevelopment areas in Central Richmond. Encourage new development and redevelopment projects to provide community amenities and uses that serve priority community needs and retain the existing urban limit lines.

LU1.B Corridor Improvement Plans: Develop plans for key commercial corridors in the City to guide redevelopment of these areas into mixed-use, pedestrian and transit-oriented corridors and nodes. Collaborate with regional agencies, neighboring jurisdictions and the County to develop the plans. Include development standards and urban design guidelines.

- LU1.F Station Area Plans: Develop station area plans for major transit stations including the BART Station, proposed ferry terminal and Hilltop Mall. Revise and update plans already underway to encourage higher-density development within a half-mile of stations; improve pedestrian, bicycle and transit connectivity; and address parking, safety and congestion.
- LU1.I Ferry Terminal Specific Plan: Implement the ferry terminal specific plan to develop the area as a higher-density, mixed-use community.

Policies

LU5 Connection and Linkages. Enhance connections and linkages between activity centers and major destinations in the City and the region.

LU1.6 Ferry Terminal at the Ford Peninsula in Marina Bay. Support and promote the location of the ferry terminal in Richmond. Work closely with the WETA (Water Emergency Transportation Authority) in its efforts to implement the proposed ferry terminal project. Providing fast and efficient transit to San Francisco via a ferry terminal would further enhance the Southern Shoreline's appeal to residents and businesses. The terminal could also provide a focus for transit-oriented development and can aid in disaster relief.

HW4.3 Safe and Convenient Walking and Bicycling. Promote walking and bicycling as a safe and convenient mode of transportation. Improve pedestrian and bicycle amenities to serve the recreation and travel needs of residents and visitors in all parts of Richmond. Where feasible, the City will: connect major destinations such as parks, open spaces, civic facilities, employment centers, retail and recreation areas with pedestrian and bicycle infrastructure; promote shared roadways in residential streets; require new development and redevelopment projects to provide pedestrian and bicycle amenities, streetscape improvements and linkages to planned and completed City and regional multi-use trails; and develop safe routes to schools and out-of-school programs that allow access by bicycle and pedestrian paths or reliable and safe transit.

Explore innovative solutions such as bicycle-sharing programs and encourage businesses, schools and residential developments to provide secure bicycle parking to ensure that these ecologically-friendly, low-impact transportation modes are available to all community members, thereby reducing emissions from vehicles within the City, improving environmental quality and enhancing mobility and connectivity.

Actions

HW4.D Bicycle and Pedestrian Plans: Develop and implement citywide bicycle and pedestrian plans to make Richmond a more pedestrian and bicycle-friendly City. Identify gaps in the network, major travel routes and priority safety improvements. Designate a network of multi-use trails and off-street paths. Include connections to open space amenities such as Point Isabel, San Francisco Bay Trail, Point San Pablo, Point Pinole and the Richmond Greenway.

Update design guidelines and standards for bicycle and pedestrian facilities and amenities that meet local, state and federal standards. Include a uniform citywide signage plan and comply with all Americans with Disabilities Act (ADA) requirements.

Explore the potential to designate pedestrian priority areas or districts. Include strong connections to the downtown, recreation destinations, commercial and mixed-use streets, transit stations and schools. Address pedestrian and bicycle connections in parking lots.

Collaborate with Contra Costa County and other jurisdictions to ensure links to the regional trail network including the San Francisco Bay Trail and coordination with the County Bicycle and Pedestrian Plan. Coordinate efforts with ongoing bicycle and pedestrian community initiatives.

HW4.E Bicycle, Pedestrian, and Trail Standards: Develop standards for bicycle, pedestrian, and trail improvements and amenities in new development and redevelopment projects. Include requirements for adequate, safe and accessible bicycle parking, drinking fountains, public restrooms, benches, landscaping and lighting. Require new development and redevelopment projects to be pedestrian and bicycle-friendly, and to provide adequate connections to the existing and proposed bicycle and pedestrian network.

Require all new commercial, industrial and residential development to provide access for construction and operation of a trail where a local or regional trail is designated or planned. Include provisions that require owners of property along the shoreline to provide maximum feasible public access to the shoreline and to complete the Bay Trail as part of any project approval process.

Policy

HW4.5 Complete Streets. Promote mixed-use urban streets that balance public transit, walking and bicycling with other modes of travel. Support pedestrian and bicycle connectivity by restoring and reinforcing Richmond's grid-based network of streets with landscaping and amenities for transit, bicycles, pedestrians, and people with disabilities. Establish a process for modifying streets to support various modes of travel. Prohibit future construction of projects with long block lengths, cul-de-sacs and gated streets.

In addition, implementation of the mitigation measures below would further reduce VMT. However, because of the programmatic nature of the mitigation measures, quantifying the VMT reductions is not possible at this time. Although VMT is expected to decrease from the numeric values shown above, it cannot be guaranteed to be reduced to below a level of significance. Therefore, the General Plan would remain inconsistent with the transportation portion of the CAP, which would be a **significant unavoidable impact**.

Full Buildout Analysis

The City's population increase under the full buildout scenario would be greater than projected regional growth the City anticipates it could capture within the General Plan's 2030 planning horizon. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate new sources of regional air emissions that would conflict with or obstruct implementation of the Clean Air Plan. Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the emissions would be substantially greater than analyzed above.

The proposed General Plan includes policies that would reduce the emissions associated with development within the Plan Area. At this time, however, the extent of additional growth and the exact nature of future effects associated with this additional growth are unknown. Therefore, it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to rigorous review to determine impacts on air quality in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

- 3.3-1 a. *Encourage the inclusion of the ferry terminal within the shuttle service feasibility study and within the current transportation system to promote the use of public transportation and provide for convenience of use.*
- b. *Promote reduced transit fares for daily commutes within the City, and encourage the cooperation between all modes of transportation to provide for ease of use, such as the institution of a monthly commuter pass that would provide access to the ferry, as well as bus, train, and/or BART system.*
- c. *Continue to expand the Bay Trail and other routes for bicycle and pedestrian travel.*
- d. *Provide bicycle and pedestrian amenities, such as benches and bike storage, along routes leading to the Richmond and El Cerrito Del Norte BART stations to promote non-motorized travel to and from public transit.*
- e. *Provide development incentives, such as reduced parking requirements, for businesses that provide transit incentives to employees.*

3.3-2 Implementation of the proposed General Plan would result in construction and operational emissions that could contribute substantially to an existing or projected air quality violation. Though all feasible mitigation measures would be implemented, the impact of operational emissions remains uncertain and, therefore, would be considered *significant and unavoidable*.

Construction

Implementation of the proposed General Plan would result in generation of new emissions from construction activities. For plan level analysis of construction emissions, the BAAQMD indicates that a General Plan is less than significant for construction emissions with the incorporation of the most recently available BMPs as determined by the BAAQMD. Without implementation of these BMPs to the greatest extent feasible, a plan level project impact would be considered *significant*.

Implementation of the following mitigation measures would require that individual projects developed under the General Plan provide an air quality analysis for construction activities and incorporate the most recent Best Management Practices as indicated by the BAAQMD.⁹ With implementation, the proposed General Plan would have a ***less-than-significant*** impact with respect to construction emissions.

Full Buildout Analysis

As noted above, the BAAQMD indicates that a General Plan is less than significant for construction emissions with the incorporation of the most recently available BMPs as determined by the

9 The above BMPs are subject to change over time. Bay Area Air Quality Management District will post updates to this list at www.baaqmd.gov.

Full Buildout Analysis

As noted above, the BAAQMD indicates that a General Plan is less than significant for construction emissions with the incorporation of the most recently available BMPs as determined by the BAAQMD. Therefore, with implementation of the mitigation measures below, the construction emissions of the full buildout scenario would also be reduced to less than significant.

Mitigation Measure

- 3.3-2 a. *All construction projects shall incorporate the most recent Best Management Practices as required by the BAAQMD.*
- b. *Future development under the proposed General Plan shall be subject to review to determine construction air quality impacts in accordance with CEQA.*

Operational

The proposed General Plan would result in long-term operational impacts as determined by the continued operation of land uses allowed in the proposed General Plan. Thresholds of significance have been established by the BAAQMD for the control of these emissions. The BAAQMD has incorporated control measures into their 2005 Ozone Strategy that are incorporated into the 2009 CAP. As part of their significance threshold for plan level operational emissions, the BAAQMD requires that the proposed General Plan incorporate current CAP control measures as appropriate to the City of Richmond. The current control measures are detailed in Appendix C of the 2005 Ozone Strategy.¹⁰ The City of Richmond currently requires "...individual developers to closely coordinate with the BAAQMD in implementing applicable new stationary source control measures as proposed in the most recent CAP, while conforming with existing BAAQMD stationary source regulations and requirements and complying with BAAQMD rules and regulations regarding indirect sources."¹¹

As shown by the policy below, the City of Richmond is taking several important steps in further reducing its operational long-term emissions. In addition, the City has implemented Green Building standards and adheres to BAAQMD guidelines. The following policies and actions and mitigation measures incorporated in the General Plan would further minimize the potential impacts from operational activities within the City.

Policy

HW9.1 Air Quality. Support regional policies and efforts that improve air quality to protect human and environmental health and minimize disproportionate impacts on sensitive population groups. Work with businesses and industry, residents and regulatory agencies to reduce the impact of direct, indirect and cumulative impacts of stationary and non-stationary sources of pollution such as industry, the Port, railroads, diesel trucks and busy roadways. Ensure that sensitive uses such as schools, childcare centers, parks and playgrounds,

10 Bay Area Air Quality Management District, *Bay Area 2005 Ozone Strategy, Appendix C – Stationary and Mobile Source Measure Descriptions*, January 4, 2006.

11 City of Richmond, *General Plan Volume 1 Open Space and Conservation Element*, August 1994.

housing and community gathering places are protected from adverse impacts of emissions.

Continue to work with stakeholders to reduce impacts associated with air quality on disadvantaged neighborhoods and continue to participate in regional planning efforts with nearby jurisdictions and the Bay Area Air Quality Management District to meet or exceed air quality standards. Support regional, state and federal efforts to enforce existing pollution control laws and strengthen regulations.

Actions

HW9.A Air Quality Monitoring and Reporting Program: Work with the Bay Area Air Quality Management District and other government agencies to establish and identify funding for a citywide air quality monitoring and reporting program. The air quality monitoring and reporting program would assess the cumulative impact of air pollution and toxins on human and environmental health and monitor exposure of sensitive uses such as schools, childcare centers, parks and playgrounds, housing and community gathering places.

Collaborate with the County Health Department, the Bay Area Air Quality Management District and state agencies to establish baseline exposures and to the extent feasible, document health effects associated with monitored baseline exposures and develop provisions to hold businesses and operations financially accountable for their impacts on the environment or community due to air pollution exceeding legal thresholds.

HW9.B Air Pollution Reduction Strategy: Support local and regional efforts to develop strategies that reduce air pollution, reduce auto use, expand transit and non-motorized transportation options and reduce congestion and idling time including programs to reduce air pollution from stationary sources such as power plants, oil refineries and commercial and residential buildings. Work with regional agencies as they monitor air quality impacts and establish best practices for reducing emissions.

HW9.C Engine Replacement and Retrofitting Program: Work with the Bay Area Air Quality Management District to develop a program to fund diesel engine retrofitting or replacement in existing automobiles, trucks, rail, ships and equipment. Regularly identify feasible technologies that can be applied for retrofitting polluting vehicles. Collaborate with key stakeholders to develop and implement the program.

HW9.D Port Emissions Reduction Plan: Collaborate with the Port, local industry, and regulatory agencies to develop a comprehensive emissions reduction plan for ship-operated emissions. Include strategies to reduce emissions from trucks, ships, locomotives and equipment. Enforce existing laws and strengthen regulations to protect human and environmental health and access available funds for clean air projects. Explore use of low-emission vehicles, short-sea shipping service, "cold ironing" and other strategies to reduce emissions. Consider the San Pedro Bay Ports Clean Air Action Plan, developed by the ports of Los Angeles and Long Beach as a model.

HW9.E Indoor Air Quality Guidelines: Develop and adopt guidelines for mitigating significant impacts on indoor air quality for new residential and commercial units along higher-density corridors and areas where increased intensity of use may result in higher levels of vehicular traffic. Identify recommendations for mitigation, including design standards and ventilation systems. Continue to seek grants and support current efforts to improve the air quality in older homes where mold, mildew, and other contaminants may be present.

- HW9.F Sensitive Use Location Guidelines: Develop, update and enforce local guidelines for protecting sensitive uses, including residences, schools and childcare facilities from impacts due to existing stationary and mobile sources of air pollution. The guidelines should include mitigation measures to ensure that new sensitive uses will be protected from adverse health effects as recommended by the California Air Resources Board in the 2005 Land Use and Air Quality Handbook. Mitigation could include measures to reduce air emissions from existing sources as well as to design buildings to reduce exposure.
- HW9.G Air Quality Impact Analysis Guidelines: Develop, update and enforce local guidelines for new stationary sources of air pollution and new local circulation facilities for exposure and health impact analysis. Apply the Bay Area Air Quality Management District's CEQA thresholds of significance and mitigation measures to ensure that new facilities do not create additional net cumulative air pollution health impacts on sensitive uses. Mitigation could include measures to reduce air emissions, monitor exposure and prevent exposure. Consider California Environmental Protection Agency recommendations for cumulative impact assessment.
- HW9.H Truck Routes Study: Review, update and ensure implementation of the truck route map to re-route heavy trucks away from neighborhood streets and sensitive uses such as homes, schools, parks and playgrounds to minimize impacts from emissions and traffic conflicts. Collaborate with the Port, truck operators, local businesses and regional and state transportation agencies to develop the new routes while ensuring the efficient movement of goods through the port and industrial areas.
- HW9.I Emergency Alert System: Strengthen the emergency alert system to notify residents, businesses and visitors as well as emergency response agencies and personnel about a toxic release event. Collaborate with the County Office of Emergency Services to develop and implement a reliable system. Address language barriers for non-English speaking populations. Include a funding and maintenance program.

The incorporation of the following mitigation measures would reduce the impacts from operational emissions. However, long-term operational impacts of the proposed General Plan would result in an increase in VMT within the City of Richmond. The rate of increase of VMT and associated emissions are higher than the rate of increase in population within the City as discussed in Impact 3.3-1. Therefore, this impact would be considered ***significant and unavoidable***.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the emissions would be substantially greater than analyzed for the City's anticipated level of growth. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate new operational air emissions associated with VMT. Therefore, the impact under the full buildout scenario would be greater than under the City's anticipated growth scenario and this impact would also be significant and unavoidable.

Mitigation Measures

- 3.3-2 c. *The City of Richmond shall continue to require individual developers to implement applicable new stationary source control measures as proposed in the most recent CAP, while conforming with existing BAAQMD stationary source regulations and requirements and complying with BAAQMD rules and regulations regarding indirect sources.*
- d. *The City of Richmond shall consult with project proponents during the pre-application review process to ensure that uses with a high level of operational emissions are appropriately designed and sited to avoid impacts on neighboring uses and regional air quality.*

3.3-3 Operational activities under the proposed General Plan would not expose sensitive receptors to substantial pollutant concentrations in excess of the established thresholds. This impact would be considered *less than significant*.

BAAQMD recommends the use of CALINE4, a dispersion model for predicting CO concentrations, as the preferred method of estimating pollutant concentrations at sensitive receptors near congested roadways and intersections. For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening procedure developed by BAAQMD. The simplified model is intended as a screening analysis in order to identify a potential CO hotspot and assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations.

BAAQMD defines typical sensitive receptors as residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. When evaluating potential air quality impacts to sensitive receptors, the BAAQMD is primarily concerned with high localized concentrations of CO. Motor vehicles, and traffic-congested roadways and intersections are the primary source of high localized CO concentrations. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed CO “hotspots.”

Implementation of the proposed General Plan is not expected to expose existing or future sensitive uses within the City to substantial CO concentrations. As shown in Table 3.3-3 (Carbon Monoxide Concentrations at 2030 Buildout), based on CO modeling using the simplified CALINE4 methodology at the 10 intersections expected to operate at LOS D or worse at buildout (2030), CO concentrations would be substantially below the national 35.0 ppm and state 20.0 ppm 1-hour ambient air quality standards, and the national and state 9.0 ppm 8-hour ambient air quality standards when growth envisioned under the proposed General Plan occurs. Therefore, the proposed General Plan would result in a ***less-than-significant*** impact with respect to CO.

Toxic air contaminants of potential concern within the City of Richmond include diesel particulate matter, a form of PM_{2.5} emitted mostly from diesel-powered equipment during construction activities, and chemicals emitted from the industrial uses within the City. The individual projects that are included in the industrial development of the City have not been planned to the level of detail where

pollution sources can be identified and emissions quantified. In the absence of specific project data, the BAAQMD Guidelines provide thresholds of significance for plan-level analysis. In order for General Plans to be considered less than significant with respect to potential TACs, special overlay zones need to be established around existing and proposed land uses that emit TACs. Without assurance that TAC emitters would be identified in overlay zones, this would be a *significant impact*.

Intersection	Level of Service	Daily Vehicle Volume	1-Hr Conc. (ppm)	8-Hr Conc. (ppm)	Significant?
State Standards			20	9	
Robert Miller at San Pablo	D	32,876.0	8.5	5.6	No
Richmond Parkway at Giant	D	65,625.0	12.1	8.1	No
Pennsylvania at Harbour	D	38,000.0	8.4	5.5	No
23rd at Sanford	E	33,126.0	7.5	4.9	No
22nd at Bissell	D	17,252.0	5.3	3.4	No
23rd at Bissell	D	17,252.0	5.2	3.3	No
Harbour at MacDonald	D	33,500.0	7.4	4.8	No
Central at I-580	D	34,252.0	6.7	4.3	No
San Pablo Dam at El Portal	F	51,726.0	10.3	6.9	No
San Pablo Dam at Castro	D	33,376.0	7.3	4.8	No
Note: As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. CO values include background concentrations of 2.0 and 1.4 ppm for 1- and 8-hour concentrations. 8-hour concentrations are based on a persistence factor of 0.7 of the 1-hour concentration. Source: PBS&J 2009.					

With the inclusion of all future TAC source development into these zone areas and ensuring they are properly mapped, the proposed General Plan would result in a less than significant impact for TACs. Incorporation of the following specific measures would minimize potential impacts to sensitive receptors, which would reduce impacts from TACs to a *less-than-significant level*.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to TACs would be the same as presented above. Future development would be subject to review to determine impacts related to TACs and CO in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

- 3.3-3 a. *The City of Richmond shall implement special overlay zones around all planned sources of TACs to minimize the potential impacts to sensitive receptors. Land Use diagrams within the adopted General Plan will indicate the Special Overlay Zones*

which shall include an overlay zone of at least 500 feet on either side of all freeways and high volume roadways (100,000 vehicles per day or more).

- b. *The City of Richmond shall require all new industrial and commercial development projects that have the potential to emit TACs to be located an adequate distance from existing and proposed development used by sensitive receptors—including residential, schools, day care facilities, congregate care facilities, hospitals, or other places of long-term residency. The determination of development projects that have the potential for TAC emissions and adequate distances from sensitive receptors as identified in CARB’s “Air Quality and Land Use Handbook—A Community Health Perspective (April 2005; CARB Guidance) are as follows:*
- *Proposed dry cleaners and film processing services that use Perchloroethylene shall be sited at least 500 feet from sensitive land uses.*
 - *Proposed auto body repair services shall be sited at least 500 feet from sensitive land uses.*
 - *Proposed gasoline dispensing stations with an annual throughput of less than 3.6 million gallons shall be sited at least 50 feet from sensitive land uses. Proposed gasoline dispensing stations with an annual throughput at or above 3.6 million gallons shall be sited at least 300 feet from sensitive land uses.*
 - *Other proposed sources of TACs including furniture manufacturing and repair services that use Methylene Chloride or other solvents identified as a TAC shall be sited at least 300 feet from sensitive land uses.*
 - *Proposed distribution centers with more than 100 trucks per day; more than 40 trucks with operating transport refrigeration units per day; or where transport refrigeration unit operations cumulatively exceed 300 hours per week should not be sited within 1,000 feet of sensitive land uses.*
 - *Proposed rail yards for major service and maintenance operations should not be sited within 1,000 feet of sensitive land uses.*
 - *Proposed chrome platers should not be sited within 1,000 feet of new sensitive land uses.*
 - *Proposed port developments should not site the heavily impacted areas immediately upwind of sensitive land uses. Siting of port developments should be done in consultation with the BAAQMD.*
 - *Proposed petroleum refineries should not site the heavily impacted areas immediately upwind of sensitive land uses. Siting of refineries should be done in consultation with the BAAQMD.*
- c. *Proposed sensitive land uses including schools, daycare facilities, congregate care facilities, hospitals, or other places of long term residency for people shall be sited:*
- *At least 500 feet from dry cleaners and film processing services that use Perchloroethylene.*

- *A least 500 feet from auto body repair services.*
 - *At least 50 feet from existing gasoline dispensing stations with an annual throughput of less than 3.6 million gallons and 300 feet from existing gasoline dispensing stations with an annual throughput at or above 3.6 million gallons.*
 - *At least 300 feet from existing land uses that use Methylene Chloride or other solvents identified as a TAC, including furniture manufacturing and repair services.*
 - *At least 1,000 feet from distribution centers with more than 100 trucks per day; more than 40 trucks with operating transport refrigeration units per day; or where transport refrigeration unit operations cumulatively exceed 300 hours per week. In addition sensitive land uses should not be sited near facility entry and exit points.*
 - *At least 1,000 feet from major service and maintenance rail yards.*
 - *At least 1,000 feet from chrome plating facilities.*
 - *Avoid siting sensitive land uses immediately downwind from the most heavily impacted areas of existing port facilities.*
 - *Avoid siting sensitive land uses immediately downwind from petroleum refineries.*
- d. *The City of Richmond shall consult with the BAAQMD to identify TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.*

3.3-4 Implementation of the proposed General Plan would not create objectionable odors that would affect a substantial number of people. This is a *less-than-significant* impact.

The individual projects that are included in the development of the City have not been planned to the level of detail where odor sources can be identified and emissions quantified. In the absence of specific project data, the BAAQMD Guidelines provide thresholds of significance for plan-level analysis. In order for General Plans to be considered less than significant with respect to potential odor emissions, special overlay zones need to be established around existing and proposed land uses that emit odors. Special overlay zones should be included in the proposed plan policies, land use maps, and implementing ordinances. Section 15.04.510 of the Richmond Municipal Code details the Resource Management Overlay Districts¹² and the existing use of special overlay zone maps. The BAAQMD has established screening levels to aid in the determination of adequate overlay zone distances for minimizing impacts from odor sources. With the evaluation and inclusion of all future odor source development into the existing zone areas and ensuring they are properly mapped, the proposed General Plan would result in a ***less-than-significant*** impact related to odor.

12 Richmond Municipal Code Section 15.04.510 Overlay Districts.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to odors would be the same as presented above. Future development would be subject to review to determine impacts related to odors in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

Cumulative impacts are addressed only for those aspects of the project that have a project-related impact, whether it is less than significant, significant, or significant and unavoidable. If "no impact" occurs, the project does not contribute to a cumulative impact and no cumulative analysis is provided for that threshold.

The analysis accounts for all anticipated cumulative growth within the SFBAAB. However, the significance of cumulative air quality impacts is typically determined according to the plan-level methodology employed by the BAAQMD. With regard to determining the significance of the proposed plan level contribution, the BAAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor provides methodologies or thresholds of significance to be used to assess cumulative impacts. Because the BAAQMD developed significance criteria and attainment plans based upon effects on the ambient air quality, with a goal to control pollutant concentrations, those criteria and attainment plans consider the project impact in the context of cumulative changes. Consequently, a project's potential contribution to cumulative impacts is assessed utilizing the same significance criteria as those for project-level impacts.

The City of Richmond is located in the western portion of Contra Costa County. The ABAG projections anticipate the City's population will capture 10.9 percent of the Bay Area's population assuming the continuation of the current Richmond General Plan. The existing CAP is based on this level of growth in the City. Under the proposed General Plan, the City's 2030 population is expected to absorb 13.0 percent of the County's growth by 2030 (see section 3.2, Demographics). This would result in a 2.09 percent increase from the ABAG-projected level. Because the proposed General Plan would include more growth than assumed in the CAP, it is not consistent with the existing CAP with respect to population increases; therefore, the proposed General Plan's contribution to cumulative effects on the CAP would be considerable.

As discussed in Impact 3.3-3, the proposed General Plan would result in a less-than-significant TAC impact on a project level. Because TAC effects tend to be local rather than regional, and the General Plan includes overlay districts to limit exposure to TACs, and development under the General Plan would not likely combine with other TAC sources to result in a cumulative effect or

substantially contribute to effects of TACs from other areas. Therefore, the proposed General Plan would not be considered cumulatively considerable for TAC impacts.

As discussed in Impact 3.3-2, the proposed General Plan is less than significant for construction impacts. Because individual projects developed under the General Plan have the potential to be significant and to overlap with other nearby projects, there is the potential for cumulative construction activities to be significant. As detailed construction schedules for future development are unknown, the cumulative impacts from development under the General Plan cannot be determined; therefore, the proposed General Plan would be considered cumulatively considerable for construction impacts.

Long-term operational impacts of the proposed General Plan would result in an increase in VMT within the City of Richmond. The rate of increase of VMT is higher than the rate of increase in population within the City as discussed in Impact 3.3-1. Therefore, this impact would be considered *significant and unavoidable*. It would also be a cumulatively considerable impact.

As discussed in Impact 3.3-3, the proposed General Plan is less than significant for CO and TAC emissions with respect to sensitive receptors. Because TACs and CO are local impacts, the effects would not likely combine with those of other TAC or CO sources. Therefore, the project's contribution to cumulative impact is not considered considerable for CO and TAC emissions.

As discussed in impact 3.3-4, the proposed General Plan is less than significant for odor impacts on a project level. Because odors are local impacts, the effects would not likely combine with those of other odor sources to result in a cumulative effect. As a result, the proposed General Plan would not be considered cumulatively considerable for odor impacts.

A significant impact would occur if a proposed General Plan would result in a cumulatively considerable contribution of a federal or state nonattainment pollutant. Because the Basin is currently in nonattainment for ozone, PM₁₀, and PM_{2.5}, related plans could exceed an air quality standard or contribute to an existing or projected air quality exceedance. With regard to determining the significance of the proposed plan level contribution, the BAAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor provides methodologies or thresholds of significance to be used to assess these impacts. Instead, a project's potential contribution to cumulative impacts should be assessed utilizing the same significance criteria as those for project-level impacts. Therefore, this analysis assumes that individual development projects may generate construction or operational emissions that would exceed the BAAQMD recommended thresholds for plan level impacts and would also cause a cumulatively considerable increase in emissions for those pollutants, for which the Basin is in nonattainment.

Construction and operation of the proposed project could generate emissions that exceed the thresholds of significance recommended by the BAAQMD for ROG, NO_x, CO, and PM₁₀, and PM_{2.5}. Because the Basin is in nonattainment for PM₁₀ and PM_{2.5} and because both ROG and NO_x are precursors of ozone, for which the Basin is also in nonattainment, the proposed General Plan could make a cumulatively considerable contribution to these emissions. At this time, construction and operational emissions generated by projects occurring as a result of the proposed General Plan are

not known. Future projects resulting from implementation of the proposed General Plan would be required to undergo environmental analysis to determine whether each project result in a significant air quality impact and would also have to implement mitigation measures from the General Plan. Implementation of Mitigation Measures 3.3-2 and 3.3-3 has the potential to reduce the emission of criteria pollutants for which the basin is in non-attainment. This would not necessarily reduce this impact to a level below the significance thresholds. Therefore, the General Plan's contribution of emissions in the nonattainment area would be significant.

Implementation of Mitigation Measures 3.3-1 through 3.3-4 has the potential to reduce the cumulative significance of the proposed General Plan's impacts on implementation of the Clean Air Plan. However, as the proposed General Plan remains significant with respect to plan compliance, emissions of operational criteria pollutants, and cumulative net increase of criteria pollutants, the proposed General Plan's contribution to the cumulative impact would be considerable.

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3.4 BIOLOGICAL RESOURCES

3.4 BIOLOGICAL RESOURCES

INTRODUCTION

This section addresses the potential direct and indirect effects of implementation of the proposed City of Richmond General Plan on biological resources in the City. The setting descriptions and impact analyses presented in this section are based on a review of existing documentation, biological databases, and literature review.

The information serving as the basis for this chapter is shown at the end of the section under “References.”

No comments on specific biological resources were received in response to the Notice of Preparation.

ENVIRONMENTAL SETTING

The City of Richmond lies along the northeast portion of San Francisco Bay and the southeast side of San Pablo Bay. The San Francisco Bay lies west of the City. Marshes border portions of the western and the northwestern side of the City, the City of El Cerrito generally borders the City to the south and east. To the north and northeast, Richmond is bounded by urbanized areas, including unincorporated communities. The Berkeley Hills, San Pablo Ridge, and Sobrante Ridge are in the eastern and northeastern portions of the City. The City is bounded on the east by lands of the East Bay Regional Park District and East Bay Municipal Utility District.

Habitats

Despite its predominantly urbanized nature, the City still supports a diverse range of plant and animal habitats. These include wetlands, riparian zones, non-native annual grassland, coastal scrub, oak woodland, and eucalyptus/Monterrey pine woodland, each of which is described further below.

Wetlands

Figure 3.4-1 depicts wetlands within the City limits; the different wetland types are described below.

Tidal flat (Intertidal Mudflatland Rocky Shores)

The Bay Conservation and Development Commission (BCDC) has mapped tidal flats in the shores surrounding the City.¹ The National Wetlands Inventory of the United States Fish and Wildlife Service (USFWS) call this habitat Intertidal Mudflatland Rocky Shores. Tidal flats are sand or mud areas found in many estuarine areas and typically lack recognizable plant life. They are neither terrestrial nor aquatic, but fall somewhere in between and are harsh, unpredictable environments.

1 San Francisco Bay Conservation and Development Commission, 1977.

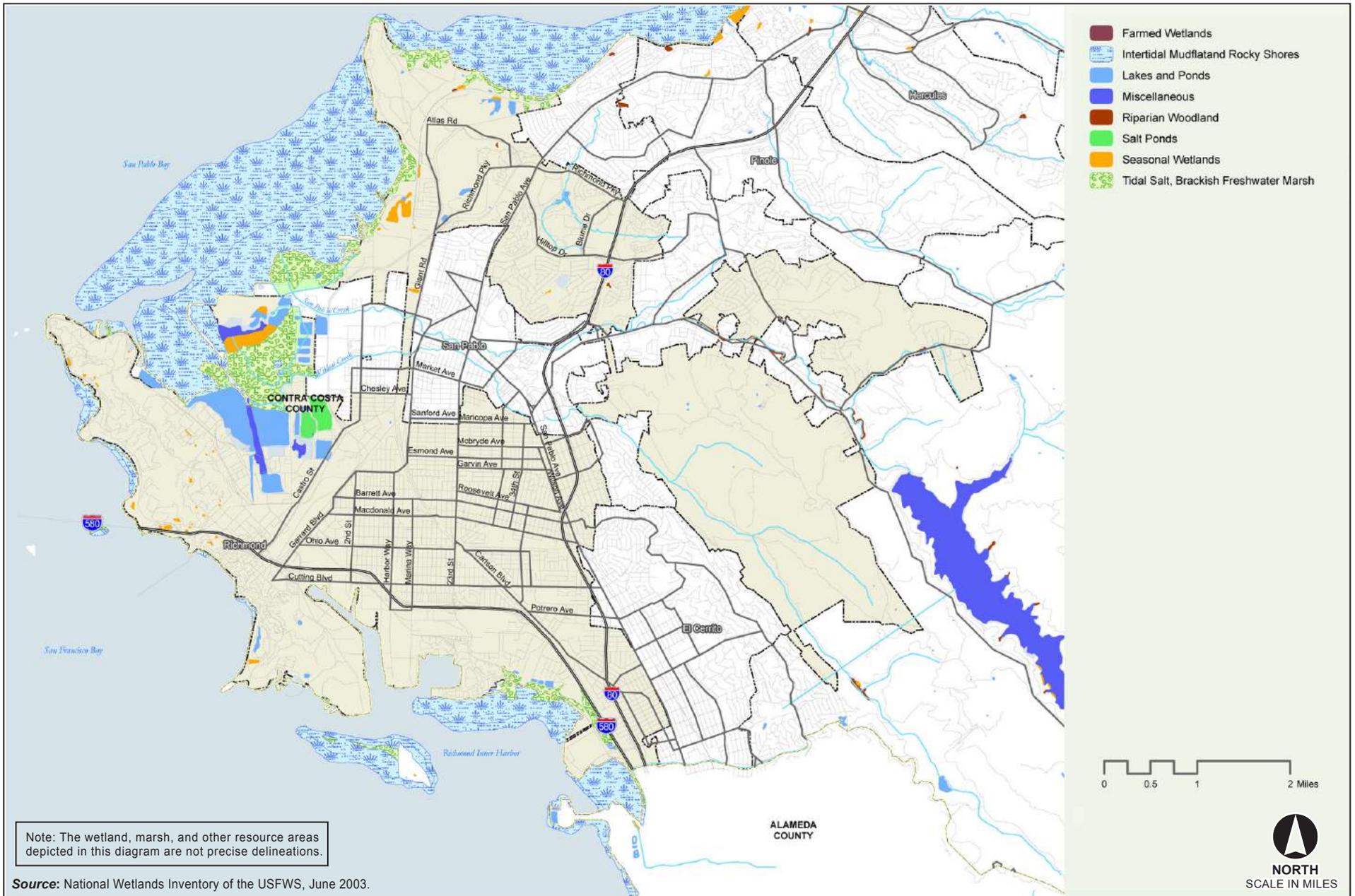


FIGURE 3.4-1
Biological Resources: Wetlands



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The extent to which tidal flats contribute to the flow of energy within an estuary is mostly determined by how frequently they are flooded with seawater and the length of time they are exposed.

Tidal flats appear to be barren wastelands but they are, in fact, highly productive areas that support large numbers of animals, particularly shorebirds. Other creatures of the mud flat, such as crabs, snails, and clams, make the seawater flow in by making holes and pipes. Bacteria, also abundant in the mud, play an essential role in the mud flat ecosystem, decomposing dead plant and animals and making nutrient-rich detritus. A tremendous number of burrowing animals exploit this productive food source. Most are deposit-feeding worms that swallow the sediments, digest the edible material and excrete the indigestible mud and sand. The mud protects them from would-be predators stalking the waters above, and also buffers them from changes in both temperature and water conditions that occur during the daily tidal changes. These and other creatures of the tidal flat, in turn, serve as the food base for predatory animals, primarily fishes and birds. Seasonally, many tidal flats serve as essential stopovers for migrating birds to rest, feed and breed. Tidal flats also play a role in purifying pollutants discharged from the land into the sea, through the assimilation of excess nutrients and the removal of impurities, such as heavy metals. All the creatures living in the tidal flat are involved in this purification process either directly or indirectly. Thus, the greater the biological diversity of the tidal flat habitat, the greater the stability of the ecosystem and the greater the potential service provided.

Tidal Marsh (Tidal Salt, Brackish Freshwater Marsh)

The BCDC map from the SF Bay Plan also shows tidal marsh as being present within the shoreline boundaries of the City.² The National Wetlands Inventory of the USFWS calls this habitat Tidal Salt, Brackish Freshwater Marsh. Salt marshes are mostly found on stable or emerging coastlines where sediment accumulates in sheltered intertidal areas in estuaries, behind spits, bars or islands, and in protected bays. Soils and seawater inundation provide limited nutrients for growth of salt-marsh plants. Nitrogen comes from nitrogen-fixing bacteria found in the soils. Small fish, birds, and a variety of small mammals, insects and marine invertebrates are found in tidal marshes.

Tidal marshes are also highly productive systems with abundant nutrients. The primary production is largely carried out by grasses, sedges, and rushes, and is either consumed (by insects, waterfowl and small mammals) or accumulates on site, adding organic material to the soil. Tidal marshes play the same role in purifying pollutants as the tidal flats. Salt marshes within the San Francisco and San Pablo Bays are a major source of food material for the marine ecosystem. The tidal marshes are important migratory-waterfowl feeding areas in fall and early winter and are important breeding areas for some species of ducks.

Lakes and Ponds

Hilltop Lake and several unnamed ponds occur within the City. These lakes and ponds are mostly found within the northern part of the City, although some are located in close proximity to the shore in the southwest part of the City. Most of these lakes and ponds are located within parks, but there

2 San Francisco Bay Conservation and Development Commission, 1977.

are a few that appear to be within private property. Ponds within the City might provide suitable nesting and limited foraging habitat for special status species.

Creeks

Creeks within the City are important to local wildlife, not only for the habitat they provide, but for the connectivity they create between otherwise isolated areas of wildlife habitat, acting as corridors through which wildlife species can migrate. Wildcat Creek, San Pablo Creek, Castro Creek (Castro Cove) and Garrity Creek cross the City boundaries and eventually drain into the San Pablo Bay. Portions of San Pablo Creek and Wildcat Creek have been channelized and lined with concrete through portions of their reaches within the City, and are maintained such that riparian and marsh vegetation is generally cleared on an annual basis. Wildcat Creek and San Pablo Creek are also listed in the Clean Water Act (CWA) section 303 (d) list of Impaired Water Bodies due to their high levels of Diazinon,³ a pesticide. Special-status species that use creeks in the City include California clapper rail (*Rallus longirostris obsoletus*), white-tailed kite (*Elanus leucurus*), and San Pablo vole (*Microtus californicus sanpabloensis*).

Riparian Woodland

Riparian woodland and scrub habitats are generally associated with rivers, low gradient streams, floodplains and occasionally ponds and canals. The composition of species in riparian woodland communities is highly variable and dependent on geographic location, elevation, substrate, and amount of flow in the watercourse. San Pablo Creek and Wildcat Creek have limited riparian vegetation that would not be considered Riparian Woodland by the California Department of Fish and Game (CDFG). Nevertheless, these two creeks support riparian vegetation that could provide shelter and nesting habitat for several special status species. The true riparian woodland is mostly found in the headwaters of Wildcat Creek within the Wildcat Canyon Regional Park and along San Pablo Creek adjacent to El Sobrante area. Species inhabiting these areas include willows (*Salix* sp.), boxelder (*Acer* sp.), elderberry (*Sambucus* sp.), California bay (*Umbellularia californica*), maple (*Acer* sp.), Oregon ash (*Fraxinus latifolia*), cottonwood (*Populus* sp.), Coast Live oak (*Quercus agrifolia*), and eucalyptus (*Eucalyptus* sp.). Common understory plant species include coyote bush (*Baccharis pilularis*), blackberry (*Rubus discolor*), poison oak (*Toxicodendron diversilobum*), bedstraw (*Galium* spp.), sedges (*Carex* spp.), umbrella sedges (*Cyperus* spp.), rushes (*Juncus* spp.), spike rush (*Eleocharis macrostachya*), and a variety of annual grasses.

Riparian habitats provide abundant food, cover, and breeding sites for wildlife in close proximity to water. These factors and the structural diversity of riparian woodland are largely responsible for the high productivity of this habitat type. Characteristic bird species in this habitat include the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), spotted towhee (*Pipilo maculatus*), California towhee (*Pipilo crissalis*), and song sparrow (*Melospiza melodia*). A number of these species nest or roost in riparian woodlands and feed in adjacent habitat types, such as annual grassland. Riparian woodlands also provide important feeding, resting, and nesting habitat for neotropical migrant

3 USEPA, 2007.

songbirds such as warblers, vireos, grosbeaks, and flycatchers. Mammals found within riparian habitat may include the raccoon (*Procyon lotor*), deer mouse, striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginianus*), and coyotes (*Canis latrans*). Amphibians and reptiles likely to occur in this community include the Pacific tree frog, common king snake (*Lampropeltis getula californiae*), valley garter snake (*Thamnophis sirtalis fitchii*), and Gilbert's skink (*Eumeces gilberti*).

Seasonal Wetlands

The National Wetlands Inventory of the USFWS contains records of seasonal wetlands within the City. Due to the urban nature of the City, these features are mostly restricted to buffer areas within industrial areas as in the case of the San Pablo Peninsula. However, some appear to occur within private property or parks as is the case in the Point Pinole Regional Shoreline.

There are three indicators of wetlands: the presence of water, soil development under aquatic conditions, and the presence of wetland plants. The presence of water can be attributable to runoff or ground water. Soils associated with wetlands are called hydric soil. Hydric soil is saturated with water to make it anaerobic. Decomposition is slow because of this factor, particularly where water movement is minimal; plant remains accordingly tend to accumulate in these areas. However, in areas where there is continuous water movement, soils are often composed of silt and/or clay. Plants that are adapted to water are called hydrophytes. There are two types of hydrophytes: those that are largely submerged (submergents), such as floating plants, and plants that exist partially above the water surface (emergents), like cattails and tules.

Grasslands

This community type comprises a dense to sparse cover of introduced, naturalized grasses associated with numerous species of annual and perennial forbs. The presence of this assemblage of non-native grasses (of Mediterranean and South African origin) is a consequence of permanent alterations to the once widely distributed, pristine perennial bunchgrass grasslands of California.

The conversion of native perennial grassland into non-native, predominantly annual species has resulted from a combination of: 1) invasion by alien plant species, 2) changes in the species composition of grazing animals, 3) cultivation, and 4) fire regime.

The dominant grasses grow actively during winter and spring, remain dormant during summer and early fall, and persist only as seed until conditions are favorable for germination. California annual grassland is common below elevations of 3,000 feet above mean sea level throughout most of California, except for the north coastal and desert regions.

Common species of the nonnative annual grassland occurring within the City include wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and Italian ryegrass (*Lolium multiflorum*) and a large assortment of weedy non-native species including mustard (*Brassica* spp.), wild radish (*Raphanus sativus*), fennel (*Foeniculum vulgare*) and many others. Areas within the City where these species occur is very disturbed and generally dominated by the weedy, non-native species. These areas are

better considered as covered with ruderal vegetation, generally not considered a plant community type.

Grasslands can provide refuge for reptiles and amphibians such as western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), and Pacific chorus frog (*Pseudacris regilla*), and birds including mourning dove (*Zenaida macroura*) and western meadowlark (*Sturnella neglecta*). Grasslands also can be important foraging grounds for aerial and ground-foraging insect eaters such as Myotis bat species and pallid bat (*Antrozous pallidus*). Mammals such as Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), and black-tailed jackrabbit (*Lepus californicus*) may forage within annual grasslands. Small rodents attract raptors (birds of prey), including red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and white-tailed kite (*Elanus leucurus*).

Within Richmond, grassland/ruderal vegetation is found in abandoned or vacant lots, although grassland areas can also be found within City and regional park areas. Within the City, tank fields, roads, and buffer areas adjacent to industrial areas are generally barren. Ruderal vegetation covers often extensive areas of the ground adjacent to roads and tank buffers. Patches of grassland occur in these areas and along with tree groves and scrub in the larger, vegetated areas beyond the buffers around the tank clusters.

Coastal Scrub

Coastal scrub in the area consists of coyote brush scrub and California sagebrush scrub. Typically, these plant communities include low to medium-sized shrubs, ranging in cover from patchy clusters of plants to dense, relatively impenetrable continuous cover. An understory of small shrubs to annual grasses and herbs is often present as well. Plant species composition varies regionally and locally (e.g., per differences in exposure). In the area of San Pablo Peninsula dominant shrubs include coyote brush, poison oak, toyon (*Heteromeles arbutifolia*), California sagebrush, and sticky monkeyflower (*Mimulus aurantiacus*). Invasive shrub species include French broom (*Genista monspessulana*) and pampas grass (*Cortaderia selloana*). Common wildlife expected in this habitat type includes western fence lizard and a large variety of birds including California quail, Anna's hummingbird (*Calypte anna*), western scrub jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), and California towhee.

Eucalyptus/Monterey Pine Groves

Eucalyptus habitats were introduced to California in 1856 and were planted throughout the state in the subsequent decades. They usually form dense stands and often do not contain other species. The most common species is blue gum, although other species may be mixed in or may dominate. The understory is often sparse, due in large part to the prolific accumulation of bark and leaf litter with their growth-suppressing properties. Nonnative annual grasses, with an assortment of common weedy species such as mustard and thistle (e.g., *Centaurea* spp.) may occur in the understory. Native shrubs such as coyote brush, chamise (*Adenostoma fasciculatum*), and California sage (*Artemisia californica*) may occur in the understory in areas where eucalyptus groves have established in native scrub habitat.

Eucalyptus trees and groves can serve as roosts, perches, and nest sites for raptors such as red-tailed hawk and other birds, including American crow (*Corvus brachyrhynchos*) and barn owl (*Tyto alba*). Developed stands of eucalyptus have potential to serve as overwintering sites for monarch butterflies (*Danaus plexippus*).

In Richmond, a relatively extensive mixed grove of gum trees and Monterey pine covers much of the northeast face of the Chevron Refinery Tank Farm Hill, generally traversing the Main Tank Field from south to north and also in places along the northeast side of the Main Tank Field. This vegetation type is also found between the Quarry Tank Field and Interstate 580, and in places along the northeast slope of Potrero Ridge bordering the northwest extent of the lowland refinery operating area.

Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*) occur along with blue gum in many of these areas and in some places form relatively monotypic groves. Monterey pines and Monterey cypresses are also not native to the region and those that are present are derived from plantings in the past. Wildlife habitat values present are similar to the blue gum (e.g., roost and nest sites) although generally these trees allow for greater understory development and corresponding potential for habitat usage by mammals such as mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), and gray fox (*Urocyon cinereoargenteus*). Birds commonly found in coastal scrub habitat described above would be expected to be found in understory habitat in these groves.

Significant Ecological Areas

The Contra Costa County General Plan⁴ designated Significant Ecological Areas throughout the County. Significant Ecological Areas in general proximity or within the vicinity of the City include (the numbering below corresponds to General Plan listing):⁵

Point Pinole. This area contains tidal and freshwater marshes, mudflat, grassland, eucalyptus plantation, and fishing pier that extends ¼-mile into San Pablo Bay. The area is valuable for migrating waterfowl and shorebirds. Habitat for soft bird's-beak (*Cordylanthus mollis mollis*), California clapper rail (*Rallus longirostris obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*), possibly for California black rail (*Laterallus jamaicensis coturniculus*), Samuel's song sparrow [=San Pablo song sparrow] (*Melospiza melodia samuelis*) and white-tailed kite (*Elanus leucurus*). The eucalyptus plantation serves as resting place for migrating monarch butterflies.

San Pablo Creek and Wildcat Creek Marshes. This area of marsh is located adjacent to and north of the San Pablo Peninsula. Numerous special status species have been recorded in these marshes (see the special status species discussion below for further details on this topic).

4 Contra Costa County Community Development Department. 2005.

5 While the General Plan change areas are entirely within the City of Richmond and not subject to the Contra Costa County General Plan, these designated areas identify important concentrations and/or habitat for special status species within or adjacent to the City of Richmond. Consideration of the Significant Ecological Areas provides a useful context within which to evaluate potential effects on biological resources in areas surrounding the General Plan change areas.

Brooks Island. This area contains tidal marsh, scrub/brushland and coastal prairie grassland. Important stop for migrating waterfowl including Canada goose (*Branta canadensis*). Supports Caspian tern (*Hydroprogne caspia*), Great egret (*Ardea alba*) and Great blue heron (*Ardea herodias*) nesting colonies as well as a population of California vole (*Microtus californicus*) with an uncommon hair color variation.

Hoffman Marsh. This area contains tidal marsh habitat for migrating waterfowl and shorebirds, possibly for California clapper rail and salt marsh harvest mouse.

San Pablo Ridge. The grassland areas on clay and clay loam soils on San Pablo Ridge support a population of Santa Cruz tarweed (*Holocarpha macradenia*) which was transplanted from a hillside in Pinole.

Wildcat Canyon. Grassy hillside with riparian woodland along Wildcat Creek. Habitat for ornate shrew (*Sorex ornatus*), western pond turtle (*Actinemys marmorata*), northern brown skink (*Eumeces [=Plestiodon] "gilberti" placerensis*) and possibly for Alameda whipsnake (*Masticophis lateralis euryxanthus*).

Sobrante Ridge Manzanita Grove. A unique "island" stand of chaparral that supports two - and possibly three - species of Manzanita, including the Alameda Manzanita (*Arctostaphylos pallida*).

Special Status Species

The following section identifies special-status biological resources observed, reported, or having the potential to occur within the City. These resources include plant, habitat, and wildlife species that have been afforded special status and/or recognition by federal and state resource agencies, as well as private conservation organizations and special interest groups, such as the California Native Plant Society (CNPS). In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or expected decline or limitation of its population size or geographical extent and/or distribution that results in most cases from habitat loss.

Information on special status species and habitats occurring in the vicinity of the City was obtained from an electronic search of the California Natural Diversity Database (CNDDDB) database (information dated November, 2007),⁶ USFWS automated species list (information dated November, 2007)⁷ and the CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California⁸ for the U.S Geological Survey's 7.5-minute Richmond, San Quentin and Mare Island quadrangle maps. The following special-status species have a moderate to high potential to occur or are known to occur within the City boundaries. These and other species potentially occurring in the City of Richmond can be found in Table 3.4-1. Figure 3.4-2 shows the locations of sensitive elements within the Policy Area.

6 California Natural Diversity Database (CNDDDB), November 2007.

7 USFWS Federal Endangered and Threatened Species List, 2007.

8 CNPS Electronic Inventory, 2007.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status ¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity ²
PLANTS				
Bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	none/none/1B.2	Coastal bluff scrub, cismontane woodland, and valley and foothill grassland habitats. 3 – 500 m. Blooms March - June	Known. Species is known to occur within El Sobrante Area. (CNDDDB occurrence No. 40)
Pallid manzanita	<i>Arctostaphylos pallida</i>	FT/SE/1B.1	Grows on uplifted marine terraces on siliceous shale or thin chert, also found in chaparral, cismontane woodland and costal scrub. 185 – 465 m.	Known. Species is known to occur within El Sobrante Ridge.
Alkali milk-vetch	<i>Astragalus tener</i> <i>var. tener</i>	none/none/1B.2	Occurs in playas, valley and foothill grassland in adobe clay soil substrates, and vernal pools with alkaline soils at elevations ranging from 1 - 60 m.; blooms April to May	Not Likely. The CNDDDB occurrence dates back to 1900, the location where the plant was collected is now developed. (Occurrence No. 67)
Tiburon mariposa lily	<i>Calochortus tiburonensis</i>	FT/ST1B.1	Tiburon Mariposa lily is known only from Ring Mountain on the Tiburon Peninsula in Marin County, where it grows on rocky serpentine slopes among annual and perennial herbs and grasses, blooms March to June.	Not Likely. The City is outside of the known range of this species.
Tiburon Indian paintbrush	<i>Castilleja affinis</i> <i>ssp. neglecta</i>	FE/ST /1B.2	Tiburon paintbrush grows in serpentine bunchgrass communities on north to west facing slopes. There are seven known populations: five in Marin County (including three on the Tiburon Peninsula), one in American Canyon in Napa County, and a small population in Santa Clara County.	Not Likely. The City is outside of the known range of this species.
Coastal bluff morning-glory	<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	none/none/1B.2	Found in coastal scrub habitats ranging from 10-105 meters. Blooms from May – Sept.	Not Likely. Species was found in Brooks Island, however, CNDDDB occurrence (No. 1) dates back to 1893.
Point Reyes bird's- beak	<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	none/none/1B.2	Coastal salt marsh and swamp habitats. At elevations ranging from 0 – 10 m. Blooms June - October	Moderate. The freshwater marsh habitat within the City provides suitable habitat for this species.
Soft bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>Mollis</i>	FE/SR/1B.2	Occurs in coastal salt marshes and swamps at elevations ranging from 0 – 3 m.; blooms July to November	Known. Species is known to occur in Point Pinole Regional Shoreline.
Western leatherwood	<i>Dirca occidentalis</i>	none/none/1B.2	Found primarily in broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland habitats. 50 – 395 m. Blooms January - March	Known. Species is known to occur in the Wildcat Regional Park area.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status ¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity ²
Fragrant fritillary	<i>Fritillaria liliacea</i>	none/none/1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland habitats often in association with serpentine soils. 3 – 410 m. Blooms February - April	Not Likely. Species reported to occur historically in the Tilden Regional Park.
Diablo helianthella	<i>Helianthella castanea</i>	none/none/1B.2	Found in broad-leaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland habitats. 60 – 1300 m. Blooms March - June	Known. Species is known to occur within El Sobrante Ridge.
Marin western flax	<i>Hesperolinon congestum</i>	FT/ST/1B.1	Chaparral and valley and foothill grassland habitats in association with serpentine soils. 5 – 370 m. Blooms April - July	Not Likely. City is outside of current known range for the species.
Loma Prieta hoita	<i>Hoita strobilina</i>	none/none/1B.1	Found in chaparral, cismontane woodland and riparian woodland in elevations ranging from 30-860 m. Blooms from May - July	Known. Species is known to occur within the north end of San Pablo Ridge.
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	FT/SE/1B.1	Found in coastal prairie, valley and foothill grasslands at elevation ranging from 10-220 m. Blooms from June – Oct.	Known. Species is known to occur within Wildcat Canyon Regional Park.
Robust monardella	<i>Monardella villosa ssp. globosa</i>	none/none/1B.2	Occurs in broad-leaved upland forest openings, chaparral openings, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations ranging from 100 – 915 m.; blooms June to July.	Not Likely. Species reported to occur in Tilden Park in Berkeley.
Oregon meconella	<i>Meconella oregona</i>	none/none/1.B1	Found in coastal prairie and coastal scrub ranging in elevation from 250-620 m. Blooms from March to April.	Moderate. Coastal scrub habitat could provide suitable habitat for this species to occur.
White-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	FE/SE/1B.1	Valley and foothill grasslands in association with serpentine soils. 35 – 620 m. Blooms March - May	Not Likely. City is outside of the range of this species.
Most beautiful jewel-flower	<i>Streptanthus albidus ssp. Peramoenus</i>	none/none/1B.2	Chaparral, cismontane woodland, valley and foothill grasslands, often on serpentine soils. 110 – 1000 m. Blooms April – June.	Moderate. Chaparral and grassland habitat could provide suitable habitat for this species.
Tiburon jewel-flower	<i>Streptanthus niger</i>	none/none/1B.2	Found in foothill and valley grasslands with serpentine soils ranging in elevation from 30 t - 150 m. Blooms from May – June.	Not Likely. City is outside of the known range for this species.
California seablite	<i>Suaeda californica</i>	FE/none/1B.2	Coastal salt marshes and swamps. 0 – 15 m. Blooms July - October	Not Likely. CNPS reports that the Richmond occurrence has been extirpated.

TABLE 3.4-1				
SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE PLANNING AREA				
Common Name	Scientific Name	Status¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity²
Suisun Marsh aster	<i>Symphotrichum lentum</i>	none/none/1B.2	Found in marshes and swamps. 0 - 3 m. Blooms May – Nov.	Known. Species is known to occur in west Richmond near Point Molate.
Showy Indian clover	<i>Trifolium amoenum</i>	FE/none/1B.1	Occurs in coastal bluff scrub and valley and foothill grassland, often on serpentine soil substrates at elevations ranging from 5 – 415 m; blooms April to June.	Not Likely. City is outside of the known range of this species.
SENSITIVE NATURAL COMMUNITIES				
Northern Coastal Salt Marsh	N/A	CDFG Sensitive Habitat		Known. Habitat known to occur in Point Pinole and north of the San Pablo Peninsula.
Northern Maritime Chaparral	N/A	CDFG Sensitive Habitat		Known. Habitat found in El Sobrante area.
Valley Needlegrass Grassland	N/A	CDFG Sensitive Habitat		Known. Habitat found within Brooks Island.
INVERTEBRATES				
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE/none/none	Large alkaline playa pools in open grasslands	Not Likely. No CNDDB occurrences have been reported for this species within the City of Richmond.
Monarch butterfly	<i>Danaus plexippus</i>	Wintering sites protected by CDFG	Eucalyptus groves used as winter roost sites.	Known. Species is known to winter in eucalyptus groves.
Bridges' coast range shoulderband	<i>Helminthoglypta nickliniana bridgesi</i>	none/none/ IUCN:DD	Open hillsides with tall grass/weeds in Contra Costa and Alameda Counties.	Moderate. Species is known to occur in San Pablo..
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	FE/none/none	Occurs in grassland habitats around the northern Bay Area containing Johnny jump-up (<i>Viola pedunculata</i>), which is the larval host plant for this species.	Not Likely. City is outside of current known range of this species. ⁹
California freshwater shrimp	<i>Syncaris pacifica</i>	FE/SE/none	Historically, the shrimp was probably common in low elevation, perennial freshwater streams in Marin, Sonoma, and Napa counties. Today, it is found in sixteen stream segments within these counties.	Not Likely. The City is outside of the current known range of this species.
FISH				
Sacramento perch	<i>Archoplites interruptus</i>	none/CS/none	Historically found in the sloughs, slow-moving rivers, and lakes of the central valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerant of a wide range of physio-chemical water conditions.	Low. Historically known from throughout the Sacramento-San Joaquin Delta, but has been extirpated throughout much of its former range.

9 University of California, Berkeley. ESSIG Museum of Entomology. <http://essig.berkeley.edu/endins/callippe.htm>.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status ¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity ²
Green sturgeon	<i>Acipenser medirostris</i>	FT/CSC /NMFS	Native to deltaic and riverine systems of Sacramento Valley.	High. Known to spawn in the Sacramento River drainage, juveniles outmigrate through San Francisco Estuary. Uncommon in the in the Sacramento-San Joaquin system.
Tidewater goby	<i>Eucyclogobius newberryi</i>	FE/CSC/	Shallow waters of bays and estuaries, in lower stream reaches, in coastal stream lagoons	Low. Thought to be extirpated from San Francisco Bay
Delta smelt	<i>Hypomesus transpacificus</i>	FT/CT/	Shallow, open waters of the estuary where salinities range from 2-7 ppt. Spawn and rear sloughs and shallow edge waters of channels in upper Delta and Sacramento River, Suisun Marsh and Bay	Low. Generally restricted to the Sacramento-San Joaquin Delta, including the Carquinez Strait and Suisun Bay. Not found westward of Carquinez bridge, except occasionally during extremely wet years.
Coho salmon – Central CA Coast ESU	<i>Oncorhynchus kisutch</i>	FE/ CE/NMFS	Accessible Bay Area and coastal rivers and streams with cover, cool water and sufficient dissolved oxygen. Require beds of loose, silt-free gravel for spawning	Low. Although within the historical range of the species, Coho are currently considered extinct in the San Francisco Bay/Sacramento – San Joaquin River system.
Steelhead – Central CA Coastal ESU	<i>Oncorhynchus mykiss</i>	FT/ none/NMFS	Unblocked Bay Area and coastal rivers and streams, requires clear, cool water and clean gravels for spawning	High. These fish are known to spawn in streams tributary to San Francisco and San Pablo Bays
Steelhead – Central Valley	<i>Oncorhynchus mykiss</i>	FT/ none /NMFS	Spawn in the Sacramento and San Joaquin Rivers and their tributaries	High. Migrate through San Francisco, San Pablo, and Suisun Bays, as well as the Delta region to spawning grounds
Chinook salmon – Central Valley Spring Run	<i>Oncorhynchus tshawytscha</i>	FT/CT/NMFS	Spawning and rearing restricted to a few tributaries to the Sacramento River basin	High. Migrate through San Francisco Bay and Sacramento-San Joaquin Delta to spawning streams
Chinook salmon – Sacramento River Winter Run	<i>Oncorhynchus tshawytscha</i>	FE/CE/NMFS	Spawning restricted to the Sacramento River. Require clean, cold water with gravel beds	High. Migrate through San Francisco Bay and Sacramento-San Joaquin Delta to spawning grounds
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	none/CSC/none	Slow moving rivers, dead end sloughs, require flooded vegetation for spawning and foraging for young	Low. Spawn in freshwater in the lower Delta. Once common in San Pablo Bay and Carquinez Strait following high winter flows, now largely confined to the Delta, Suisun Bay, Suisun Marsh, Napa River, Petaluma River, and other parts of the Sacramento-San Joaquin Estuary.

TABLE 3.4-1				
SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE PLANNING AREA				
Common Name	Scientific Name	Status ¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity ²
Longfin smelt	<i>Spirinchus thaleichthys</i>	none/CSC/none	Open waters of estuaries. Spawn in freshwater streams from February to April. Larval rearing habitat consists of brackish estuarine waters.	Moderate. Spawn in lower San Joaquin and Sacramento Rivers and upper Suisun Bay. Larval concentrations high in Suisun and San Pablo Bays.
Amphibians				
California red-legged frog	<i>Rana aurora draytonii</i>	FT/CSC/none	Slow-flowing portions of perennial streams, ephemeral streams, and hillside seeps that maintain pool environments (including ponds) or saturated soils throughout the summer months	Moderate. Creeks such as Wildcat creek might provide suitable habitat.
Reptiles				
Western pond turtle	<i>Actinemys marmorata</i>	none/CSC/none	Permanent or nearly permanent water in a wide variety of aquatic habitats. Requires basking sites. Nest sites may be found up to 0.5 km from water	Known. Species is known to occur in Brooks Island.
Alameda whipsnake [=striped racer]	<i>Masticophis lateralis euryxanthus</i>	FT/ST/none	Scrub and chaparral habitats in Alameda and Contra Costa counties but may occur in any inner Coast Range plant communities, including grasslands, open woodlands, rocky slopes, and along open streams and arroyos near scrub and chaparral.	Known. There is a recorded occurrence (CNDDDB Occurrence No. 89) in Wildcat Canyon Road.
Birds				
Short-eared owl	<i>Asio flammeus</i>	none/CSC/none	Found in open fields and grasslands. Nests in ground.	Known. Species has been observed foraging over Wildcat Marsh.
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT/CSC/none	Found in coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries	Low. Recreation activities probably discourages nesting within the habitat available. No CNDDDB occurrences have been reported for this species.
Northern harrier	<i>Circus cyaneus</i>	none/CSC/MBTA	Grasslands and open habitats; typically nests on the ground in dense vegetation.	Known. Species has been recorded in Wildcat Marsh. Suitable foraging and nesting habitat is also present within regional parks.
Snowy egret	<i>Egretta thula</i>	none/none/MBTA	Nests in oak and riparian woodlands. Forages in woodland, grassland, marshes, tidal flats, streams, wet meadows, and border of lakes, and in agricultural lands. Colonial nester, with nest sites situated in protected.	Known. Species has been observed in Brooks Island.
White-tailed kite	<i>Elanus leucurus</i>	none/CFP/MBTA	Preferred habitat is marshes and waste fields in the Central Valley and coastal plains of California.	Known. Species has been recorded on Wildcat Creek Marsh and Brooks Island.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity²
Caspian tern	<i>Hydropogone caspia</i>	none/none/BCC, MBTA	Nests on sandy or gravelly beaches and shell banks in small colonies inland and along the coast.	Known. Nesting colony recorded in Brooks Island.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	none/ST-CFP/BCC	Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass. Usually found in immediate vicinity of tidal sloughs.	Known. Nesting sites have been reported in Point Pinole Regional Park.
Alameda song sparrow	<i>Melospiza melodia pusillula</i>	none/CSC/BCC	Endemic to San Francisco Bat Estuary. Found in pickleweed marshes, nests in low shrubs (<i>Grindelia</i> bushes) and pickleweed above high tide extent.	Low. Marshes contain potential habitat. CNDDDB record dates back to 1940.
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	none/CSC/BCC	Endemic to tidal marshes of San Pablo Bay.	Known. Species has been observed in Wildcat Marsh.
Black-crowned night heron	<i>Nycticorax nycticorax</i>	none/none/MBTA, BLMS	Colonial nester, usually in trees, occasionally in tule patches, nest sites located adjacent to foraging areas, lake margins or marshy spots.	Known. Species is known to nest in Brooks Island.
Double-crested cormorant	<i>Phalacrocorax auritus</i>	none/CSC/none	Colonial nester on coastal cliffs, but also nests along coast on sequestered islets, usually on ground with sloping surface or in tall trees along the water margin.	Low. No CNDDDB occurrences have been reported for this species. May forage within the coastal areas of the bay.
California brown pelican	<i>Pelecanus occidentalis californicus</i>	FE/SE/none	May forage over San Pablo and San Francisco Bay. Does not nest in Northern California.	Moderate. Suitable foraging and resting habitat can be found along the marshes and beaches.
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE/SE/FP	Found in salt-water and brackish marshes.	Known. Species is known to occur in the Richmond Inner Harbor and the salt marsh along San Pablo Creek.
California least tern	<i>Sternula antillarum</i> (= <i>Sterna</i> , = <i>albifrons</i>) <i>browni</i>	FE/SE/FP	Nests are situated on barren to sparsely vegetated places near water, normally on sandy or gravelly substrates. In the San Francisco Bay region, breeding typically takes place on abandoned salt flats.	Moderate. Species have been reported nesting in salt flats along the San Francisco Bay.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity²
Northern spotted owl	<i>Strix occidentalis caurina</i>	FT/none/	The Northern Spotted Owl primarily inhabits old growth forests in the northern part of its range (Canada to southern Oregon) and landscapes with a mix of old and younger forest types in the southern part of its range (Klamath region and California). The species' range is the Pacific coast from extreme southern British Columbia to Marin County in northern California.	Not Likely. The City is outside of the known range of this species, and no suitable habitat is present there.
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	none/none/MBTA	Yellow-headed blackbirds are found in freshwater marshes during the summer. They particularly like to live amongst cattails, tule, and bulrush. During migration and over the winter months, the Yellow-headed Blackbird is found in open, cultivated lands, in fields, and in pastures.	Low. Marsh areas could provide suitable habitat for this species, however, the reported CNDDDB occurrence dates back to 1899.
Mammals				
Pallid bat	<i>Antrozous pallidus</i>	none/CSC/none	Found in deserts, grasslands, shrublands, woodlands and forests. Roosts in rock crevices, buildings, and bridges in arid regions.	Moderate. Potential habitat in regional parks in the area. CNDDDB occurrences date back to the late 1930's early 1940's.
Silver-haired bat	<i>Lasiorycteris noctivagans</i>	none/CSC/none	Closely associated with coniferous or mixed coniferous and deciduous forest types, especially in areas of Old Growth. Forages over streams, ponds and open brushy areas.	Moderate. Wooded, Brushy and stream habitat within Regional Parks may provide suitable habitat for this species. CNDDDB occurrence dates back to 1982.
Hoary bat	<i>Lasiurus cinereus</i>	none/CSC/none	Solitary, foliage roosting species that is infrequently observed. Roosts are typically outside of urban areas. Forages in open areas or habitat edges.	Moderate. Potential habitat in the Wildcat Canyon Regional Park, and other wooded areas in the region such as along portions of San Pablo Creek near El Sobrante. CNBBD occurrence dates back to 1969.
San Pablo vole	<i>Microtus californicus sanpabloensis</i>	none/CSC/none	Grassy habitats associated with salt marshes.	Known. Species has been recorded in the Wildcat Marsh area.
Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE/SE/FP	Saline emergent marshland with dense pickleweed.	Known. Species has been recorded in the Wildcat Marsh area.
Salt marsh wandering shrew	<i>Sorex vagrans halicoetes</i>	none/CSC/none	Salt marshes where abundant drift wood is scattered among pickleweed.	Known. Species has been recorded within the San Pablo Creek Salt Marsh.

TABLE 3.4-1

**SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE VICINITY OF THE
PLANNING AREA**

Common Name	Scientific Name	Status ¹ Fed/CA/Other	Habitat and Seasonal Distribution in California	Likelihood of Occurrence Within the City Vicinity ²
Notes:				
1-Status:				
Federal				
FE	Federally listed as Endangered			
FT	Federally listed as Threatened			
MBTA	Protected under the Migratory Bird Treaty Act			
BCC	USFWS Bird of Conservation Concern			
State				
SE	State listed as Endangered			
ST	State listed as Threatened			
SR	State Recovered			
CR	California rare			
CSC	California Department of Fish and Game designated "Species of Special Concern"			
CNPS				
1A	Presumed extinct			
1B	California Native Plant Society (CNPS) Ranking. Defined as plants that are rare, threatened, or endangered in California and elsewhere.			
2	California Native Plant Society (CNPS) Ranking. Defined as plants that are rare, threatened, or endangered in California, but more common elsewhere.			
3	Needs more review			
CNPS Threat Code Extension				
.1	Species seriously endangered in California			
.2	Species fairly endangered in California			
.3	Species not very endangered in California			
OTHER				
NMFS	Species under the jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Services.			
IUCN	The World Conservation Union (CE=critically endangered, E=endangered, V=vulnerable, DD=data deficient)			
2-Likelihood of Occurrence: CDFG Natural Diversity Database (CNDDDB) California Natural Diversity Database, 2007.				
Likelihood of occurrence evaluations:				
<ul style="list-style-type: none"> • A rating of "known" indicates that the species has been observed on the site. • A rating of "high" indicates that the species has not been observed, but sufficient information is available to indicate suitable habitat and conditions are present on-site and the species is expected to occur on-site. • A rating of "moderate" indicates that it is not known if the species is present, but suitable habitat exists on-site. • A rating of "low" indicates that species was not found during biological surveys conducted to date on the site and may not be expected given the species' known regional distribution or the quality of habitats located on the site. • A rating of "not likely" indicates that the taxa would not be expected to occur on the project site because the site does not include the known range or does not support suitable habitat. 				

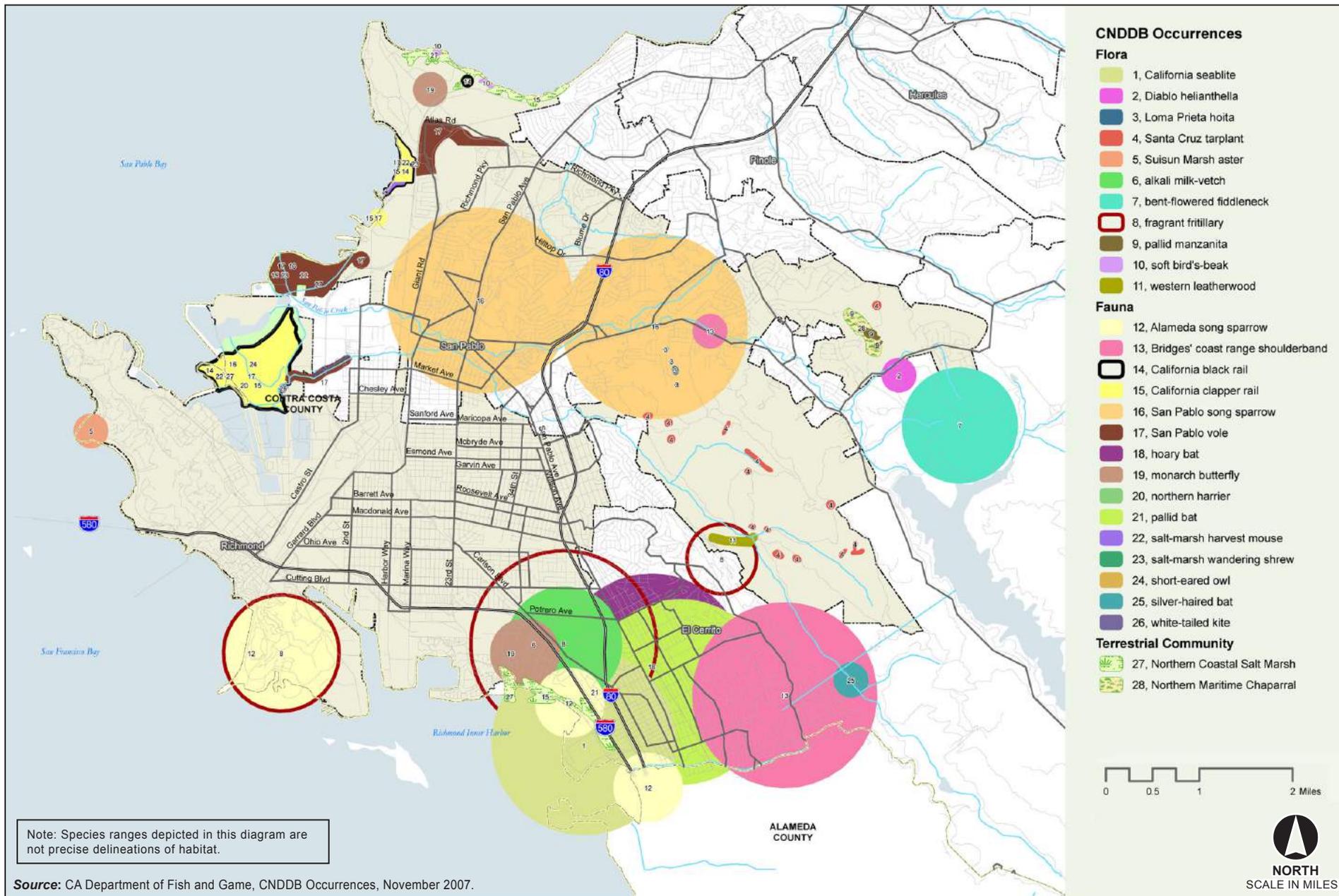


FIGURE 3.4-2
Biological Resources: Sensitive Elements



100018268

Richmond GPU EIR

Plants

Bent-flowered fiddleneck (Amsinckia lunaris) is an endemic annual herb with yellow flowers that blooms from March through June. This CNPS List 1B.2 species has no federal or state protected status. Bent-flowered fiddleneck is associated with coastal bluff scrub, cismontane woodland and valley and foothill grassland habitats at elevations ranging from 3 to 500 meters throughout the Central coast, Delta and northern central valley regions. This species is known to occur within El Sobrante Area (CNDDDB).

Pallid Manzanita (Arctostaphylos pallida) is listed as threatened by the USFWS (Federal Threatened) and also listed as threatened by CDFG (State Threatened). Also listed on California Native Plant Society's (CNPS) List 1B.1. Pallid manzanita has been recorded in chaparral areas within El Sobrante Ridge.

Point Reyes bird's-beak (Cordylanthus maritimus ssp. palustris) is a CNPS List 1B. This plant grows in the coastal salt marshes and brackish marshes. Much of its habitat has been lost or fragmented due to development. There are no CNDDDB recorded occurrences of this plant within the City; however, suitable habitat exist along the Wildcat Marsh area.

Soft bird's-beak (Cordylanthus mollis ssp. mollis) is a federally endangered species, a California rare plant, and is a CNPS 1B plant. Soft bird's-beak grows in the coastal salt marshes and brackish marshes from northern San Francisco Bay to Suisun Bay in Napa, Solano, and Contra Costa counties. Much of its habitat has been lost or fragmented due to development. The CNDDDB contains recorded occurrences within Point Pinole Regional Shoreline.

Western leatherwood (Dirca occidentalis) is a CNPS 1B plant and is typically found in broadleaf upland forests, closed-cone coniferous forests, chaparral, riparian and cismontane woodland between 50 and 395 meters in elevation. The CNDDDB contains recorded occurrences within the Wildcat Regional Park.

Diablo helianthella (Helianthella castanea) is a CNPS List 1B plant. Diablo helianthella is usually found in broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland and valley and foothill grassland habitats at elevations ranging from 60 to 1300 meters. There is a CNDDDB recorded occurrence within El Sobrante Ridge.

Loma Prieta hoita (Hoita strobilina) is an endemic perennial herb with purple-pink flowers that blooms from May through July (August through October in rare occurrences). This CNPS List 1B.1 species has no federal or state protected status. Loma Prieta hoita is associated with chaparral, cismontane woodland, and riparian woodland habitats at elevations ranging from 30 to 860 meters in the central coast region. This species is known to occur within the north end of San Pablo Ridge.

Santa Cruz tarplant (Holocarpha macradenia) is a federally threatened, state threatened and a CNPS List 1B plant. Santa Cruz tarplant occurred or formerly occurred in coastal prairie vegetation on the windward southwestern slope of San Pablo Ridge but has never been recorded on the leeward northeastern slope. This species was extensively planted along the San Pablo ridge summit

to mitigate losses to urbanization on the southwestern slope, but most of these plantings are declining or gone. CNDDDB recorded occurrences have been reported on the Wildcat Canyon Regional Park and close to El Sobrante Ridge.

Oregon meconella (*Meconella oregana*) is an endemic annual herb with white flowers that blooms from March through April. This CNPS List 1B.1 species has no federal or state protected status. Oregon meconella is associated with coastal prairie and coastal scrub habitats at elevations ranging from 250 to 620 meters, known from five occurrences in Santa Clara and Contra Costa counties. Coastal scrub habitat could provide suitable habitat for this species.

Most beautiful jewel-flower (*Streptanthus albidus* ssp. *Peramoenus*) is an annual herb with purple-pink flowers that blooms from April through September (occasionally from March through October). This CNPS List 1B.2 species has no federal or state protected status. Most beautiful jewel-flower is associated with chaparral, cismontane woodland and valley and foothill grassland habitats at elevations ranging from 94 to 1000 meters in the central coast and Delta regions. Chaparral and grassland habitat could provide suitable habitat for this species.

Suisun marsh aster (*Symphyotrichum lentum*) is a rhizomatous herb with lavender-colored flowers that blooms from May through November. This CNPS List 1B.2 species has no federal or state protected status. Suisun marsh aster is associated with freshwater or brackish marshes and swamps around sea level within the Delta region. This species is known to occur in west Richmond near Point Molate.

Invertebrates

Monarch Butterfly (*Danaus plexippus*) has no federal or state protection status, but the butterfly's wintering habitat in California is protected by the CDFG. This species has been documented to occur during winter in eucalyptus groves at Pinole Point.

Bridge's Coast Range shoulderband snail (*Helminthoglypta nickliniana bridgesi*) has no federal or state protection since the USFWS Special Status List was dropped. The snail habitat consists of rocky outcrops and open hillsides with tall grasses and weeds. The CNDDDB contains two recorded occurrences; both of these occurrences appear to be outside the City boundaries. Habitat present within the regional parks could provide suitable habitat for this species.

Fish

Green sturgeon (*Acipenser medirostris*) is federally Threatened and a CDFG Species of Special Concern. The green sturgeon is a long-lived, anadromous, native fish that occurs in low numbers in the San Francisco Estuary and Sacramento Rivers. Adults spawn in freshwater rivers from British Columbia south to the Sacramento River. In the Sacramento River spawning occurs near Red Bluff and in the Feather River. Larvae develop within these freshwater systems, migrate downstream and remain in the estuaries for between one and four years before migrating to the ocean. Mature adults move into estuaries in the spring, and spawning adults continue into natal rivers in late spring/early summer. Post spawning adults return to the estuary before migrating back to the ocean in late fall.

Sub-adult fish also are thought to enter estuaries during summer and fall months. On April 7, 2006: NOAA Fisheries Service listed the southern distinct population segment, or DPS, of North American green sturgeon as threatened under the Endangered Species Act. The listing covers the sturgeon that uses the Sacramento River.¹⁰ While green sturgeon migrate along the San Pablo Bay towards the Sacramento River adjacent to the City of Richmond, the bay does not support spawning habitat for adult fish, or rearing habitat for juveniles.¹¹

Central California Coastal Steelhead (Oncorhynchus mykiss) is an Evolutionarily Significant Unit (ESU) that is a federally-listed Threatened species and a CDFG Species of Special Concern. Steelhead is an anadromous form of rainbow trout, which return to freshwater streams to spawn. In February 1994, the National Marine Fisheries Service (NMFS) identified and established 15 ESUs of west coast steelhead populations. The central California coastal steelhead ESU was listed as threatened under the FESA of 1973 on October 17, 1997, and consists of steelhead populations from the Russian River south to and including Soquel Creek in Santa Cruz County. This ESU also includes San Francisco Bay and its tributaries, excluding the Sacramento/San Joaquin River system east of Vallejo, California.

Central Valley Steelhead (Oncorhynchus mykiss) is an ESU that includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin rivers and their tributaries. This species was federally listed as a Threatened species in March of 1998 (63 FR 13347). Steelhead begin their migration from the ocean when winter rains provide large amounts of cold water for migration and spawning. Peak migration periods for adult fish in the Sacramento River are in mid-winter. They typically spawn in tributaries to mainstem rivers, often long distances from the ocean. Juvenile steelhead generally spend one to three years in freshwater before migrating to the ocean.¹² While steelhead migrate along San Pablo Bay, the area does not support spawning habitat for adult fish, nor rearing habitat for juvenile steelhead.

Chinook Salmon (Oncorhynchus tshawytscha) consists of two ESUs, the Winter Run and Spring Run Chinook. Chinook are relatively common within the Sacramento-San Joaquin River System. Adult and juvenile Chinook may move through the San Pablo Bay on their way to and from the ocean, but like the Central Valley steelhead, the species does not spawn there due to lack of suitable habitat.

- *Winter Run* – Winter-run Chinook salmon are listed as an Endangered species under both the California and federal ESAs. Winter-run Chinook return to the upper Sacramento River between December and July, but delay spawning until the spring and summer (April-August).¹³ Juveniles spend five to nine months in the river and Sacramento-San Joaquin Estuary before entering the ocean.¹⁴
- *Spring Run* – Spring run Chinook salmon are listed as a Threatened species under the California and federal ESAs. Spring-run Chinook enter the Sacramento River between

10 Moyle. 2002.

11 Moyle. 2002.

12 Moyle. 2002.

13 Moyle. 2002.

14 Moyle. 2002.

March and September and move upstream into the headwaters, where they hold in pools until they spawn between August and October.¹⁵ Juveniles emigrate from the tributaries from mid-November through June; however, some juveniles spend a year in the streams and emigrate as yearlings the following October.¹⁶

Longfin smelt (*Spirinchus thaleichthys*) is a pelagic, estuarine fish approximately 4 inches in length. Its range consists of estuaries and lakes of the northern Pacific coast, from Monterey Bay to Prince William Sound, Alaska. The fish formerly inhabited Humboldt Bay and the Eel River but has recently only been found in the two remaining locations in California: the San Francisco Bay and Klamath River. The longfin smelt reaches maturity at the end of their second year, when they migrate to freshwater or brackish waters of Suisun Bay and lower Sacramento and San Joaquin Rivers. In April and May, juveniles disperse with high freshwater outflow in the middle and lower regions of the water column, utilizing brackish waters of San Pablo Bay. Development, water diversions, agricultural toxins, and non-native species impacts have all contributed to the decline of longfin smelt (and delta smelt).

Amphibians

California red-legged frog (*Rana aurora draytonii*). This frog is federally listed as Threatened, and a CDFG Species of Special Concern. The aquatic and riparian habitats found within the City could provide habitat for the California red-legged frog. The California red-legged frog occurs in lowlands, foothills, woodlands, and grasslands, usually near marshes, pools, perennial creeks or other permanent water sources, generally with emergent and sub-emergent vegetation. California red-legged frogs disperse widely following the onset of the rainy season and are known to travel up to 1.5 miles in search of breeding habitat. They lay their eggs in loose, oval-shaped, floating clusters of two to five thousand eggs in floating vegetation. The CNDDDB contains no records of California red-legged frog occurrences within the City limits.

Reptiles

Western pond turtle (*Actinemys marmorata*) is a CDFG Species of Special Concern. Historically, the western pond turtle had a relatively continuous distribution in most Pacific slope drainages from Klickitat County, Washington along the Columbia River to Arroyo Santo Domingo, northern Baja California, Mexico. They can be found in ponds, lakes and slow moving streams. While usually found near water, western pond turtles require adjacent grasslands on south-facing hills for nesting sites. The CNDDDB reveals three occurrences of western pond within the City; one of them is on Brooks Island.

Alameda whipsnake (*Masticophis lateralis euryxanthus*) is a state and federally-listed Threatened species. The species is closely associated with scrub and chaparral communities such as coastal sage scrub, chaparral, and northern coastal scrub. The species uses rock outcrops or small rodent burrows within the scrub and chaparral communities for refuge and for catching prey. Alameda whipsnake is also known to use grassland, oak savanna, and oak-bay woodland in close proximity to

15 Moyle. 2002.

16 Moyle. 2002.

scrub and chaparral. Whipsnake usage of these habitats has been documented to occur up to 150 m (500 ft) from scrub and chaparral. Alameda whipsnakes prey primarily on western fence lizard and western skink (*Eumeces skiltonianus*), but have been documented to also feed on frogs, other snakes, and birds.

Currently, the distribution for Alameda whipsnake is recognized as being five populations within a more fragmented regional meta-population. The five populations consist of the Tilden-Briones population, the Oakland-Las Trampas population, the Hayward-Pleasanton Ridge population, the Mt. Diablo-Black Hills population, and the Sunol-Cedar Mountain population. Parts of the City are within the Tilden-Briones population and within a critical habitat area (Unit 1) for the Alameda whipsnake. The CNDDDB contains one recorded occurrence within the City limits.

Birds

The *short-eared owl* (*Asio flammeus*) has no federal or state protection status, but is a CDFG Species of Special Concern. This species is highly irruptive (subject to sudden growth), following outbreaks of small rodents, primarily voles (*Microtus* sp.). Short-eared owls require tall grassland, prairie and marsh habitat for hunting and nesting. Nesting season is from March through July, and nests are occupied in depressions in the ground surrounded by thick vegetation. They are known to breed in northeastern California but not in the Central Valley; records of fluctuating nest numbers at Grizzly Island Wildlife Area suggest that breeding may be opportunistic in years of high prey abundance. This species has been observed foraging over Wildcat Marsh.

The *northern harrier* (*Circus cyaneus*) has no federal or state protection status, but is a CDFG Species of Special Concern within California. Its range in California is significant, breeding from sea level to 5,700 feet, in the Central Valley's grasslands to lodgepole pine and sierran meadows. Northern harriers require thick cover of tall grasses for nesting, often near emergent wetlands or in grain fields or grassland habitat. Nesting season is from April to September, and nests are occupied in a mound of sticks or grasses. Harriers are year-round residents in northeastern California and less common in the Central Valley. This species has been recorded in Wildcat Marsh. Suitable foraging and nesting habitat is also present within regional parks.

The *great blue heron* (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*) and black-crowned night heron (*Nycticorax nycticorax*) have similar life histories, and are all fairly common in the bay. These species are typically associated with waterways (natural and artificial), marshes, ponds and other wetlands where they forage for prey, but also use grasslands and agricultural fields for this purpose. These species are all colonial nesters in rookeries they create in the tops of groves of large trees in riparian areas or other woodlands adjacent to suitable foraging habitat, although a rookery is known from the Brooks Island.¹⁷

The *white-tailed kite* (*Elanus leucurus*) is a "fully protected" raptor under the California Fish and Game code. White-tailed kites feed on rodents, small reptiles, and large insects in fresh emergent wetlands, annual grasslands, pastures, and ruderal vegetation. They breed between February and

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October. Although, like other raptors, kites build solitary nests, they often roost and occasionally nest communally. Therefore, disturbance of a relatively small roost or nesting area could affect a large number of birds. The white-tailed kite can commonly be observed foraging in open grasslands and marsh areas within Richmond.

The *Caspian tern* (*Hydroprogne caspia*) has no federal or state protection status, but is protected under the Migratory Bird Treaty Act (MBTA). This seabird breeds along the Pacific coast from Alaska to Baja California and winters down the coast and inland along rivers, lakes and marshes. Nests consist of a depression lined with vegetation, pebbles or shells on sandy or gravelly beaches. Brooks Island has harbored a population of breeding Caspian terns for some years now, estimated to be between 500 and 800 pairs. This colony faces constant disturbance within the bay, mostly human induced – dredges, ships and water recreation.

California black rail (*Laterallus jamaicensis coturniculus*). The California black rail is a state Threatened and Fully Protected Species under the CDFG Code. Historically, California black rail was known from the San Francisco Bay area and the delta of the Sacramento and San Joaquin rivers south along the coast to northern Baja California, and in the San Bernardino-Riverside area, at the Salton Sea, and also along the lower Colorado River north of Yuma in California and Arizona. Most recorded occurrences are in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, they are usually found in bulrushes, cattails, and saltgrass. CNDDDB records of black rail occur within the Point Pinole Regional Shoreline.

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*). The saltmarsh common yellowthroat is a CDFG Species of Special Concern. In California, yellowthroats are found in freshwater marshes, coastal swales, swampy riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields. There are no CNDDDB occurrences of saltmarsh common yellowthroat within the City; however, the Wildcat Marsh could provide suitable habitat for this species.

San Pablo song sparrow (*Melospiza melodia samuelis*). The San Pablo song sparrow is a CDFG Species of Special Concern. They are non-migratory and breed in areas along the edge of bays and streams where tidal flow affects the vegetation. These birds have recorded CNDDDB occurrences along the San Pablo and Wildcat Marsh areas.

The *California clapper rail* (*Rallus longirostris obsoletus*) is both a federally and state endangered bird and it is also Fully Protected under the CDFG Code. This species range is restricted to tidal and brackish marshes in San Francisco, San Pablo and Suisun Bays as well as Petaluma and Napa-Sonoma marshes. Nesting season is from February to August, primarily occurring in the San Francisco estuary. This species is known to occur in the Richmond inner Harbor and the salt marsh along San Pablo Creek.

California least tern (*Sternula antillarum* [=*Sterna*, =*albifrons*] *browni*) is a federal and state Endangered and a Fully Protected Species under the CDFG Code. As its name implies, the least tern is the smallest of North American terns. It is 21-23 cm (around 8¼ to 9 inches) long. Its

wingspan is 48-53 cm (around 19 to 21 inches). They mainly eat small fishes, but also shrimp and sometimes other invertebrates. They nest in colonies on relatively open beaches kept free of vegetation by natural scouring from tidal action. There are no recorded CNDDDB occurrences for this species; however, suitable habitat within Brooks Island¹⁸ could support this species.

Mammals

Special Status Bats. Special-status bat species with the potential to occur within the City include the: pallid bat (*Antrozous pallida*), silver-haired bat (*Lasionycteris noctivagans*) and hoary bat (*Lasiurus cinereus*). Pallid bat uses hollow trees, caves, and rock crevices for roosting, but also use man-made structures such as mines, old buildings, and bridges if suitable structure and seclusion are available. Silver-haired bat typically roosts in crevices in tree bark, with maternity roosts almost exclusively in tree hollows. Hoary bats are solitary, typically roosting in foliage of riparian trees such as cottonwoods and sycamores, though eucalyptus are also known to be used. Although potential habitat for these species is present within the City area, no recent records of the above special-status bat species have been recorded in the CNDDDB. However, distribution of special-status bat species is difficult to study and therefore poorly known.

San Pablo vole (Microtus californicus sanpabloensis) is a CDFG Species of Special Concern. The San Pablo vole is a subspecies of the California vole. It is typically found within grassy habitats associated with salt marshes along the San Pablo Bay. The CNDDDB contains recorded occurrences of this species within the San Pablo Creek Marsh and just southeast of the Point Pinole Regional Shoreline.

Salt Marsh Harvest Mouse (Reithrodontomys raviventris) is both a federal Endangered Species and a California Endangered Species. The mouse is typically found in emergent salt marsh habitats dominated by dense growths of pickleweed. The CNDDDB reports the occurrence of salt marsh harvest mouse within the San Pablo and Wildcat Creek Marshes.

Salt marsh wandering shrew (Sorex vagrans halicoetes) is a CDFG Species of Special Concern. The salt marsh wandering shrew is a subspecies of the wandering shrew (*Sorex vagrans*) that is endemic to the salt marshes of the San Francisco Bay. These shrews, which prefer a low, dense cover of pickleweed, occur in low densities. The CNDDDB contains recorded occurrences within the salt marsh of San Pablo Creek.

Regulatory Context

Federal

Endangered Species Act (FESA). The FESA of 1973 provides legal protection for threatened and endangered plant and animal species and requires definitions of critical habitat and development of recovery plans for specific species. Section 7 of the FESA requires federal agencies to make a finding on the potential to jeopardize the continued existence of any listed species potentially

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impacted by all federal actions, including the approval of a public or private action, such as the issuance of a permit pursuant to sections 10 and 404 of the U.S. Clean Water Act (CWA). Section 9 of the FESA prohibits the take of any member of an endangered species. Take is defined by the FESA as "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Section 10(a) of the FESA permits the incidental take of listed species if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Projects adversely affecting federally-listed threatened or endangered species are required to obtain take permission from the USFWS prior to project implementation. If a federal agency is involved (i.e., if a wetlands permit is required, project has federal funding, etc.), take permission can be obtained through FESA section 7 consultation with the USFWS. Consultation will determine whether the project would adversely impact a protected species or designated critical habitat and identify mitigation measures that would be required to avoid or reduce impacts on the species or its habitat. Following this consultation, the USFWS issues a Biological Opinion (BO), which dictates the conditions of take that are allowed for the project. If no federal agency is involved, project applicants are required to obtain an Incidental Take Permit through section 10 of the FESA, which requires preparation of a Habitat Conservation Plan (HCP) and results in the issuance of an Incidental Take Permit.

Migratory Bird Treaty Act (MBTA) of 1918. The MBTA regulates or prohibits the taking, killing, possession of, or harm of migratory bird species listed in Title 50 Code of Federal Regulations (CFR) section 10.13. It is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20.

The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). Six families of raptors occurring in North America are included in the amendment:

- Accipitridae (kites, hawks, and eagles);
- Cathartidae (New World vultures);
- Falconidae (falcons and caracaras);
- Pandionidae (ospreys);
- Strigidae (typical owls); and
- Tytonidae (barn owls).

All species and subspecies of the families listed above are protected under the amendment.

Federal Clean Water Act (CWA)

Section 404. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 401 prohibits the discharge of any pollutant into the Nation's waters without a permit, and section 402 establishes the permit program. Section 404

of the CWA regulates activities that result in discharge of dredged or fill material into waters of the United States. The United States Army Corps of Engineers (Corps) is responsible for permitting certain types of activities affecting wetlands and other waters of the United States. Under section 404 of the CWA, the Corps has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or acres.

Section 401. The State Water Resources Control Board (SWRCB) has authority over wetlands through section 401 of the CWA, as well as the Porter-Cologne Act, California Code of Regulations section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. A request for certification is submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, these boards may effectively veto or add conditions to any Corps permit.

State

California Endangered Species Act (CESA). The CDFG administers a number of laws and programs designed to protect fish and wildlife resources. Principal among these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code, section 2050), which regulates the listing and take of state-endangered and state-threatened species. The CESA declares that deserving species will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. The CESA established that it is state policy to conserve, protect, restore, and enhance endangered species and their habitats.

Species listed under the CESA cannot be "taken" without adequate mitigation and compensation. The definition of take under CESA is the same as described above for the FESA. However, based on findings of the California Attorney General's Office, take under CESA does not prohibit indirect harm by way of habitat modification. Typically, the CDFG implements endangered species protection and take determinations by entering into management agreements (California Fish and Game Code, section 2081 Management Agreements) with project applicants.

Fish and Game Code - sections 3503, 3503.5, 3513. Fish and Game Code section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act. These regulations could require that elements of the proposed project (particularly

vegetation removal or construction near nest trees) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFG and/or USFWS.

Fish and Game Code - Sections 3511, 4700, 5050, and 5515. Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code designate certain species as “fully protected.” Fully protected species, or parts thereof, may not be taken or possessed at any time, and no provision of the California Fish and Game Code or any other law may be construed to authorize the issuance of permits or licenses to take any fully protected species. No such permits or licenses heretofore issued may have any force or effect for any such purpose, except that the California Fish and Game Commission may authorize the collecting of such species for necessary scientific research. Legally imported and fully protected species or parts thereof may be possessed under a permit issued by CDFG.

CDFG Lake and Streambed Alteration Agreements. Under sections 1600-1616 of the California Fish and Game Code, the CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG’s jurisdiction are defined in the code as the “... *bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit...*” (section 1601). In practice, the CDFG usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

Native Plant Protection Act. The California Native Plant Protection Act (California Fish and Game Code Sec. 1900-1913) prohibits the taking, possession, or sale within the State of any rare, threatened or endangered plants as defined by CDFG. This protection would apply to any plants with a State designation of rare, threatened, or endangered. Project impacts to these species would be considered “significant” if the species are known to occur within the area of disturbance associated with construction of the project, or “potentially significant” if the species has a high potential to occur within the area of disturbance.

California Environmental Quality Act (CEQA). Although threatened and endangered species are protected by specific federal and State statutes, section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(b) requires public agencies to undertake reviews to determine if projects would result in significant effects on species that are not listed by either the USFWS or CDFG (i.e., candidate species). Thus, CEQA provides an agency with the ability to protect a species from a project’s potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

McAteer-Petris Act. The McAteer-Petris Act and Suisun Marsh Preservation Act were adopted to protect San Francisco Bay and Suisun Marsh as great natural resources for the benefit of public and to encourage development compatible with this protection. The San Francisco Bay Conservation

and Development Commission (BCDC) was established to carry out the McAteer-Petris Act. The two primary goals of the BCDC are (1) to prevent the unnecessary filling of San Francisco Bay, and (2) to increase public access to and along the Bay shoreline. BCDC approval is required for projects within 100 feet of the Bay shoreline, as well as projects that propose any filling or dredging within Bay waters.

Oak Woodlands Conservation Act. The Oak Woodlands Conservation Act, added to the State of California Public Resources Code (section 21083.4) on February 18, 2004, requires that a County determine whether a project in its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. A County must then require one or more alternatives to mitigate the significant effect of the conversion of oak woodlands. This Act exempts specified activities from its requirements, including:

1. Projects undertaken pursuant to an approved Natural Community Conservation Plan (NCCP) or approved sub-area plan within an approved Natural Community Conservation Plan that includes oaks as a covered species or that conserves oak habitat through natural community conservation preserve designation and implementation and mitigation measures that are consistent with this section.
2. Affordable housing projects for lower income households, as defined pursuant to section 50079.5 of the Health and Safety Code, that are located within an urbanized area, or within a sphere of influence as defined pursuant to section 56076 of the Government Code.
3. Conversion of oak woodlands on agricultural land that includes land that is used to produce or process plant and animal products for commercial purposes.
4. Projects undertaken pursuant to section 21080.5 of the Public Resources Code.

Standards of Significance

For the purposes of this EIR, impacts on biological resources are considered significant if the proposed project would:

- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impacts in any of the above categories would be considered unavoidable significant effects of the projects if they could not be (a) eliminated, (b) avoided or minimized by redesign or relocation of some components of the projects, (c) reduced to a less-than-significant level, or (d) compensated for by replacement of equal habitat extent and value.

Project-Specific Impacts and Mitigation Measures

3.4-1 The proposed General Plan would not have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. This is considered a *less-than-significant impact*.

The City of Richmond is occupied primarily by urban development, including commercial, residential, and industrial land uses that do not provide habitat for any state or federally listed, or other special-status species. However, undeveloped, natural land is present within the boundaries of the General Plan Update area including natural areas east of the City such as Wildcat Canyon Regional Park, San Pablo Ridge, Sobrante Ridge Manzanita Grove, and northwest of the City along the San Pablo Bay in areas such as the San Pablo Creek and Wildcat Creek Marshes, Point Pinole, Hoffman Marsh, and Brooks Island. These natural areas provide suitable habitat for a variety of state and federally listed and other special-status species such as pallid manzanita, soft bird's-beak, Santa Cruz tarplant, California red-legged frog, Alameda whipsnake, California black rail, California clapper rail, and salt-marsh harvest mouse, among others. Additionally, these natural areas provide habitat for a wide variety of common native plant and wildlife species.

The City of Richmond places great value on its remaining natural areas and the plant and wildlife species that they support. The proposed General Plan includes the following policies and implementing actions that would reduce impacts of the project.

Policy

CN1.1 Habitat and Biological Resources Protection and Restoration. Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources. Protect these areas and work with the California Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, the East Bay Regional Park District and other regional agencies to identify areas for special protection and establish appropriate protection measures for these areas.

Protect resources to maximize the efficacy of natural systems and encourage sustainable development practices and conservation measures to ensure a healthy natural environment.

Protect wetlands from direct and indirect impacts of new and existing development and infrastructure. Ensure that direct and indirect impacts to wetland habitats are minimized by environmentally sensitive project siting and design.

Protect marshlands and baylands to ensure they are not polluted or damaged from bay filling and dredging.

Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas. Protect and restore creek corridors and riparian areas by restoring riparian habitat with appropriate vegetation and channel design; removing culverts and hardened channels where appropriate; improving creek access; avoiding future culverting or channelization of creeks; and ensuring appropriate and ongoing maintenance.

At a minimum, require mitigation of impacts to sensitive species ensuring that a project does not contribute to the decline of the affected species populations in the region. Identify mitigations in coordination with the U.S. Fish and Wildlife service, the California Department of Fish and Game and other regulatory agencies.

Actions

- CN1.A Habitat Conservation Plans. Work closely with Contra Costa County and the East Bay Regional Park District to develop habitat conservation plans. Ensure that these plans identify locations and protect sensitive habitat including wetlands, marshes, baylands, creeks and open space. The plans should also establish clear mitigation criteria including no net losses in natural resource acreage, functions or values. The plan should provide for safe wildlife movement by limiting roadways within habitat areas, creating wildlife passable fencing for existing roadways, incorporating design features and by creating habitat preserves that are immediately adjacent to each other.
- CN1.B Priority Conservation Areas. The City will identify areas of the City with significant natural habitat, open space and recreation resources and promote conservation, preservation and environmental rehabilitation.
- CN1.C Creek Access Easement. Identify and create access easements, where practical, for creek maintenance and public access to creekside amenities. Establish standards that allow public access in the floodplain and buffers along creek corridors without compromising the integrity of sensitive habitats.

The proposed General Plan includes policy CN1.1, which is intended to preserve and restore Richmond's natural habitat and associated range of plants and wildlife including wetlands, baylands, riparian areas, oak woodlands and other sensitive biological resources. The General Plan encourages restoration efforts such as controlling invasive species, re-establishing natives, restoring creeks, and reclaiming priority conservation areas. These actions are essential to maintaining critical habitat and biodiversity. Implementing actions in the General Plan include working with Contra Costa County and the East Bay Regional Park District to develop habitat conservation plans (Implementing Action CN1.A), identification of areas in the City with significant natural habitat, open space and recreation resources for conservation, preservation and environmental rehabilitation (Implementing Action CN1.B), and establishment of performance standards for creek corridors that allow for existing and created wildlife habitat and species sensitive to human disturbance, provide vegetative filtration for water quality and corridors for wildlife habitat linkage, and protection from runoff and other impacts of adjacent urban uses (Implementing Action CN1.C). These measures would protect sensitive species and their habitat.

In addition, future planned development in the City would be focused on urban infill of brownfields, undeveloped urban lots, and redevelopment of underused existing development where special-status species are not likely to occur. No development in natural areas, such as the eight County-designated ESUs or the one area of the City that may support the Alameda whipsnake, is proposed as a part of this General Plan and none of the change areas encroach into areas with moderate or high potential for a special-status species to occur. However, if any development were proposed in the vicinity of a natural area, that project would have to comply with applicable state and federal regulations regarding natural resources. Such compliance for any project, at a minimum, would require a survey of the project area by a qualified biologist to evaluate its potential to support any wetlands, sensitive habitats or special-status species known from the region. If such resources are found, the project applicant, and/or its consulting biologist, would be required to coordinate with the applicable state or federal resource agency to ensure that any potential impacts on those resources are either avoided, or are mitigated to a less than significant level through compensatory mitigation. Since compliance with these regulations is required on a project level, the General Plan would not have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. Therefore, this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to review to determine impacts on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.4-2 The proposed General Plan would not interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. This is considered a *less-than-significant impact*.

The area within the City of Richmond General Plan Update boundaries is occupied primarily by urban development, including commercial, residential, and industrial land uses that would not be of value as wildlife movement corridors, or wildlife nursery sites. However, as noted above, undeveloped, natural land is present within the boundaries of the General Plan Update area. In particular, the open space areas in the San Francisco and San Pablo bays, along creeks, along the

ridges, and in the regional preserves and parks provide areas for migratory birds and wildlife species.

The City of Richmond places great value on its remaining natural areas, and has included in the General Plan Policy CN1.1 and Implementing Actions (see Impact 3.4-1) that would protect natural habitat and biodiversity and preserve biological resources. As noted above, future planned development in the City would be focused on urban infill of brownfields, undeveloped urban lots, and redevelopment of underused industrial development, with no development expected to occur in natural areas. Specific actions included as part of Policy CN1.1 call for protection of marshes, baylands, and creek corridors that would serve to protect wildlife migration corridors. Additionally, as described under Impact 3.4-1, any future projects would be required to comply with state and federal regulations pertaining to natural resources. To facilitate this compliance, project applicants must retain a qualified biologist to evaluate whether a project would potentially interfere with wildlife movement, migration, or breeding/nesting. If potential to affect wildlife movement, migration, or nesting is discovered, project applicants or their consulting biologists would be required to coordinate with the appropriate resource agency to ensure that impacts are either avoided, or mitigated to a less-than-significant level. With development focused in infill areas and away from areas on ridgelines and the regional preserves and parks, and compliance with existing state and federal regulations pertaining to natural resources, the proposed General Plan would not result in the interference with the movement of any native resident or migratory fish or wildlife species or established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. As noted in the Policy CN1.1, if there were proposed development or other improvements that could disturb wildlife movement, the City would require mitigation of impacts on sensitive species in coordination with USFWS, CDFG, and other regulatory agencies, as appropriate. In addition, potential effects on migratory fish and bird species would be reduced through compliance with the California Fish and Game Code (sections 5515 and 3511, respectively) and with the MBTA. Therefore, this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to review to determine impacts on the movement of native resident, migratory fish, or wildlife species or established native resident or migratory wildlife corridors or the use of native wildlife nursery sites. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.4-3 The proposed General Plan would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. This is considered a *less-than-significant impact*.

Sensitive natural communities identified in the CNDDDB from the vicinity of the City of Richmond include Northern Coastal Salt Marsh, Northern Maritime Chaparral, and Valley Needlegrass Grassland. Additionally, riparian habitat occurs along portions of San Pablo Creek and Wildcat Creek. Although development within these known sensitive natural communities is not expected to occur as a result of the proposed General Plan, it is possible that future development and improvements may disturb these or other previously undocumented sensitive biological habitats. However, all future projects are required to comply with state and federal regulations regarding natural resources. Such compliance, at a minimum, would require that the project applicant retain a qualified biologist to evaluate the project site for the presence of sensitive natural communities such as riparian woodland or vernal pools. If such communities are found, the applicant or its consulting biologist is required to coordinate with the appropriate resource agency to ensure that impacts on these resources are either avoided or mitigated to a less than significant level.

Additionally, the General Plan contains policies and implementing actions that would avoid or reduce the impacts on biological resources to less than significant. In particular, the actions described below are protective of riparian habitats and natural communities.

Actions

- CN1.A Habitat Conservation Plans. (see above)
- CN1.B Priority Conservation Areas. (see above)
- CN1.C Creek Access Easement. (see above)
- CN1.H Where feasible, restore creek corridors in urban areas. Creeks currently diverted in culverts or hardened channels should be restored to their natural state. Adopt regional guidelines for channel creation or modification to ensure that channels meander, have a naturalized side slope and a varied channel bottom elevation. Include improvement standards for soft bottom channels.

Implementing Action CN1.B involves identification of areas in the City with significant natural habitat, open space, and recreation resources for conservation, preservation, and environmental rehabilitation, such as the sensitive natural communities identified above. Implementing Action CN.1J involves creation of a program to restore creek corridors in urban areas, in coordination with regional agencies and local nonprofits toward restoration of creeks currently diverted in culverts or hardened channels to their natural state, where feasible. The Action also calls for adoption of regional guidelines for channel creation or modification to ensure that channels meander, have a naturalized side slope, and a varied channel bottom elevation. These measures would reduce potential effects on riparian areas and restore some creeks to a more natural condition.

Future planned development in the City would be focused on urban infill of brownfields, undeveloped urban lots, and redevelopment of underused existing development, outside of riparian areas. As

stated above, any future development that could affect riparian areas or other sensitive natural communities would also be subject to applicable regulations designed to protect these resources. Specifically, the CDFG Lake and Streambed Alteration Agreements, the California Native Plant Protection Act, and CEQA would serve to avoid or reduce disturbances to riparian habitat and other natural communities. Therefore, the project would not result in a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS. Therefore, this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to review to determine impacts on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.4-4 The proposed General Plan would not have a substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. This is considered a *less-than-significant impact*.

Wetlands and other waters of the United States as defined by section 404 of the Clean Water Act are present within the boundaries of the City of Richmond General Plan Update. However, due to the occupation of the majority of the City by urban development, wetlands are generally limited to natural areas, such as the Wildcat Canyon Regional Park, San Pablo Creek and Wildcat Creek Marshes, Point Pinole, Hoffman Marsh, Brooks Island, and along Wildcat Creek and San Pablo Creek as they pass through the City of Richmond.

Future planned development in the City would be focused on urban infill of brownfields, undeveloped urban lots, and redevelopment of underused existing development, where federally protected wetlands are not expected to occur. However, as discussed in the regulatory section, any activity that could affect waters of the United States would be subject to section 404 of the Clean Water Act. Compliance with section 404, which includes, at a minimum, an evaluation of each project area by a qualified biologist to determine if potential wetlands are present, followed by coordination with the Corps and local RWQCB if potential impacts exist, would ensure that there would be no net loss of wetlands. Consequently, the project would not have a substantial adverse effect on federally

protected wetlands as defined by section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. Therefore, this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review, in accordance with CEQA, to determine if there would be impacts on protected wetlands. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.4-5 The proposed General Plan would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. This is considered a *less-than-significant impact*.

The City of Richmond is primarily occupied by urban development, but that development includes landscape trees that receive protection under the City of Richmond Municipal Code. The City of Richmond Municipal Code, Chapter 10.08 *Trimming, Pruning, Care, Planting, Removal and Moving of Trees, Shrubs or Plants* prohibits trimming or removing trees in or on any "street, park, pleasure ground, boulevard, alley or public place" without first obtaining a permit from the Recreation and Parks Director of the City of Richmond or any of his or her authorized deputies. Applicants for development permits under the updated City of Richmond General Plan would be required by law to comply with Municipal Code Chapter 10.08 by obtaining the necessary permits prior to trimming or removal of any trees related to development. Additionally, applicants would be required to place protective structures around any trees that would remain after construction to protect them from harm during construction of development projects. Since project applicants would be required by law to comply with all applicable provisions of Chapter 10.08 of the City of Richmond Municipal Code, the project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. The City has no other policies or ordinances that explicitly protect biological resources. Because project applicants would be required to comply with all applicable provisions of the City of Richmond Municipal Code, this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review to determine if it would conflict with any local policies or ordinances protecting biological resources. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030

planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.4-6 The proposed General Plan would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan since none exist. As a result, the proposed project would have *no impacts on adopted conservation plans.*

No Habitat Conservation Plans or Natural Community Conservation Plans have been designated within the City boundaries. The closest HCP/NCCP is the *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan*, which is a joint venture between the cities of Brentwood, Clayton, Oakley, and Pittsburg and Contra Costa County. The City of Richmond is not a part of this plan. Other nearby adopted habitat conservation plans include the San Francisco Bay Plan, the Suisun Marsh Protection Plan, and a variety of regional habitat and park plans by the East Bay Regional Park District, but the City of Richmond is outside the scope of these plans. Since no HCPs or NCCPs are currently included in the City of Richmond, and none are likely to be developed in the future (due to the lack of unprotected natural habitat areas), future development within the City of Richmond resulting from implementation of the General Plan would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, there would be ***no impact.***

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review to determine if the development is proposed consistent with the provisions of any applicable Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

The context for cumulative impacts on biological resources includes the City of Richmond and the areas surrounding the City of Richmond. Areas where no impacts were determined to exist would not contribute considerably to a cumulative impact and are not analyzed.

Because the City of Richmond and areas surrounding it are highly urbanized, special-status species, sensitive habitats, and wetlands are limited to natural parks and other preserves such as Wildcat Canyon Regional Park, San Pablo Ridge, Sobrante Ridge Manzanita Grove, and northwest of the City along the San Pablo Bay in areas such as the San Pablo Creek and Wildcat Creek Marshes, Point Pinole, Hoffman Marsh, and Brooks Island. Due to its limited extent in the area, any habitat loss could result in an adverse effect on any of the special-status plant or wildlife species occurring there, which would be a significant impact. However, any development that occurs in Richmond or in other areas that could contribute to cumulative impacts on special-status species, sensitive habitats and wetlands, and wildlife corridors and nursery sites would be subject to the same federal, state, and regional policies, regulations, and conservation programs that are intended to protect sensitive biological resources and reduce potential impacts. These regulations would have the same mitigating effect on special-status species as for the proposed General Plan. Therefore, this cumulative impact is *less than significant*.

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3.5 CULTURAL RESOURCES

3.5 CULTURAL RESOURCES

INTRODUCTION

This section of the EIR assesses potential effects on cultural resources that could result from implementation of the proposed Richmond General Plan Update. Cultural resources are defined as buildings, sites, districts, structures, or objects having historical, architectural, archaeological, or cultural importance. This section includes a historical overview of the City of Richmond and a discussion of known cultural resources in the City. Applicable federal, state, and local regulations are identified, followed by analysis of impacts and identification of mitigation measures to reduce adverse impacts on cultural resources, where available. This section also addresses potential impacts on paleontological resources, which include fossil remains and rock or soil formations that have produced fossil material.

Information used to prepare this section includes the 1994 Richmond General Plan, the Richmond Municipal Code, and the Draft Historic Resources Element of the proposed Richmond General Plan Update.

One comment letter addressing cultural resources was received in response to the February 1, 2008 Notice of Preparation circulated for the Richmond General Plan Update EIR. The California Department of Transportation (Caltrans) stated that construction actions within the state right of way require the results of records search from the Northwest Information Center of the California Historical Resources Information System and, if warranted, a cultural resources study by a qualified professional archaeologist to ensure compliance with applicable federal, state, and local laws and regulations. The proposed project identifies long-term development and improvements within the City and does not involve any immediate construction actions. Subsequent projects, such as construction actions or activities that may occur within the Caltrans right-of-way, would obtain records searches from the Northwest Information Center to determine whether those particular projects may warrant a cultural resources study.

ENVIRONMENTAL SETTING

The following summary history of the City of Richmond is taken from the Draft Historic Resources Element of the proposed Richmond General Plan Update. The summary also describes historic sites, structures, and landmarks associated with each period.

Native Americans (4000 B.C. – 1803)

People have lived along the San Francisco Bay shoreline for thousands of years. The Huchiun, part of the larger Ohlone tribe, lived in what is now Richmond from Temescal Creek to Rodeo Creek. They established villages and subsisted primarily on acorns, nuts, seeds, berries, game, fish, and shellfish. The Ohlone created massive shellmounds containing burials, ceremonial and household artifacts, and the remains of fish, birds, and other animals. Today, the shellmounds along baylands and creeks represent evidence of Native American habitation. Three shellmounds in Richmond

have been determined eligible for the National Register of Historic Places (NRHP): the Ellis Landing Shellmound Site, the Lower San Pablo Creek Archaeological District, and the Stege Mounds Archaeological District.

Spanish Mission Period (1776 – 1821)

During the Spanish Mission period, the Huchiun were forced to convert to Christianity and move to Mission San Francisco de Asís (Dolores) where many died of disease or were absorbed into other tribes. Between 1813 and 1817, to meet the need for more food, priests at Mission Dolores established an outpost along Wildcat Creek where Christianized Indians engaged in agriculture.

Mexican Period (1821 – 1846)

After Mexico won independence from Spain in 1821, large tracts of land in California were granted to military heroes and loyalists. In 1823, Don Francisco Castro was given 17,000 acres of land in Contra Costa (meaning “opposite coast” in Spanish), which became known as Rancho San Pablo. Cattle ranching was the focus of the rancho, and the Castro family retained large numbers of Native Americans to work their ranch. The Castros also operated a ferry-shuttle freight service from Point Isabel (Richmond) to Yerba Buena Village (San Francisco). With the expansion of the cattle trade to the international market, especially the eastern United States, Castro and other landowners became barons of a major industry that flourished throughout the nineteenth century. The City of Richmond was established on a portion of Castro’s land grant about 70 years after his death.

American Period (1846–1895)

In 1846, California broke away from Mexico. After the Mexican-American War, Mexico ceded California to the United States. Many squatters settled on the huge Castro landholding, sparking court proceedings that lasted nearly 50 years and deterring developers from the region due to uncertainty over land ownership.

The Castro’s ferry-shuttle at Point Isabel provided a service for gold miners in 1849. By 1859, the San Francisco market was made readily accessible to West Contra Costa ranchers by cargo shuttle-ferry service at Ellis Landing (now the Richmond Ferry Terminal), where Captain George Ellis ferried freight aboard his two sailing vessels, the Sierra and the Mystery.

More people started to settle on the lands surrounding the bay, contributing to the multicultural identity that still characterizes Richmond today. Farming expanded from family gardens to commercial market gardens grown by Portuguese, Italian, and Irish immigrants. Fruits, vegetables, hay, and grain were raised while intensive stock and dairy ranching dominated the Portrero and Wildcat canyons. Around 1870, a shrimp village was established by Chinese fisherman at what is now Point Molate. For nearly half a century, fishermen lived and worked at Point Molate, capturing bay shrimp for local markets and international export. Many Chinese also later worked for California Cap Works and the Metropolitan Match Company, both of which were located in Richmond.

Two significant historical resources remain from the American period: East Brother Lighthouse and the Giant Powder Company Site. The East Brother Lighthouse was constructed in 1873 on East Brother Island just west of Point San Pablo. As the oldest of the three remaining wood-frame lighthouses on the Pacific Coast, East Brother Lighthouse is an important landmark with California Historical Landmark status (Landmark No. 951) and listing on the NRHP. The U.S. Coast Guard operated the lighthouse from 1939 to 1969 when the installation of automated light and sound was completed. Today, the lighthouse operates as a bed-and-breakfast. The last site of the Giant Powder Company at Point Pinole Regional Park is also a California Historical Landmark (Landmark No. 1002-1). Giant Powder Company was the first company in America to produce dynamite. Following devastating explosions at their San Francisco and Berkeley sites, the business moved to the isolated Point Pinole location in 1892. Incorporating the established Croatian community of Sobrante, the company town of Giant quickly grew into one of the North Bay's industrial centers. Explosives were produced there until 1960 and were essential to mining, dam building, and other construction projects throughout the western hemisphere.

Industrial Era (1895 – 1940)

With the dispute over the Castro family's Rancho San Pablo finally resolved in 1894, real estate development began and Richmond changed forever when the transcontinental Santa Fe Railroad arrived at Point Richmond in 1900. Passenger rail service between Chicago and Point Richmond prompted the location of Santa Fe's shops in Point Richmond, as well as the construction of the Standard Oil Company Refinery (known then as Pacific Coast Oil). Standard Oil quickly expanded to cover 1,800 acres and became the City's largest employer. The first hotel, fire station, and city hall were located in Point Richmond, which was firmly established by the year 1900 with some 2,000 residents.

After that time, investors and speculators began subdividing and promoting residential lots along Macdonald Avenue. Colonel George S. Rheems, president of the Standard Oil Refinery, organized the East Shore and Suburban Railway Company and began trolley car service between the Point Richmond and San Pablo railroad depots in 1904. Santa Fe moved its station from Point Richmond to "East Yard" at the foot of Macdonald Avenue and renamed it Richmond. The City of Richmond incorporated August 6, 1905, launching a period of substantial industrial growth. By 1915, Macdonald Avenue eclipsed Point Richmond as the commercial heart of Richmond, and Richmond's Downtown soon emerged as the City's business and retail center.

The year 1915 also brought formation of the Richmond-San Rafael Ferry and Transportation Company, which offered the first direct steamer passenger service across the bay to San Rafael. A tunnel through Point Richmond was also constructed at this time, allowing access to the developing waterfront. Marshland was filled in, effectively converting Point Richmond from an island to a peninsula. With the authorization of harbor dredging and tideland filling as part of a large-scale shipping port terminal construction effort, many well-known industries located in the area, including American Radiator, Pullman Palace Car Shops, Standard Sanitary Company, Stauffer Chemical Company, Winehaven, Felice & Perelli Cannery, and Ford Motor Assembly Plant. This industrial

growth spawned the development of surrounding town sites and the population grew from just 2,150 in 1905 to 23,600 in 1940.

Richmond's early population remained diverse and included Chinese shrimp fisherman and employees of the explosives factories; Native Americans who had developed a village in the Santa Fe rail yards as part of a 1888 right-of-way use agreement between the railroad and New Mexico Pueblo Indians; Japanese that constituted more than half the railroad's workforce and those who purchased property in the Macdonald/San Pablo Avenue area to operate flower nurseries; and African Americans.

Much of the City's infrastructure and buildings constructed during this era still survive. The basic street infrastructure of the southwest portion of Richmond is still in place and many homes and some commercial buildings in what are now the neighborhoods of the Iron Triangle, Santa Fe, and Coronado still exist. The railroad tunnel to Ferry Point and the Pier itself are still in use. The oldest remaining building from the Santa Fe yards, the Reading Room, constructed about 1903, has been moved to Point Richmond and rehabilitated for use as a bank at approximately the site of the original Point Richmond Depot. The most significant structures and sites that recall this early industrial and social history of Richmond are now officially recognized on the NRHP and include the Point Richmond Historic District; Winehaven Historic District; the Ford Motor Company Assembly Plant; Hotel Don (Hotel Carquinez); and Alvarado Park. These are described in more detail below.

Point Richmond was one of the first communities built in the City. Today, residents enjoy many of the thoughtfully preserved Victorian structures dating from 1910 and earlier. Because of the wealth of contributing significant historic structures in this area, a portion of Point Richmond has been listed on the NRHP. The recognized historic district includes homes and commercial buildings from Richmond's pre-incorporation (1900 and 1905). Point Richmond's Ferry Point Pier, part of Miller-Knox Regional Shoreline Park, has also been determined eligible for the National Register as an individual resource.

Winehaven Historic District housed a successful 412-acre winery near Point Molate until Prohibition forced its closure. The land later served the Navy as part of the Point Molate Fuel Depot Naval Supply Center. The property is now listed on the National Register, with 35 contributing buildings on site including wine cellars, warehouses, cottages, the winemaker's house, and other wine processing-related outbuildings.

The Ford Motor Company built cars in the massive 500,000-square-foot Ford Motor Company Assembly Plant on Harbour Way South between 1931 and 1955. During World War II, military vehicles received final processing here, and after World War II the Plant produced over a million vehicles until 1955 when its capacity could no longer meet production demands. The property is planned as the future site of the Rosie the Riveter/World War II Home Front National Historical Park's visitor center and museum.

The Hotel Don (later renamed Hotel Carquinez) was built in 1926 at the corner of Harbour Way and Nevin Avenue. The hotel quickly became the center of Richmond's social and civic life, serving as a

meeting place for the City's important business until the construction of the Civic Center in 1949. The building currently houses a senior center and senior housing units.

Alvarado Park (once known as Grand Canyon Park) was purchased by the City in 1920 and renamed for two-time governor of Mexican California Juan Bautista Alvarado. The Park, situated along Wildcat Creek, has long been a favorite place for locals to picnic and hold celebrations. The Park features a chateau and landscaped areas with stonework, which were added by the Works Progress Administration (WPA) during the Depression years. The chateau is now a private residence, but the parks grounds are still enjoyed by area residents.

World War II Home Front Era (1940 – 1945)

The City of Richmond rapidly and dramatically increased in population during World War II when thousands migrated to work in the Kaiser Shipyards. Almost overnight, Richmond was transformed from a sleepy country town into a bustling 24-hour city. Atchison Village, which still exists in Richmond, was constructed by the Richmond Housing Authority in 1941 as housing for defense workers from the Kaiser Shipyards. During the three-year period from 1940 to 1943, the population soared from 23,600 to over 93,700. This explosive growth contributed to a "boomtown" atmosphere in Richmond. Many traveled from the economically depressed South and Southwest seeking work. The multi-ethnic population established at this time continues to be one of Richmond's distinguishing characteristics.

As increasing numbers of men joined the armed forces, women began to make crucial contributions to the shipbuilding effort. Many buildings and sites were developed to support the home front workforce, including structures associated with the shipyards, factory buildings, housing, and other community-serving facilities. A significant number of these sites and landmarks still exist today, linking the City to this wartime era.

In 2000, the National Park Service determined that Richmond retained one of the largest collections of World War II-era sites and structures with which to tell the home front story of the government, industry, and citizen efforts that led to victory in World War II. The United States Congress passed legislation to establish Rosie the Riveter/World War II Home Front National Historical Park in Richmond to commemorate the millions who worked on the wartime home front. The Park encompasses a series of shoreline parks and a number of significant structures and sites in the waterfront vicinity and nearby neighborhoods.

The National Historical Park Element of the Draft Richmond General Plan Update provides a detailed description of the World War II home front era and known surviving resources, and a policy framework for developing the National Historical Park.

Post World War II (1945 – 1960)

By the late 1940s, Richmond experienced the economic instability that followed wartime expansion. Large numbers of Richmond's war workers were left unemployed or underemployed as the defense contracts ended and the industries closed down. Many were left homeless when temporary war

worker housing was demolished. Although new industries such as International Harvester moved in to occupy some of the vacated shipyard structures, unemployment in the City was exacerbated by the loss of its older urban industries that left to take advantage of incentives to build new plants in outlying suburbs. The most significant departure in Richmond was the Ford Motor Company, which moved to Milpitas, California in 1955. Fifty-five war-related businesses had relocated by 1957. The poverty rate rose to nearly 50 percent and remained that way through the 1960s. Strained race relations added to challenging economic conditions.

Richmond's Redevelopment Agency was created in 1949 to plan the City's post-war transformation. That same year, the City constructed a new civic center, a public facility concept that led Richmond to earn the title, "All American City" in 1952. In the 1950s, Richmond expanded by annexing land in and around El Sobrante to encourage growth in the hills. By 1956, the new Richmond-San Rafael bridge linked the East Bay with Marin County, expanding access to northern destinations and signaling the end of an era for the once-popular Richmond-San Rafael passenger ferry system.

Modern Richmond (1960 – Present)

Housing and commercial development in the late 1980s brought the City's population back up to around 100,000. The 1.3 million-square-foot Hilltop Regional Shopping Center was built in 1976. Later, the waterfront gained new life sparked by the Harbour Redevelopment Project bringing a new marina green space, housing, walkways, parks, lagoons, restaurants, and office space. The Richmond Parkway connecting Point Richmond to the Hilltop area encouraged housing developments along this corridor. Today, Richmond is home to some 103,000 people with four marinas, two country clubs, dozens of parks and beaches, and performing arts centers.

Known Historical Resources

The City includes a number of properties and landmarks that have been determined significant at a local level. Some of these, such as the Pullman District, Kaiser Field Hospital, Civic Center District, and Santa Fe Reading Room, have been added to Richmond's Historical Register. Others are unofficial potential listings such as the International Hotel, the Fire Station at Cutting Boulevard, and the Chevron Refinery Administration Building and Laboratory.

Various locations in Richmond, including Point San Pablo, are known to contain archaeological sites connected to the Ohlone Indians, the earliest inhabitants of the Richmond area. Some of these sites have been determined eligible for NRHP listing, such as the Ellis Landing Shellmound site and the Lower San Pablo Creek Archaeological District.

Many of Richmond's historic and cultural resources have been officially recognized at federal and state levels through listing on the NRHP and the California Register of Historical Resources (CRHR). Of particular significance are the resources that have become part of the establishing legislation for the Rosie the Riveter/World War II Home Front Historical National Park. These are recognized as having outstanding historic value and significance in relation to the World War II home front effort and they range from waterfront parks and structures associated with the shipyards to factory buildings, housing, and other community-serving facilities.

An inventory of officially recognized historical resources in the City is provided in Table 3.5-1. The locations of these resources are shown on Figure 3.5-1.

TABLE 3.5-1	
RECOGNIZED NATIONAL HISTORICAL RESOURCES WITHIN THE CITY OF RICHMOND	
National Register of Historic Places	
Point Richmond Historic District	
East Brother Light Station	
Winehaven Historic District (Point Molate)	
Alvarado Park	
Ford Motor Company Assembly Plant	
Richmond Shipyard No. 3	
Atchison Village	
Carquinez Hotel (former Hotel Don)	
Rosie the Riveter/World War II Home Front National Historical Park Resources	
Richmond Shipyard No. 3	
Whirley Crane	
SS Red Oak Victory Ship	
Ford Motor Company Assembly Plant	
Maritime Child Development Center	
Ruth C. Powers Child Development Center	
Kaiser-Permanente Field Hospital	
Fire Station No. 67A	
Atchison Village	
Rosie the Riveter Memorial	
Shimada Peace Memorial Park	
Westshore (Lucretia Edwards) Park	
Sheridan Observation Point Park	
Barbara and Jay Vincent Park	
Bay Trail/Esplanade	
Source: City of Richmond, 2009.	

Paleontological Setting

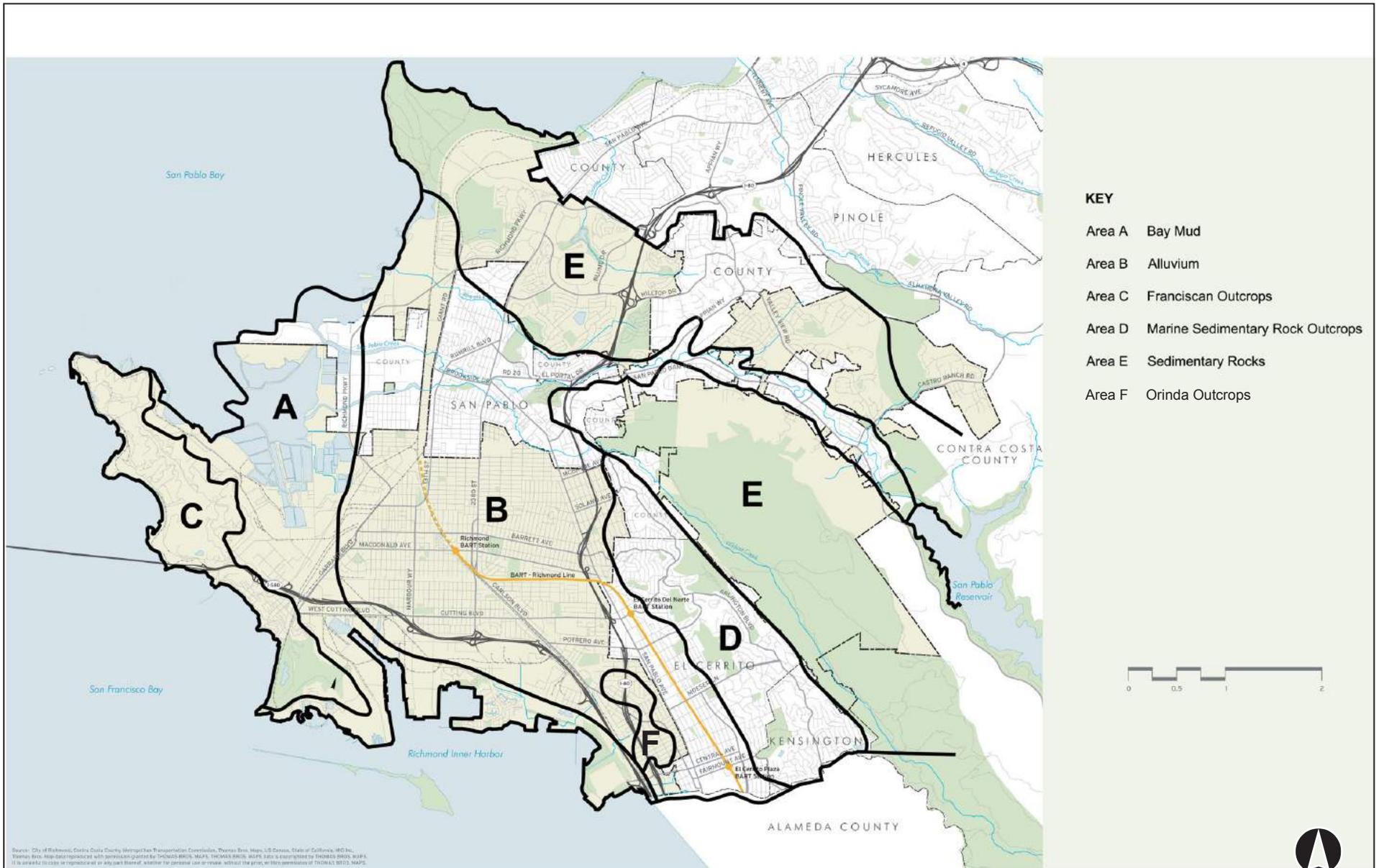
Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils). They are valuable, nonrenewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can be used to determine the relative ages of the depositional layers in which they occur and of the geologic events that created those deposits. The age, abundance, and distribution of fossils depend on the geologic formation in which they occur and the topography of the area in which they are exposed. The geologic environments in which the plants or animals became fossilized usually were quite different from the present topography in which the geologic formations now exist.

Richmond is underlain by an assemblage of basement rocks known as the Franciscan Complex (Area C on Figure 3.5-2), which consists of sedimentary and volcanic rocks (sandstone, serpentine, chert, greenstone) that probably accumulated in a deep oceanic basin during Late Jurassic to Late Cretaceous time (from about 163 to about 66 million years ago). Above the Franciscan are marine and non-marine sedimentary and volcanic sequences of hardened sandstones and shales formed in Eocene through Miocene time (about 57 to about 5 million years ago – Area D on Figure 3.5-2). In the El Sobrante Valley the bedrock is the Contra Costa Group – mostly the Orinda Formation north of San Pablo Creek and mostly unnamed sedimentary rocks south of the creek (Area E on Figure 3.5-2), a formation of poorly sorted marine sedimentary rocks consisting mostly of sandstone, siltstone, and mudstone of Miocene age (about 24 million to about 5 million years ago). The majority of the coastal lowland areas (Area B on Figure 3.5-2) contain deep alluvial soils (undivided Quaternary deposits) overlying the Franciscan Complex, typically composed of interbedded clays, silts, gravel, and sands deposited by upland erosion and marine action during the post-glacial flooding of San Francisco Bay (about 12,000 years ago). The most recent sediment is a marine deposit of soft gray silty clay known as Bay Mud (less than 10,000 years old – Area A on Figure 3.5-2). The Hilltop Mall area (Area F on Figure 3.5-2) is characterized by a series of low ridges and shallow swales of the Orinda Formation, partially consolidated claystone, siltstone, sandstone, and conglomerate of Early through Middle Miocene age (about 23 to about 10 million years ago).

Fossil localities in Contra Costa County occur in the marine and non-marine formations, listed above. Many of the vertebrate fossils are fragments of extinct bison, camels, boney fish, mammoths, and horses. Marine invertebrates include bivalves (clams) and microfossils (foraminifera). The distribution of fossil localities and the location of corresponding geologic units indicate that most of the vertebrate paleontological resources in the County are in the upland foothills of the Diablo Range, which extends into the northwestern communities of the County including Hercules, Pinole, El Sobrante, San Pablo, Richmond, and El Cerrito and includes the rocks of the Orinda formation and some unnamed siltstone and sandstone formations in the northeastern part of the City of Richmond. Vertebrate fossil localities diminish west of Interstate 680 because much of that area is underlain by young alluvial and basin deposits that do not contain abundant fossil remains. Invertebrate paleontological resources occur throughout the County.

Contra Costa County has more than 280 fossil localities recorded in the University of California Museum of Paleontology (UCMP) database. All but about a dozen localities contain vertebrate megafossils (identifiable without the aid of a microscope). Most (75 percent) occur on the slopes of the Diablo Range or in the nearby valleys. The vertebrate fossils are mostly fragmentary records of the extinct camel (*Camelidae*), horse (*Equus* sp.), giant ground sloth (*Xenarthra*), tapir (*Tapirus* sp.), and mammoth (*Mammuthus* sp.).

Late Pleistocene and Holocene fossils have been recovered from marine sediments (older Bay mud) in Contra Costa County, including remains of petrified wood, marine mollusks and mammals, bony fishes, amphibians, reptiles, birds, a diversity of extinct land mammals such as ground sloths, mammoth, mastodon, deer, horse, camel, and bison, and microfossils such as radiolaria, foraminifera, diatoms, pollen, and spores.



Source: City of Richmond, Contra Costa County Water/Flood Transportation Commission, Thomas Bros. Maps, U.S. Census, State of California, IBC, Inc., Thomas Bros. Map data reproduced with permission granted by THOMAS BROS. MAPS. THOMAS BROS. MAPS, INFO & COPYRIGHTED BY THOMAS BROS. MAPS. It is unlawful to copy or reproduce or adapt (in whole or in part) for personal use or resale, without the prior written permission of THOMAS BROS. MAPS.

Source: City of Richmond, 2009.



FIGURE 3.5-2
Surficial Geology

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Fossils have been reported in the Franciscan Complex, mostly radiolarian chert beds containing microfossils of radiolaria – the silicon-based skeletons of single-celled planktonic marine organisms – which are important as stratigraphic markers. Limestone nodules and concretions in Franciscan shales, and the shales themselves, often contain radiolaria, foraminifera (another single-celled marine organism), gastropods (snails), pelecypods (clams), and plant microfossils (pollen and spores).

REGULATORY CONTEXT

Federal

Federal regulations for cultural resources are primarily governed by Section 106 of the National Historic Preservation Act (NHPA) of 1966, which applies to actions taken by federal agencies. The goal of the Section 106 review process is to offer a measure of protection to sites that are determined eligible for listing on the NRHP. The criteria for determining NRHP eligibility are found in Title 36 of the Code of Federal Regulations (CFR) Part 60. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 CFR Part 800. The NRHP criteria (contained in 36 CFR 60.4) are used to evaluate resources when complying with NHPA Section 106. Those criteria state that eligible resources comprise districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

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

Archaeological site evaluation assesses the potential of each site to meet one or more of the criteria for NRHP eligibility based upon visual surface and subsurface evidence (if available) at each site location, information gathered during the literature and records searches, and the researcher's knowledge of and familiarity with the historic or prehistoric context associated with each site.

The American Indian Religious Freedom Act, Title 42 United States Code, Section 1996, protects Native American religious practices, ethnic heritage sites, and land uses.

The federal Paleontological Resources Preservation Act of 2002 was enacted to codify the generally accepted practice of limiting the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers. These researchers must obtain a permit from the appropriate state or federal agency and agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and to other researchers

(USFWS/CDFG, 2006). The Paleontological Resources Preservation Act incorporates the following key findings of a recent report issued by the Secretary of the Interior, with input from staff of the Smithsonian Institute, U.S. Geological Survey, various federal land management agencies, paleontological experts, and the public (Society of Vertebrate Paleontology, 2003; as cited in USFWS/CDFG, 2006).

- Most vertebrate fossils and some fossils of other types (invertebrates, plants) represent a rare resource.
- Illegal collection and theft of fossil materials from public lands is a serious problem; penalties for fossil theft should be strengthened.
- Effective stewardship requires accurate information; federal fossil collections should be preserved and made available for research and educational use.
- Federal management of fossil resources should emphasize opportunities for public involvement.

State

Under CEQA, public agencies must consider the effects of their actions on both “historical resources” and “unique archaeological resources.” Pursuant to Public Resources Code (PRC) section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” Section 21083.2 requires agencies to determine whether proposed projects would have effects on “unique archaeological resources.”

“Historical resource” is a term with a defined statutory meaning (refer to PRC section 21084.1 and State CEQA Guidelines, section 15064.5, subdivisions (a) and (b)). The term embraces any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be “historical resources” for purposes of CEQA unless a preponderance of evidence indicates otherwise.¹ Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially affected by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project’s impacts on historical resources (PRC section 21084.1 and State CEQA Guidelines section 15064.5, subdivision

1 PRC Section 5024.1 and *California Code of Regulations*, Title 14, Section 4850.

(a)(3)). In general, an historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

- (a) Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and
- (b) Meets any of the following criteria:
 - 1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 - 2) Is associated with the lives of persons important in our past;
 - 3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 - 4) Has yielded, or may be likely to yield, information important in prehistory or history.

Archaeological resources can sometimes qualify as “historical resources” (CEQA Guidelines, section 15064.5 subdivision (c)(1)). In addition, PRC Section 5024 requires consultation with the Office of Historic Preservation when a project may impact historical resources located on state-owned land.

For historic structures, CEQA Guidelines Section 15064.5, subdivision (b)(3), indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, under CEQA, lead agencies are required to consider whether projects would adversely affect “unique archaeological resources.” PRC section 21083.2, subdivision (g), states that “‘unique archaeological resource’ means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include

excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a “unique archaeological resource”).

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

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human remains are discovered. The Code states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in section 5097.98 of the Public Resources Code.

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

Section 5097.5 of the California Public Resources Code (PRC) prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands. The sections of the California Administrative Code pertaining to the State Division of Beaches and Parks afford protection to geological features and “paleontological materials,” but grant the director of the state park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the state park system and for state park purposes (California Administrative Code sections 4307–4309; as cited in USFWS/CDFG, 2006).

An additional section of the Public Resources Code that is applicable to paleontological resources is section 5097.5, which provides that any unauthorized removal or destruction of archaeological or paleontological resources on sites located on public lands is a misdemeanor.

Although CEQA does not define “a unique paleontological resource or site,” CEQA section 21083.2 defines “unique archaeological resources” as “...any archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

With only slight modification, this definition equally is applicable to recognizing “a unique paleontological resource or site.” Additional guidance is provided in CEQA section 15064.5 (a)(3)(D), which indicates “generally, a resource shall be considered historically significant if it has yielded, or may be likely to yield, information important in prehistory or history.”

Section XVII, part a, of the CEQA Environmental Checklist asks a question equally applicable to paleontological resources: “Does the project have the potential to . . . eliminate important examples of the major periods of California history or pre history?” To be in compliance with CEQA, impact assessments must answer this question in the Environmental Checklist. If the answer to either question is “yes” or “possibly,” a mitigation and monitoring plan must be designed and implemented to protect significant paleontological resources.

SB 18

Senate Bill 18 (Government Code Sections 65352.3, 65352.4), for the purpose of protecting Traditional Tribal Cultural Places, requires cities and counties to contact and consult with California Native American tribes, prior to amending or adopting a general plan. The NAHC maintains a list of California Native American Tribes with whom local governments must consult. The City of Richmond contacted the NAHC on November 10, 2010 to request a list of tribal contacts, and the NAHC provided a list of tribal contacts on November 23, 2010. The City sent letters of invitation to consult to each of the contacts provided by the NAHC. As of the publication of this Draft EIR, none of the tribal contacts has requested consultation.

Local

Richmond Historic Structures Code

The Richmond Historic Structures Code (Chapter 6.06 of the Richmond Municipal Code) guides the City in protecting and restoring historic buildings, creating compatibility with historic districts,

acknowledging Richmond's historic industrial identity, and celebrating the City's long-standing multicultural background.

Section 6.06.070 of the Richmond Historic Structures Code requires that no exterior addition, alterations or demolition shall be made by any person to a historic resource without review and approval by the Design Review Board or on appeal by the City Council. Nor shall the City grant any permit to carry out such work on a designated historic resource without approval by the Design Review Board or, on appeal, by the Council.

Section 6.06.071 requires that, to the extent allowable under state law, building officials shall apply the State Historic Building Code (Title 8, CCR Title 24) for alterations and additions to structures on the Richmond Historic Register.

Section 6.06.072 requires the Design Review Board to evaluate applications for alteration permit and shall approve the issuance of an alteration permit for any proposed work if and only if it determines:

- (1) With regard to a designated historical resource, the proposed work neither adversely affects the exterior architectural features of the designated resource nor adversely affects the character or historical, architectural, or aesthetic interest or value of the designated resource and its site. Exterior alterations and additions shall conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitation of Historic Buildings.
- (2) With regard to any property located within an historic district but which is not a contributing structure, the proposed work does not adversely affect the character and integrity of the district.
- (3) For a new historic district designated after the adoption of the ordinance codified in this chapter, in order to implement the authority granted hereunder, and prior to the exercise thereof, the Board shall promulgate a preservation area plan for each preservation area, which shall contain, but is not necessarily limited to, the following elements and findings:
 - (A) A statement of the goals for design review;
 - (B) A representation of existing land uses;
 - (C) The historical period to which the area is significant;
 - (D) The predominant architectural periods or styles of the buildings therein;
 - (E) The specific features of said architectural periods or styles, as represented in the preservation area, including, but not limited to, building height, bulk, distinctive architectural details, materials, textures, and landscaping; and
 - (F) A statement of the standards and criteria to be utilized in determining the appropriateness of any proposed building or structure or alteration thereof within the preservation area.

Section 6.06.074 of the Richmond Historic Structures Code requires that when an application is made to demolish a historic resource, the Design Review Board's disapproval of the application means that no alteration permit shall be issued. The Design Review Board's disapproval shall suspend the issuance of an alteration permit for a period of not less than thirty and not more than one hundred eighty days, during which time the Historic Preservation Advisory Committee shall take steps within the scope of its powers and duties as it determines are necessary for the preservation of the site. At the end of the first thirty days, the Design Review Board may withdraw its objection to the proposed demolition. If the Design Review Board determines to withdraw its objection and

approve the demolition, the alteration permit may be issued. If, at the end of the first one hundred days of the aforesaid one hundred eighty day period, it is found that the preservation of the site structure cannot be fully accomplished within a hundred eighty day period, and the Design Review Board determines that such preservation can be satisfactorily completed within an additional period not to exceed one hundred eighty days, the Design Review Board may recommend to the Council that an additional one hundred eighty day postponement of the issuance of the alteration permit be allowed. The Council may authorize such postponement when it appears that the historic resource may be protected or preserved by reason of such postponement. In no event shall issuance of an alteration permit for a demolition be postponed for more than a total of three hundred sixty days after said permit is applied for.

Richmond Historic Preservation Commission

The Richmond Historic Structures Code established a Historic Preservation Commission for the purpose of recommending public policy related to historic resources and conducting historic resources surveys or studies. Members have documented experience, education, and/or commitment related to historic preservation; are nominated by the Mayor; and are appointed with concurrence of a majority of the City Council.

Certified Local Government

On March 12, 2007, the City of Richmond was certified as a Certified Local Government (CLG). The CLG designation provides the City with technical assistance and the opportunity to apply for small matching grants for local historic preservation projects. The CLG program is a partnership program with the National Park Service and the State Office of Historic Preservation. On August 3, 2007, the State Historical Resources Commission passed Resolution 2007-10 recognizing the City of Richmond for achieving Certified Local Government status.

Preserve America Community

On July 25, 2006, the Richmond City Council unanimously passed Resolution 91-06, which authorized an application to become a Preserve America Community. The Preserve America Communities 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. Preserve America is a White House initiative in cooperation with the Advisory Council on Historic Preservation, the U.S. Department of the Interior, the U.S. Department of Commerce, the U.S. Department of Agriculture, and the U.S. Department of Housing and Urban Development. NRHP partnership products are an integral part of the Department of the Interior's leading role in supporting the Preserve America Communities program.

On July 12, 2007, the City of Richmond was awarded a \$75,000 matching grant to survey three of the City's neighborhoods to identify new historic districts or historic resources for inclusion in the Rosie the Riveter/World War II Home Front National Historical Park. The neighborhoods that will be surveyed are Santa Fe, Coronado, and Iron Triangle.

IMPACTS AND MITIGATION MEASURES

Methods of Analysis

The impact analysis for cultural resources is based on a review of the 1994 Richmond General Plan, the Richmond Municipal Code, and the Draft Historic Resources Element of the proposed Richmond General Plan Update. The impact analysis considers the known cultural resource environment in the City of Richmond and the potential for previously undocumented cultural resources in the City with the known physical effects that could result from implementation of the proposed General Plan Update. Impacts are assessed in accordance with thresholds of significance based on section V, *Cultural Resources*, of the Environmental Checklist Form included as Appendix G of Title 14, California Code of Regulations, Chapter 3, *Guidelines for Implementation of the California Environmental Quality Act*. The impact analysis also considers the mitigating effects of existing City of Richmond cultural resources regulations, other federal, state, and local laws and regulations, and proposed Richmond General Plan Update policies that pertain to cultural resources.

Standards of Significance

For the purposes of this EIR, implementation of the proposed Richmond General Plan Update would have significant impact if it would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines;
- Cause a substantial adverse change in the significance of an archaeological resource as defined in section 15064.5 of the CEQA Guidelines;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

Project-Specific Impacts and Mitigation Measures

3.5-1 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines. Because mitigation is not certain to reduce impacts to a less-than-significant level, this would be considered a *significant and unavoidable impact*.

The City includes a number of properties and landmarks that have been determined significant at the local level. Some of these properties have been added to Richmond's Historical Register, including the Pullman District, Kaiser Field Hospital, Civic Center District, and Santa Fe Reading Room. Others are unofficial potential listings such as the International Hotel, the Fire Station at Cutting Boulevard, and the Chevron Refinery Administration Building and Laboratory.

Many of Richmond's historic and cultural resources have been officially recognized at federal and state levels through listing on the NRHP and the CRHR. Of particular significance are the resources

that have become part of the establishing legislation for the Rosie the Riveter/World War II Home Front Historical National Park. These resources are recognized as having outstanding historic value and significance in relation to the World War II home front effort and they range from waterfront parks and structures associated with the shipyards to factory buildings, housing, and other community-serving facilities. An inventory of officially recognized national historical resources in the City is provided in Table 3.5-1. The locations of these resources are shown on Figure 3.5-1.

Because the City has not been comprehensively surveyed for historical resources, numerous buildings or structures of historic age (45 years old or older) that could qualify as historical resources pursuant to CEQA may be undocumented.

CEQA Guidelines section 15064.5(b) states that “a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” The proposed Richmond General Plan Update focuses on change areas within the City that would be redesignated to accommodate growth in the proposed General Plan. Development activities have the potential to cause a substantial adverse change in the significance of an historical resource through demolition or alteration of a historical resource’s physical characteristics that convey its historical significance.

As detailed in the *Regulatory Context* above, there are a number of federal, state, and local policies, regulations, and institutions in place to protect historical resources in the City. The Richmond Historic Structures Code guides the City in protecting and restoring historic buildings, creating compatibility with historic districts, acknowledging Richmond’s industrial historic identity, and celebrating the City’s long-standing multicultural background. The Richmond Historic Structures Code establishes a Historic Preservation Advisory Committee for the purpose of recommending public policy related to historic resources and conducting historic resources surveys or studies.

In addition, the following proposed General Plan Update Policies and Implementing Actions would further reduce the potential for impact on historic resources.

Policies

HR1.1 Preservation of Diverse Resources. Protect, preserve and enhance the diverse range of historic, cultural and archaeological sites and resources in the City for the benefit of current and future residents and visitors.

Actions

HR1.A Certified Local Government Status. Retain Certified Local Government (CLG) status by encouraging adaptive reuse of significant historical resources in the City and meeting all requirements to retain CLG status.

HR1.B Historic Preservation Incentives Program. Develop an incentives program to encourage and support preservation of sites and resources of historic significance in the City that are not covered by the Historic Preservation Ordinance, but have community value. Define criteria for selecting historically significant community resources to qualify for proposed incentives. Incentives may include technical assistance, support for accessing grants and funding and waiving of City fees, among others.

Include a financing strategy to support property owners of historic properties for seismic retrofitting. Use the Mills Act to support the continued preservation of historic structures and establish new guidelines for distributing Community Development Block Grants that are consistent and aligned with the City's historic preservation objectives.

HR1.C Historic Resource Inventory. Continue updating the comprehensive citywide inventory of historic resources and develop a citywide survey to identify structures that may be eligible for local, state and national historic resource designation.

HR1.D Archival Program. Work with the City library and the Richmond Museum of History to establish a uniform archival program for documents, maps, and photographs of historic resources in the City. Consider the archival system used by the Bancroft Library at UC Berkeley as a model.

HR1.E Strategic Partnerships. Identify and leverage strategic partnerships with local and state historic preservation groups to strengthen historic preservation efforts in the City.

Coordinate with state and federal agencies to obtain grants and funding including Community Development Block Grants. Access funds for historic preservation and education through programs and agencies such as Preserve America and the National Park Service. Review state statutes for financing the retrofitting of historic structures.

HR1.2 Adaptive Reuse of Resources. Promote adaptive reuse, rehabilitation and retrofitting of historic buildings that are no longer in their original use and explore approaches to integrate preservation with economic revitalization objectives.

HR1.3 Compatibility of New Development. Promote context-sensitive design that respects and celebrates the history and historical character of sites and resources while meeting contemporary needs of the community. Encourage compatibility between new development, adaptive reuse, retrofitting and rehabilitating of historic properties and areas in the City within the historical context of the resource. Maintain consistency with the National Trust for Historic Preservation's "Main Street" principles and the Secretary of the Interior's Standards for the Treatment of Historic Properties, which include guidance for buildings and cultural landscapes.

Policy HR1.1 seeks to protect, preserve and enhance the diverse range of historic, cultural, and archaeological sites and resources in the City for the benefit of current and future residents and visitors; Policy HR1.2 promotes adaptive reuse, rehabilitation, and retrofitting of historic buildings that are no longer in their original use; Policy HR1.3 promotes context-sensitive design that respects and celebrates the history and historical character of sites and resources. Implementing Action HR1.A encourages adaptive reuse of significant historical resources in the City and meeting all requirements to retain CLG status; Implementing Action HR1.B would develop an incentives program to encourage and support preservation of sites and resources of historic significance in the City that are not covered by the Historic Preservation Ordinance, but have community value; Implementing Action HR1.C calls for updating the comprehensive citywide inventory of historic resources and development of a citywide survey to identify structures that may be eligible for local, state and national historic resource designation; HR1.D calls for the establishment of a uniform archival program for documents, maps, and photographs of historic resources in the City; and HR1.E encourages strategic partnerships with local and state historic preservation groups to strengthen historic preservation efforts in the City.

The proposed City of Richmond policies are important to addressing adverse physical impacts on historic properties that could occur as a result of development activities associated with the proposed General Plan Update. However, the policies represent only a portion of an extensive and robust policy framework aimed at the protection of historical resources within the City. The Richmond Historic Structures Code would ensure that development activities resulting from implementation of the proposed General Plan Update would undergo rigorous review to determine impacts on historical resources in accordance with CEQA and would encourage the avoidance of significant impacts through explicitly defined actions (e.g., adaptive reuse) and development incentives. Nonetheless, because existing and proposed City policies do not explicitly prohibit demolition or inappropriate alteration of historic-period buildings or structures, it is possible that development activities resulting from implementation of the proposed General Plan Update could cause a substantial adverse change in the significance of a historical resource. Impacts on historical resources are, therefore, considered *potentially significant*.

As discussed above, Policy HR1.A indicates that the City intends to protect and encourage the preservation and adaptive reuse of significant historical resources in the City. Nonetheless, in some instances, such as those related to public health or safety reasons, it may be infeasible to protect a historic structure and the City could still approve the demolition of a historic structure. While the mitigation measure below requires conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, there are no mitigation measures available to ensure that the City does not approve the demolition of a historic building or structure; therefore, this impact is ***significant and unavoidable***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review to determine impacts on historical resources in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

3.5-1 *Future projects shall implement the City's Historic Structures Code to minimize impacts on historical resources by requiring thorough scrutiny before any resource may be demolished and ensuring that alteration conforms to the Secretary of the Interior's Standards for the Treatment of Historic Properties.*

3.5-2 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of an archaeological resource as defined in section 15064.5 of the CEQA Guidelines or disturb human remains, including those interred outside of formal cemeteries. With the implementation of mitigation measures, this is considered a *less-than-significant impact*.

The greater San Francisco Bay Area is known to be rich in subsurface archaeological resources, substantiated by an archaeological record that indicates a high level of habitation/seasonal habitation and resource use by Native Americans. Various locations in Richmond, including Point San Pablo, are known to contain archaeological sites connected to the Ohlone Indians, the earliest inhabitants of the Richmond area. Some of these sites have been determined eligible for NRHP listing, including the Ellis Landing Shellmound site, the Lower San Pablo Creek Archaeological District, and the Stege Mounds Archaeological District. However, the overall archaeological record is scattered and sparse due to the ground disturbance caused by intensive development during the years before modern archaeological studies and the application of environmental protection for cultural resources. Consequently, there is the possibility that important prehistoric and historic-age archaeological resources and Native American human remains could be found in the subsurface, especially beneath structures built before the application of environmental compliance laws requiring surveys prior to construction. For these reasons, the City is considered to be sensitive for the presence of archaeological resources and human remains.

Under CEQA, public agencies must consider the effects of their actions on “unique archaeological resources.” Public Resources section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources. PRC section 21083.2, subdivision (g), states that “‘unique archaeological resource’ means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; or has a special and particular quality such as being the oldest of its type or the best available example of its type; or is directly associated with a scientifically recognized important prehistoric or historic event or person.

The proposed Richmond General Plan Update focuses on change areas within the City that would be re-designated to accommodate growth in the proposed General Plan. Given the sensitivity for the presence of archaeological resources and human remains throughout the City of Richmond, earth-disturbing development activities associated implementation of the proposed General Update could inadvertently damage or destroy unique archaeological resources, and this would result in a significant impact pursuant to CEQA.

As detailed in the Regulatory Context above, there are a number of federal, state, and local policies, regulations, and institutions in place to protect archaeological resources and human remains in the City. The Historic Resources Element of the proposed Richmond General Plan Update includes Policy HR1.1 (shown above in Impact 3.5-1), which seeks to protect, preserve, and enhance the diverse range of historic, cultural, and archaeological sites and resources in the City for the benefit of current and future residents and visitors. Nonetheless, because existing and proposed City policies do not explicitly prohibit actions that would cause a substantial adverse change in the significance of an archaeological resource as defined in section 15064.5 of the CEQA Guidelines or disturb human remains, impacts on archaeological resource and human remains are considered *potentially significant*.

Implementation of the following mitigation measure, which would prohibit any action that would cause a substantial adverse change in the significance of a unique archaeological resource as defined in section 15064.5 of the CEQA Guidelines, and would require identification and mitigation of impacts on human remains, would reduce this impact to a *less-than-significant level*.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review to determine impacts on archeological resources in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

- 3.5-2 a. *The City shall require that impacts on unique archaeological resources be mitigated to a less-than-significant level through methods identified in Public Resources section 21083.2, including planning construction to avoid archaeological sites, deeding archaeological sites into permanent conservation easements, capping or covering archaeological sites with a layer of soil before building on the sites, or planning parks, greenspace, or other open space to incorporate archaeological sites.*
- b. *The City shall require new development within the City to evaluate the potential for impacts on human remains. The City shall require that the treatment of human remains and of associated or unassociated funerary objects discovered during any soils disturbing activity shall comply with applicable state and federal laws, including notification of the County Coroner and, in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC).*

3.5-3 Development activities associated with the proposed Richmond General Plan Update could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. With the implementation of mitigation measures, this is considered a *less-than-significant impact*.

The sediment and rock formations underlying the City of Richmond are known to be rich in subsurface paleontological resources, as substantiated by the records of the University of California Museum of Paleontology. The relative sensitivity of the formations can be established using the Society of Vertebrate Paleontology's (SVP) *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontological Resources: Standard Guidelines, 2007* suggested procedures for the investigation, collection, preservation, and cataloguing of fossil-bearing sites. The SVP defines the level of potential as one of three sensitivity categories for sedimentary rocks: High, Moderate, and Low, as listed below. Two additional categories, Marginal and Zero, define non-sedimentary rocks.

- High Sensitivity is assigned to geologic formations known to contain paleontological localities with rare, well preserved, and/or critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleobiology and evolutionary history (phylogeny) of animal and plant groups. Generally speaking, highly sensitive formations are known to produce vertebrate fossil remains or are considered to have the potential to produce such remains.
- Moderate Sensitivity is assigned to geologic formations known to contain paleontological localities with moderately preserved, common elsewhere, or stratigraphically long-ranging fossil material. The moderate sensitivity category also is applied to geologic formations that are judged to have a strong, but unproven potential for producing important fossil remains (e.g., Pre Holocene sedimentary rock units representing low to moderate energy, of marine to non-marine depositional settings).
- Low Sensitivity is assigned to geologic formations that, based on their relative youthful age and/or high energy depositional history, are judged unlikely to produce important fossil remains. Typically, low sensitivity formations may produce invertebrate fossil remains in low abundance.
- Marginal Sensitivity is assigned to geologic formations that are composed either of pyroclastic volcanic rocks or metasedimentary rocks, but which nevertheless have a limited probability for producing fossil remains from certain sedimentary lithologies at localized outcrops.
- Zero Sensitivity is assigned to geologic formations that are entirely plutonic (volcanic rocks formed beneath the earth's surface) in origin and therefore have no potential for producing fossil remains.

In the context of CEQA, fossils of land-dwelling vertebrates and their environment are considered important (i.e., significant) paleontological resources. Such fossils typically are found in river, lake, and bog deposits, although they may occur in nearly any type of sedimentary sequence.

The undivided Quaternary deposits in the study area (Area B as indicated on Figure 3.5-2) fit the definition of High Sensitivity for both vertebrate and invertebrate paleontological resources. Because the Holocene and Pleistocene deposits are not differentiated, it is not possible to provide a systematic separation of the more sensitive Pleistocene deposits from the less sensitive Holocene deposits. The Bay Mud (Area A) and the Orinda formation (Areas E and F) also fit the definition of High Sensitivity for paleontological resources. For these areas, impacts on paleontological resources are considered *potentially significant*.

Rocks of the Franciscan Complex (Areas C and D) fit the definition of low sensitivity. For these areas, impacts on paleontological resources are considered ***less than significant***.

For areas of high sensitivity (Areas B, E, and F) for the occurrence of paleontological resources, implementation of the following mitigation measure would reduce this impact to a ***less-than-significant level***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to rigorous review to determine impacts on paleontological resources in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

Based on a reasonable presumption that paleontological resources may be present within the City, the following measure shall be undertaken to avoid any potentially significant adverse effect from the proposed project on buried or submerged paleontological resources.

3.5-3 *The City shall require new development within areas of high sensitivity paleontological resources to evaluate the potential for impacts on significant paleontological resources. The City shall require that impacts on significant paleontological resources be mitigated to a less-than-significant level through data recovery or other methods determined adequate by a professional paleontologist.*

Cumulative Impacts

The cumulative analysis for impacts on cultural and paleontological resources considers a broad regional system of which the resources are a part. The cumulative context for historical resources is the San Francisco Bay Area, which includes the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma, where common patterns of historic-era settlement have occurred. The cumulative context for archaeological resources and human remains is the Ohlone tribal territory, which includes the areas around San Francisco Bay, Monterey Bay, and the lower Salinas Valley. The cumulative context for paleontological resources is the San Francisco Bay Area.

Urban development that has occurred over the past several decades in the San Francisco Bay Area has resulted in the demolition and alteration of innumerable significant historical resources, and it is reasonable to assume that present and future development activities will continue to result in impacts on significant historical resources, including residential, commercial, industrial, and civic properties listed or eligible for listing on national, state, or local registers. Federal, state, and local laws protect historical resources in most instances, but it is not always feasible to protect historical resources, particularly when preservation in place would frustrate implementation of projects. For this reason, the cumulative effects of development in the San Francisco Bay Area on historical resources are considered significant.

As discussed above in Impact 3.5-1, Richmond includes a number of properties and landmarks recognized at the federal, state, and local levels. Because the City has not been comprehensively surveyed for historical resources, numerous buildings or structures of historic age (45 years old or

older) that qualify as historical resources pursuant to CEQA may be undocumented. CEQA Guidelines section 15064.5(b) states that “a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” The proposed Richmond General Plan Update focuses on 16 change areas within the City that would be re-designated to accommodate growth over the lifespan of the General Plan. Development activities have the potential to cause a substantial adverse change in the significance of an historical resource through demolition or alteration of a historical resource’s physical characteristics that convey its historical significance. As discussed above in Impact 3.5-1, existing and proposed City policies would ensure that development activities resulting from implementation of the proposed General Plan Update would undergo rigorous review to determine impacts on historical resources in accordance with CEQA and would encourage the avoidance of significant impacts through explicitly defined actions (e.g., adaptive reuse) and development incentives. Nonetheless, because existing and proposed City policies do not explicitly prohibit demolition or inappropriate alteration of historic-period buildings or structures, it is possible that development activities resulting from implementation of the proposed General Plan Update could cause a substantial adverse change in the significance of a historical resource. Because the proposed General Plan Update has the potential to adversely affect significant historical resources that are unique and non-renewable members of finite classes, the project’s incremental contribution to these cumulative effects would itself be potentially cumulatively considerable, and thus potentially significant.

Similarly, urban development that has occurred over the past several decades in the Ohlone tribal territory, which includes the areas around San Francisco Bay, Monterey Bay, and the lower Salinas Valley, has resulted in the demolition and alteration of innumerable significant archaeological resources, and it is reasonable to assume that present and future development activities will continue to result in impacts on significant archaeological resources. Federal and state laws protect archaeological resources in most instances, but it is not always feasible to protect archaeological resources, particularly when preservation in place would frustrate implementation of projects. For this reason, the cumulative effects of development in the Ohlone tribal territory on archaeological resources and human remains are considered significant.

As discussed in Impact 3.5-2 above, various locations in Richmond are known to contain archaeological sites connected to the Ohlone Indians, and there is the possibility that important prehistoric and historic-age archaeological resources and Native American human remains could be found in the subsurface, especially beneath structures built before the application of environmental compliance laws requiring surveys prior to construction. Given the sensitivity for the presence of archaeological resources and human remains throughout the City of Richmond, earth-disturbing development activities associated implementation of the proposed General Update could inadvertently damage or destroy unique archaeological resources. The proposed General Plan Update, in combination with other development in the Ohlone tribal territory could contribute to the loss of significant archaeological resources, which include Native American ancestral remains. Because all significant cultural resources are unique and non-renewable members of finite classes, all adverse effects or negative impacts erode a dwindling resource base, the project’s incremental

contribution to these significant cumulative impacts would be potentially cumulatively considerable, and thus potentially significant.

Urban development that has occurred over the past several decades in Quaternary deposits and sedimentary rocks throughout the San Francisco Bay Area has damaged paleontologically sensitive rock and sediment formations with the resultant loss of paleontological resources. It is reasonable to expect that current and future development activities will continue to have similar impacts on significant paleontological resources. Federal, state, and local laws protect paleontological resources in many instances, but protection is not always feasible, particularly when preservation in place would frustrate implementation of proposed development. For this reason, the cumulative effects of development in these deposits and rocks on paleontological resources are considered significant. Because of the historic finds of paleontological resources in the formations underlying the study area, there is a potential for previously unknown paleontological resources to be discovered during construction activities associated with implementation of the project. Although the City's General Plan contains no policies directly protecting paleontological resources, the City requires compliance with CEQA, which requires the identification and avoidance of impacts to significant paleontological resources. The proposed project has the potential to adversely affect significant paleontological resources that are non-renewable members of finite classes. Though mitigation measures reduce the project-specific impacts to a less-than-significant level, cumulative impacts may be considerable.

REFERENCES

PRC Section 5024.1 and *California Code of Regulations*, Title 14, Section 4850.

3.6 CLIMATE CHANGE

INTRODUCTION

This section of the EIR evaluates the potential impacts from and on climate change resulting from the proposed Richmond General Plan. This includes the potential for the proposed General Plan to directly or indirectly generate greenhouse gas emissions, which may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gases emissions. Data for this section was taken from the City of Richmond 2005 Greenhouse Gas Emissions Inventory,¹ Bay Area Air Quality Management District *Draft Air Quality Guidelines*, other regulatory documents, and documents prepared for the City of Richmond. Bibliographic entries for all reference materials are provided in footnotes in this section.

One comment letter associated with climate change was received in response to the February 4, 2008 Notice of Preparation circulated for the General Plan. The comment, by the San Francisco Bay Conservation and Development commission, expressed the need for the EIR to be consistent with the San Francisco Bay Plan Policies on Sea Level Rise and Safety of Fills, as well as including a section of the EIR that addresses Climate Change including policies that allow the City of Richmond to effectively plan for sea level rise.

Air Quality is addressed separately in section 3.3 of this DEIR.

ENVIRONMENTAL SETTING

The City of Richmond is located in the nine-county San Francisco Bay Area in west Contra Costa County. It is located within the San Francisco Bay Area Air Basin (SFBAAB) under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). This climatological subregion extends from Richmond to San Leandro. Its western boundary is defined by the Bay and its eastern boundary by the Oakland-Berkeley Hills. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills.

Background on Climate Change and Greenhouse Gases

Parts of the Earth's atmosphere act as an insulating 'blanket' of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The 'blanket' is a collection of atmospheric gases called 'greenhouse gases' (GHGs) that trap heat similar to the glass walls of a greenhouse. These gases, mainly water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and chlorofluorocarbons (CFCs), act as global insulators, reflecting visible light and infrared radiation back to the Earth.

1 City of Richmond and ICLEI, City of Richmond Community-wide Greenhouse Gas Emissions Analysis, February 2009.

The role of water vapor and ozone as GHGs is poorly understood. It is unclear the extent to which water vapor acts as a GHG. The uncertainty is due to the fact that water vapor can also produce cloud cover, which reflects sunlight away from the Earth and can counteract its effect, if any, as a GHG. Also, water vapor tends to increase as the Earth warms, so it is not well understood whether an increase in water vapor is contributing to, or rather a reaction to, climate change. Likewise, ozone tends to break down in the presence of solar radiation but the mechanism is not well understood. For these reasons, methodologies approved by the Intergovernmental Panel on Climate Change (IPCC), EPA, and the California Air Resources Board (CARB) focus on carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and hydrofluorocarbons as GHGs. A brief description of each of these gases is provided below.

Carbon Dioxide enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of CO₂ emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO₂ emissions. CO₂ is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle. When in balance, the total CO₂ emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal, and gas, and deforestation, have increased CO₂ concentrations in the atmosphere. In 2005, global atmospheric concentrations of CO₂ were 35 percent higher than they were before the Industrial Revolution.

Methane is emitted from a variety of both human-related and natural sources. Human-related activities include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. CH₄ is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH₄ emissions are due to human-related activities. Natural sources of CH₄ include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources, such as wildfires. CH₄ emission levels from a particular source can vary significantly from one country or region to another, depending on many factors such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological processes that cause CH₄ emissions in both human-related and natural sources. Also, the implementation of technologies to capture and utilize CH₄ from sources such as landfills, coal mines, and manure management systems affects the emission levels from these sources.

Nitrous oxide, more commonly known as “laughing gas,” is produced naturally by microbial processes in soil and water. In addition to agricultural sources, some industrial processes, such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions, also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant. Global concentration of nitrous oxide in 1998 was 314 parts per billion (ppb).

Chlorofluorocarbons (CFCs) have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere have been rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and has successfully reduced or stopped the increase in the levels of the major CFCs. However, due to the long atmospheric lifetimes, CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFCs) are another set of synthesized compounds. HFCs are also considered GHGs, though they are less stable in the atmosphere and, therefore, have a shorter lifetime and less of an impact than CFCs.

CFCs, Tetrafluoromethane (CF₄), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFCs) have been banned and are no longer commercially available. Therefore, they are not considered further in this analysis.

Potential Effects of Global Climate Change

Climate change could have a number of adverse effects. Although these effects would have global consequences, in most cases they would not disproportionately affect any one site or activity. In other words, many of the effects of climate change are not site-specific. Emission of greenhouse gases would contribute to the changes in the global climate, which would in turn, have a number of physical and environmental effects. A number of general effects are discussed below.

Sea Level Rise and Flooding. The California Climate Change Center predicts that sea level in California would rise between 10.9 to 71.6 centimeters (cm) (0.36 to 2.3 feet) above existing mean sea level (MSL) by 2099² as a result of climate change. Measurements taken in the City of Alameda indicate that the current rate of sea level rise is about 0.29 feet per century.³ When combined with astronomical tides, even a 1-foot increase in MSL would result in the 100-year event high tide peak occurring at the 10-year event frequency.⁴ In other words, the frequency of a current 100-year high tide (about 9.5 feet above current MSL) would occur 10 times more often if sea levels increase by 1 foot above current MSL.

- 2 Cayan, D., P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. 2006. Projecting Future Sea Level: Table 3 Projected global sea level rise (SLR) (cm) for the SRES A1fi, A2, and B1 greenhouse gas emission scenarios. SLR for A2 and B1 scenarios is estimated by combining output recent global climate change model simulations with MAGICC projections for the ice melt component. SLR estimates for A1fi estimated from MAGICC based on A2 temperature changes scaled according to those in A1fi. A Report From the California Climate Change Center CEC-500-2005-2002-SF. p. 19.
- 3 Floyd, M., M. Anderson, M. Roos, R. Peterson, M. Perrone, and D. Todd. 2006. Chapter 2: Potential Impacts of Climate Change on California's Water Resources, Table 2-6 Relative Sea Level Trends for Eight Tide Gauges Along the Coast of California with 50 Years or More of Record. p. 2-43. In Medelin, J., J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, K. Madani, and T. Zhu (Eds), Climate Warming and Water Supply Management In California: White Paper. A Report From Climate Change Center CEC-500-2005-195-SF.
- 4 Floyd, M., M. Anderson, M. Roos, R. Peterson, M. Perrone, and D. Todd. 2006. Chapter 2: Potential Impacts of Climate Change on California's Water Resources, Figure 2.32 Impact of One Foot Sea Level rise on the Relative Effect of Astronomical tides in the Delta. p. 2-53. In Medelin, J., J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, K. Madani, and T. Zhu (Eds), Climate Warming and Water Supply Management In California: White Paper. A Report From Climate Change Center CEC-500-2005-195-SF.

If sea level rise continues at existing rates, the City of Richmond will be impacted. The San Francisco Bay Conservation and Development Commission (BCDC) has prepared maps to identify the areas that might be inundated if sea levels were to increase by 1 meter (3.28 feet), which is more than the amount predicted by the California Climate Change Center. In addition, the City of Richmond has prepared a map showing the areas that will potentially be affected by climate change. The map shows that portions of the coastal areas of the City would be inundated to the extent that a portion of the I-580 may be impacted (Map included in Appendix C).

In the future, precipitation events are predicted to vary in terms of timing, intensity, and volume according to many climate change models. Extreme storm events may occur with greater frequency. Changes in rainfall and runoff could affect flows in surface water bodies, causing increased flooding and runoff to the storm drain system.

Water Supply. California Health and Safety Code Section 38501(a) recognizes that climate change “poses a serious threat to the economic well-being, public health, natural resources, and the environment of California,” and notes, “the potential adverse impacts of [climate change] include...reduction in the quality and supply of water to the state from the Sierra snowpack.” As most of the State, including the City of Richmond, depends on surface water supplies originating in the Sierra Nevada, this water supply reduction is a concern.

Most of the scientific models addressing climate change show that the primary effect on California’s climate would be a reduced snow pack and a shift in stream-flow seasonality. A higher percentage of the winter precipitation in the mountains would likely fall as rain rather than as snow in some locations, reducing the overall snowpack. Further, as temperatures rise, snowmelt is expected to occur earlier in the year. As a result, peak runoff would likely come a month or so earlier. The end result of this would be that the State may not have sufficient surface storage to capture the early runoff, and so, absent construction of additional water storage projects, a portion of the current supplies would flow to the oceans and be unavailable for use in the State’s water delivery systems.

Water Quality. Climate change could have adverse effects on water quality, which would in turn affect the beneficial uses (habitat, water supply, etc.) of surface water bodies and groundwater.⁵ The changes in precipitation discussed above could result in increased sedimentation, higher concentration of pollutants, higher dissolved oxygen levels, increased temperatures, and an increase in the amount of runoff constituents reaching surface water bodies. Sea level rise, discussed above, could result in the encroachment of saline water into freshwater bodies.

Ecosystems and Biodiversity. Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep sea habitat. As temperatures and precipitation change, seasonal shifts in vegetation will occur, which could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the

5 Intergovernmental Panel on Climate Change, 2007: Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom, 1000 pp.

distribution of certain sensitive species. The IPCC states that “20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2 to 3°C (3.6 to 5.4°F) relative to pre-industrial levels.”⁶ Shifts in existing biomes could also make ecosystems vulnerable to invasive species encroachment. Wildfires, which are an important control mechanism in many ecosystems, may become more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. In general terms, climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity.

Human Health Impacts. Climate change may increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects—malaria, dengue fever, yellow fever, and encephalitis.⁷ Cholera, which is associated with algal blooms, could also increase.⁸ While these health impacts would largely affect tropical areas in other parts of the world, effects would also be felt in California. Warming of the atmosphere would be expected to increase smog and particulate pollution, which could adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events would also be expected to occur with more frequency, and could adversely affect the elderly, children, and the homeless. Finally, the water supply impacts and seasonal temperature variations expected as a result of climate change could affect the viability of existing agricultural operations, making the food supply more vulnerable.

Potential Effects of Human Activity on Climate Change

The burning of fossil fuels, such as coal and oil, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in atmospheric concentrations). In 1994, atmospheric CO₂ concentrations were found to have increased by nearly 30 percent above pre-industrial (c. 1860) concentrations.

The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential⁹ (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions are typically measured in terms of pounds or tons of CO₂ equivalents (CO₂e), and are often expressed in metric tons (MT CO₂e) or millions of metric tons of CO₂ equivalents (MMT CO₂e).

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- 6 Intergovernmental Panel on Climate Change, 2007: Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom, 1000 pp.
- 7 EPA, 2008. Climate Change – Health and Environmental Effects. at: <http://www.epa.gov/climatechange/effects/health.html#climate>, Accessed December 13, 2009.
- 8 EPA, 2008. Climate Change – Health and Environmental Effects. at: <http://www.epa.gov/climatechange/effects/health.html#climate>, Accessed December 13, 2009.
- 9 The potential of a gas or aerosol to trap heat in the atmosphere.

- **Global Emissions.** Worldwide emissions of GHGs in 2004 were nearly 30 billion tons of CO₂e per year (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes).¹⁰
- **U.S. Emissions.** In 2004, the United States emitted 7 billion tons of CO₂e. Of the four major sectors nationwide — residential, commercial, industrial, and transportation — transportation accounts for the highest percentage of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion. In 2008, the United States emitted 6.9 billion tons of CO₂e, with transportation accounting for the highest percentage of GHG emissions, approximately 32 percent.¹¹
- **State of California Emissions.** In 2004, California emitted approximately 483 million tons of CO₂e, or about 6 percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has one of the fourth lowest per-capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise. Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states. In 2008, California's GHG emissions were approximately 478 million metric tons CO₂e, generally attributed to the reduced travel and therefore transportation emissions.¹²
- **The California Energy Commission** found that transportation is the source of approximately 41 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities.¹³
- **Contra Costa County Emissions.** In Contra Costa County, emissions from commercial/industrial operations are the single largest source of GHG emissions, accounting for 49 percent of the County's 12.3 MMT CO₂e. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the second highest contributor, accounting for 37 percent of total emissions. Residential sources account for about 13 percent of the County's GHG emissions, followed by waste at 1 percent.¹⁴
- **Richmond Emissions.** The citywide GHG emissions inventory reflects all the energy used and waste produced within the Richmond city limits. The total emissions from Richmond in 2005 equal approximately 5.8 million metric tons CO₂e. Approximately 88 percent of the City's emissions are from commercial/industrial operations (5.1 MMT CO₂e). The majority of

10 United Nations Framework Convention on Climate Change, *Sum of Annex I and Non-Annex I Countries Without Counting Land-Use, Land-Use Change and Forestry (LULUCF)*. *Predefined Queries: GHG total without LULUCF* (Annex I Parties). Bonn, Germany, <http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php>, accessed May 2, 2007.

11 US EPA, 2006, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004.

12 US EPA, 2010, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008. EPA# 430-R-10-006, April 2010.

13 California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update.

14 Contra Costa County, *Contra Costa County Greenhouse Gas Emissions Inventory Report*, June 2008.

these emissions, approximately 3.5 MMT CO₂e, are from commercial/industrial operations located within the City limits; however, Richmond has no jurisdictional control over them with respect to the production of GHG emissions. Therefore, the total citywide emissions for which Richmond has jurisdictional control, approximately 2.4 MMT CO₂e, is the focus of this analysis. Emissions from commercial/industrial activities within the City represent approximately 70.3 percent of the total emissions with transportation, residential activities, and waste representing 21.1, 5.3, and 3.3 percent, respectively.¹⁵

Various aspects of constructing, operating, and eventually discontinuing the use of commercial and residential development will result in GHG emissions. Operational phase GHG emissions result from energy use associated with heating, lighting and powering buildings (typically through natural gas and electricity consumption), pumping and processing water (which consumes electricity), as well as fuel used for transportation and decomposition of waste associated with building occupants. New development can also create GHG emissions in its construction and demolition phases in connection with the use of fuels in construction equipment, creation and decomposition of building materials, vegetation clearing, and other activities. However, it is noted that new development does not necessarily create entirely new GHG emissions. Occupants of new buildings are often relocating and shifting their operational phase emissions from other locations.

Regulatory

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the air basins are discussed below.

Federal

Kyoto Protocol

The United States participated in the United Nations Framework Convention on Climate Change (UNFCCC) (signed on March 21, 1994). The Kyoto Protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol were met, global GHG emissions could have been reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008–2012. The United States has not ratified the Protocol and is not bound by the Protocol's commitments.

Representatives from 170 countries met in Copenhagen in December 2009 to ratify an updated UNFCCC agreement (Copenhagen Accord). The Copenhagen Accord, a voluntary agreement between the United States, China, India, and Brazil, recognizes the need to keep global temperature rise to below 20° C and obliges signatories to establish measures to reduce greenhouse gas

15 City of Richmond and ICLEI, *City of Richmond Community-wide Greenhouse Gas Emissions Analysis*, February, 2009.

emissions and to prepare to provide help to poorer countries in adapting to Climate Change. The Copenhagen Accord is a non-binding agreement.

Representatives from 194 United Nations member states including business leaders and non-government organizations met in Cancun, Mexico in December 2010 to participate in the United Nations Climate Change Conference (COP-16). In all, approximately 25,000 participants met to work out the language and reduction targets of a new agreement. The result was the Cancun Agreements, a voluntary agreement similar to the Copenhagen Accord, but with broader UN member nation support. The Cancun Agreements set the stage for the next year's climate conference in Durban, South Africa, where the unresolved issues – including the future of the Kyoto Protocol and a binding agreement – will once again be on the table. The key elements of the Cancun Agreements are as follows:

- Countries agree to keep temperature rise below 2 degrees Celsius above pre-industrial levels and developed countries are urged to make more aggressive emission cut pledges.
- A \$30 billion package (“fast-start financing”) for 2012 to aid nations taking immediate action to adapt to global warming.
- The creation of a “Global Climate Fund” that will provide financing of \$100 million annually for longer-term adaptation and mitigation measures in developing countries (although where this aid will come from is still unresolved). The World Bank was designated as its interim trustee.
- The creation of the forestry program, Reducing Emissions from Deforestation and Forest Degradation (REDD+), which provides compensation for the preservation of tropical forests in developing countries.
- Specific language and a formal system for monitoring and reporting emissions. This includes a process of “international consultations and analysis” for developing countries that is “non-intrusive, non-punitive, and respectful of national sovereignty”, incorporating analysis by technical experts and resulting in a summary report.

U.S. Environmental Protection Agency (EPA).

The United States Environmental Protection Agency (EPA) is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO₂ gases, agricultural practices, and implementation of technologies to achieve GHG reductions.

The EPA issued a Final Rule for mandatory reporting of GHG emissions in October of 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions with the first annual reports due in March of 2011.

On May 13, 2010, the EPA issued a Final Rule that will take effect on January 2, 2011 and sets a threshold of 75,000 tons per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date.

On November 10, 2010, the EPA published the “PSD and Title V Permitting Guidance for Greenhouse Gases.” EPA’s new guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement new greenhouse gas reduction requirements while mitigating costs for industry. Most states will use EPA’s new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other big pollution point sources.

State

California Air Resources Board

The California Air Resources Board (CARB), a part of the California EPA (CalEPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards; CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California’s State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

ASSEMBLY BILL (AB) 32, the California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHGs in California. CARB has determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO₂e. CARB has adopted the Climate Change Scoping Plan, which outlines the state’s strategy to achieve the 2020 GHG limit set by AB 32. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health.

Part of California's strategy for achieving GHG reductions under AB 32 are the early action greenhouse gas reduction measures, which include a low carbon fuel standard; reduction of emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill methane capture (CARB 2007).

Senate Bill 97

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. In March 2010, the California Office of Administrative Law codified into law CEQA amendments that provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions, as found in CEQA Guidelines § 15183.5. To streamline analysis, CEQA provides for analysis through compliance with a previously adopted plan or mitigation program under special circumstances.

Executive Order S-13-08

Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, provides clear direction for how the State should plan for future climate impacts. The first result is the 2009 CAS report which summarizes the best known science on climate change impacts in the state to assess vulnerability, and outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

Local

Bay Area Air Quality Management District

The BAAQMD is the primary agency responsible for the reduction in climate change emissions for the entire San Francisco Bay Area Air Basin. BAAQMD has recently released the "California Environmental Quality Act Draft Air Quality Guidelines."¹⁶ The thresholds of significance included in the CEQA Guidelines were developed to assist local jurisdictions and agencies in complying with the requirements of CEQA regarding potentially adverse impacts on the global climate. The June 2010 Draft BAAQMD CEQA Guidelines state that a plan would be considered to have a less-than-significant impact if it would meet at least one of the following thresholds:

- Be consistent with the policies of a qualified Climate Action Plan; or

16 Bay Area Air Quality Management District *California Environmental Quality Act, Air Quality Guidelines*, June 2010.

- Produce emissions of no more than 6.6 MT CO₂e per service population annually.

The BAAQMD has not adopted a threshold with respect to construction emissions associated with plan level or individual development projects. However, the BAAQMD recommends that the Lead Agency quantify construction emissions and make a significance determination of these emissions in relation to meeting the AB 32 GHG reduction goals. Lead Agencies are encouraged to incorporate Best Management Practices to reduce GHG emissions during construction. Best management practices may include, but are not limited to:

- Use of alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet;
- Using local building materials of at least 10 percent; and
- Recycle at least 50 percent of construction waste or demolition materials.

Bay Area Regional Agency Climate Protection Program

The Joint Policy Committee (composed of the Association of Bay Area Governments [ABAG], BAAQMD, BCDC, and Metropolitan Transportation Commission [MTC]) approved the Bay Area Regional Agency Climate Protection Program on May 4, 2007 (amended July 20, 2007) to reduce potential effects of climate change. This program includes strategies to:

- Establish management priorities based on impacts, benefits, ease of implementation, and cost-effectiveness;
- Increase public awareness and motivate action through workshops and grass-roots outreach;
- Provide assistance such as standardization of procedures for determining impacts, maintaining and distributing data, model codes and other tools, funding for demonstration projects, and others;
- Reduce driving and promote alternative modes of transportation through mechanisms such as road pricing, mode competitiveness, and regional development planning;
- Prepare to adapt, because regardless of regional reductions in potential causes contributing to global climate change, the region will be affected by changing environmental conditions; and
- Increase the importance of CEQA review of CO₂ emissions, conduct life-cycle costing of all capital projects, encourage energy-efficient development with sliding-scale permit fees, rebates and expedited permit review processes, and return the region's freeways to a maximum of 55 miles per hour.

Method of Analysis

The impact analysis for the proposed City of Richmond General Plan is based on a GHG emissions analysis which is presented in the Environmental Analysis, below. GHG emissions associated with

the City were obtained from the City's 2005 Greenhouse Gas Emissions Inventory¹⁷ for 2020 and were forecasted for 2030 based on the anticipated increase in population and commercial development. The methodology and assumptions used in this analysis are detailed below for construction and operation activities. Reductions in emissions were based on State reduction measures and additional policies developed for the City of Richmond General Plan. Refer to Appendix C for reduction modeling and detailed calculations.

Because the impact each GHG has on climate change varies, a common metric of CO₂e is used to report a combined impact from all of the GHGs. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential, and is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions in this analysis are measured in terms of metric tons of CO₂ equivalents (MT CO₂e).

Construction

The proposed General Plan would include construction-related emissions of greenhouse gases from site preparation and building activities. The BAAQMD has not established plan-level analysis methodology for construction activities. However, on project level basis, the BAAQMD recommends the use of URBEMIS for land use development projects. Sources of construction emissions include exhaust from the onsite equipment used during construction activities. Further, the inclusion of the following BMPs are suggested to provide reductions in construction activity emissions.

- Use of alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet;
- Using local building materials of at least 10 percent; and
- Recycle at least 50 percent of construction waste or demolition materials.

Operational

The proposed General Plan would result in phased development of residential, commercial, industrial, and mixed-use development. However, as GHG emissions are cumulative and will have lasting impacts beyond the initial year of construction, this analysis estimates the impacts associated with the full buildout of the General Plan. The following operational activities are typically associated with residential and mixed use land uses and contribute to the generation of GHGs.

Vehicular trips. Vehicle trips generated by the proposed General Plan development would result in GHG emissions through combustion of fossil fuels.

Natural gas and other fuels. Natural gas would be used by the proposed General Plan Development for heating and other domestic activities resulting in a direct release of GHGs. The use of landscaping equipment such as lawn mowers would also result in GHG emissions.

17 City of Richmond and ICLEI, City of Richmond Community-wide Greenhouse Gas Emissions Analysis, February, 2009.

Electricity use. Public utility providers use a variety of methods to generate electricity, including burning coal and oil. By using electricity, the proposed General Plan development would contribute to the indirect emissions associated with its production. California's water conveyance system is energy-intensive, with electricity used to pump and treat water. The electricity used to pump and treat water is included in the electrical energy data provided for the commercial/industrial City facilities.

Solid waste. Disposal of organic waste in landfills can lead to the generation of methane, a potent greenhouse gas. By generating solid wastes, the proposed General Plan development would contribute to the emission of fugitive methane from landfills, as well as CO₂, CH₄ and N₂O from the operation of trash collection vehicles.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

The City of Richmond cannot generate enough GHG emissions to influence global climate change on its own. The General Plan development participates in this potential change by its incremental contribution of GHG emissions that, when combined with the cumulative increase of all other anthropogenic sources of GHGs, impact global climate change. Therefore, global climate change is a type of cumulative impact and the City's participation in this cumulative impact is through its incremental contribution of GHG emissions.

For the purposes of this EIR, impacts on global climate change are considered cumulatively significant if the proposed development would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Construction Related Thresholds

The BAAQMD has not adopted a threshold with respect to construction emissions associated with plan level or individual development projects. However, the BAAQMD recommends that the Lead Agency quantify construction emissions and make a significance determination of these emissions in relation to meeting the AB 32 GHG reduction goals. For the purposes of this analysis, construction emissions are not considered to be cumulatively considerable if development incorporates the BAAQMD recommended BMPs and is consistent with the General Plan Policies.

Operational Thresholds

The buildout of long range plans such as General Plans have the potential to result in long-term operational impacts by the continued and increased generation of GHGs from new and existing development within the City, including the vehicle emissions associated with these uses. According

to the BAAQMD, the General Plan impact would not be considered cumulatively considerable if it would meet at least one of the following thresholds:

- Be consistent with the policies of a qualified Climate Action Plan; or
- Produce emissions of no more than 6.6 MT CO₂e per service population annually.

Because the City of Richmond is currently in the process of developing a Climate Action Plan, this analysis uses the following criteria for the determination of cumulatively considerable impacts with respect to the generation of GHGs:

- Produce emissions of no more than 6.6 MT CO₂e per service population annually.

Project-Specific Impacts and Mitigation Measures

3.6-1 Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment. Implementation of BAAQMD BMPs would ensure that construction emissions of GHGs would be less than significant. However, even with the implementation of all feasible mitigation measures, the impacts of operational emissions would remain uncertain and, therefore, be considered *significant and unavoidable*.

Construction

Implementation of the proposed General Plan would result in GHG emissions generated from construction activities. For plan level analysis of construction emissions, the BAAQMD recommends quantification of the emissions and the implementation BMPs to reduce those emissions. Although the General Plan indicates population and employment growth, it does not have a detailed growth forecast as to the amount of square footage of commercial and industrial land uses. Because GHGs remain in the atmosphere for years, even the temporary emissions from construction activities would be cumulatively considerable without the implementation the BAAQMD recommended BMPs and the General Plan Policies and Actions to reduce construction related GHG emissions. The following General Plan Policies and actions address construction related GHG emission reductions.

Policies

- EC2.1 Climate-Friendly Vehicles.** Encourage the use of available climate-friendlier vehicles and equipment to reduce energy use and carbon emissions and support the use of low-emission or renewable fuel vehicles by residents and businesses, public agencies and City government.
- EC2.2 Climate-Friendly Fuels.** Support production and distribution of climate-friendlier fuels (when and if any are identified) and identify appropriate locations for fuel storage and distribution.

Actions

- EC2.A Climate-Friendly Fuel Using Vehicles:** Support the use of highly efficient climate-friendly fuel using vehicles, adequate alternative refueling stations and the use of waste for producing fuel where feasible or rational.

EC2.K Engine Replacement and Retrofitting Program: Work with the Bay Area Air Quality Management District to develop a program to fund diesel engine retrofitting or replacement in existing automobiles, trucks, rail, ships and equipment. Regularly identify feasible technologies that can be applied for retrofitting polluting vehicles. Collaborate with key stakeholders to develop and implement the program.

Policies

EC3.2 Energy Efficiency and Conservation. Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment. Collaborate with partner agencies, utilities and businesses to support a range of energy efficiency, conservation and waste reduction measures including: development and retrofitting of green buildings and infrastructure; installation of energy-efficient appliances and equipment in homes and offices; and heightened awareness of energy and conservation issues.

EC3.3 Solid Waste Reduction and Recycling. Promote waste reduction and recycling to minimize materials that are processed in landfills. Encourage residents and businesses to reduce waste and minimize consumption of goods that require higher energy use for shipping and packaging. Encourage composting to reduce food and yard waste and provide mulch for gardening. Reducing waste and selecting minimum-impact products will conserve land and energy resources.

Actions

EC3.E Construction and Demolition Ordinance: Develop an ordinance covering all construction and demolition activities that meets and exceeds minimal state building code diversion for beneficial reuse standards. Encourage preservation and readaptation of existing structures over replacement and deconstruction and reuse of building materials over demolition.

Policy

EC4.3 Green Buildings and Landscaping. Require energy and resource efficient buildings and landscaping in all public and private development projects. Encourage the use of green and sustainable development standards and practices in planning, design, construction and renovation of facilities; promote the use of green streets that incorporate extensive landscaping, pervious surfaces and native planting; encourage new development and redevelopment projects to be LEED-certified green buildings; and promote ecologically-sensitive approaches to landscaping. Adopting green standards and practices will improve the quality of the built environment, reduce environmental impacts and support economic development goals for creating a green economy.

Actions

EC4.G Landscape Design Guidelines: Update and implement the City's Landscape Design and Development Guidelines to conform to bay friendly landscape standards.

Use appropriate tree species and densities in buffer areas.

Ensure that medians include native plants and trees and are wide enough to support their long-term viability with the least demand for irrigation and maintenance.

Prioritize the use of locally propagated native drought-tolerant vegetation and discourage the use of invasive non-native species in home landscaping.

Tree and other plant selections for public landscaping should be made in conformance with the "City of Richmond Urban Forest Management/Master Plan Reforestation Supplement" (Chapter 10.08 of the Richmond Municipal Code).

Plants should be grouped together as per their water demand listed in the Water Use Classifications for the Landscape Species or “WUCOLS III,” or successor document by the University of California Cooperative Extension for the California Department of Water Resource.

- EC4.H Green Building Ordinance: Require that newly constructed or renovated City-owned and private buildings and structures comply with the City’s adopted Green Building Ordinances. Periodically upgrade requirements as mainline construction practices develop and new materials and building products become available with the intent of meeting or exceeding the State’s zero net energy goals by the year 2020.

Implementation of the following mitigation measure would incorporate the most recent Best Management Practices as indicated by the BAAQMD.¹⁸ With implementation of the General Plan Policies and Actions as well as the BMPs, the proposed General Plan would have a ***less-than-cumulatively significant*** impact with respect to construction related GHG emissions.

Full Buildout Analysis

As noted above, with the incorporation of the most recently available BAAQMD GHG BMPs and compliance with the General Plan Policies and Actions the new development under the General Plan would not be cumulatively significant for the emissions of GHGs. Therefore, with implementation of the mitigation measure below and compliance with the General Plan Policies, the construction emissions of the full buildout scenario would also be reduced to less than cumulatively significant. Future development under the proposed General Plan would be subject to review to determine construction climate change impacts in accordance with CEQA.

Mitigation Measure

- 3.6-1 a. *All construction projects shall incorporate the most recent Best Management Practices for Greenhouse Gas Emissions as indicated by the BAAQMD.*

Operational

The proposed General Plan would result in long-term operational impacts from the generation of GHGs during the continued operation of land uses allowed in the proposed General Plan. Thresholds of significance have been established by the BAAQMD as 6.6 MT CO₂e per service population for Plan level emissions of GHGs. Service population for this analysis is defined as the total number of residents and employees anticipated in Richmond for General Plan development. Based on the 2005 Greenhouse Gas Inventory for the City of Richmond¹⁹ emissions for 2020 are anticipated to be approximately 2.4 MMT of CO₂e. Emissions for 2030 were not provided in the emissions inventory and were estimated based on estimated population and employment growth. Table 3.6-1 shows the City-wide emissions by sector compared to the BAAQMD threshold.

18 Above BMPs are subject to change over time. Bay Area Air Quality Management District will post updates to this list at www.baaqmd.gov.

19 City of Richmond and ICLEI, City of Richmond Community-wide Greenhouse Gas Emissions Analysis, February, 2009.

Sector	2020 (MT CO₂e)	2030 (MT CO₂e)
Residential	137,583	155,445
Commercial/Industrial	2,277,670	2,676,221
Transportation	647,836	741,407
Waste	65,747	74,283
Total	3,128,836	3,647,355
Service Population (SP)		
Population (# people)	115,600	132,847
Employment (# jobs)	52,420	63,538
Total	168,020	196,385
Emissions per SP	18.62	18.57
BAAQMD Threshold	6.6	
Significant?	Yes	Yes
Source: 2020 Inventory: City of Richmond and ICLEI, City of Richmond Community-wide Greenhouse Gas Emissions Analysis, February, 2009; 2030 Inventory: PBSJ 2010 See Appendix C.		

As shown in Table 3.6-1, the City emissions without reductions exceed the BAAQMD operational threshold for GHG emissions. The State has implemented numerous policies that will provide reductions for all sectors of the City. In addition, the City has implemented numerous policies that will also provide reductions in GHG emissions. The following policies and actions incorporated in the General Plan would further minimize the potential impacts from operational activities within the City.

Policies

EC1.1 Leadership and Advocacy. Take a leadership role in advocating for local, regional and national solutions to climate change at all levels of government and with the private sector. The success of climate change initiatives depends on collaborative approaches. Richmond will take the initiative to forge new partnerships, develop innovative solutions and continue to support and promote regional, national and international efforts that support climate change protection and sustainability such as the Ahwahnee Principles for Climate Change, the United States of America Mayors for Climate Protection Agreement and the Urban Environmental Accords, among others.

EC1.2 Public Awareness and Support. Raise awareness among residents and businesses about climate change and its potential impacts and build support for climate change initiatives in Richmond and the region. Encourage community members to reduce their carbon footprint.

Actions

EC1.A Climate Action Plan: Develop a climate action plan for reducing greenhouse gas emissions to meet or exceed state requirements. Components of the plan should include: a comprehensive greenhouse gas emissions inventory and forecast; emissions reduction target(s); assessment of the City's vulnerability to climate change; climate change resiliency goals; broader sustainability assessment; sustainability targets; strategies and measures to address climate change mitigation, sustainability and adaptation; financing and implementation

approaches; a public education and information program; and a program for monitoring and reporting results.

Richmond's baseline greenhouse gas emissions inventory and forecast will provide a benchmark for planning and monitoring progress in achieving mandated targets. The plan should incorporate public education programs to raise community awareness.

The climate action plan should include mitigation strategies for addressing the sources of greenhouse gas emissions in the community and within government operations. Adaptation strategies will focus on potential local impacts of climate change such as sea level rise, increased risk of flooding, diminished water supplies and public health. Broader sustainability measures may include the preservation of local water quality, air quality, open space and biodiversity.

The climate action plan should also include information on the financing and implementation of each strategy or measure to ensure timely and well-informed action. The plan will be subject to the monitoring and reporting program to ensure the City achieves its greenhouse gas reduction, protection and adaptation targets.

Update the plan periodically in accordance with evolving state and federal policy and regulatory frameworks, as well as advancements in scientific research and data on climate change.

EC1.B Public Awareness and Education Program: Develop a program to educate and inform residents and businesses about key climate change challenges and potential solutions. Develop and disseminate information on topics such as waste reduction, recycling, green buildings and landscaping, and renewable energy generation. Utilize a range of tools including factsheets, website newsletters, advertising and workshops to reach potential audiences. The program should be reviewed and evaluated periodically for effectiveness. The public awareness and education program should be incorporated into the climate action plan.

EC1.C Safe and Convenient Public Transit Options: Continue to collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak and major employers in Richmond that provide shuttle service to explore the potential for expanding transit in the evenings and late nights, and for people with special needs.

Also explore the potential to enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to maintain and enhance service within the City and region. Explore strategies to address affordability, access and safety. Expand outreach and information programs to promote transit use.

Policies

EC2.1 Climate-Friendly Vehicles. (see above)

EC2.2 Climate-Friendly Fuel. (see above)

EC2.3 Expanded and Affordable Public Transit. Support enhanced and expanded public transit to improve mobility options for residents and visitors. Public transit provides an environmentally-friendly, cost-effective and equitable mode of travel for residents and visitors. Encouraging transit-supportive development patterns can further maximize the efficiency of these systems and help reduce air pollution and greenhouse gas emissions within Richmond.

Public transit service should connect major destinations in Richmond including education institutions, community facilities, regional open space areas and major commercial corridors to serve a greater number of riders and reduce commuter vehicle miles. All housing units and employment centers in Richmond should have access to a local and regional public transit stop. Ensure that all transit stations and routes to and from these stations are safe. As many residents and visitors rely on regional passenger rail and air travel, support efforts to create efficient public transit connections to train stations and regional airports.

Support efforts to expand service at night and on weekends and to make transit affordable and accessible to people of all abilities, seniors, youth and low-income households.

- EC2.4 Safe and Convenient Walking and Bicycling.** Promote walking and bicycling as a safe and convenient mode of transportation. Improve pedestrian and bicycle amenities to serve the recreation and travel needs of residents and visitors in all parts of Richmond. Where feasible, the City will: connect major destinations such as parks, open spaces, civic facilities, employment centers, retail and recreation areas with pedestrian and bicycle infrastructure; promote shared roadways in residential streets; require new development and redevelopment projects to provide pedestrian and bicycle amenities, streetscape improvements and linkages to planned and completed City and regional multi-use trails; and develop safe routes to schools and out-of-school programs that allow access by bicycle and pedestrian paths or reliable and safe transit.

Explore innovative solutions such as bicycle-sharing programs and encourage businesses, schools and residential developments to provide secure bicycle parking to ensure that these ecologically-friendly, low-impact transportation modes are available to all community members, thereby reducing emissions from vehicles within the City, improving environmental quality and enhancing mobility and connectivity.

- EC2.5 Regional Passenger Rail.** Support efforts by transit agencies to provide regional and long-distance passenger rail service. Supporting the regional passenger and rail services that serves Richmond residents and businesses will improve connections to other cities, regions and states while reducing vehicle emissions. Support Amtrak and the State of California's Capitol Corridor service for short-distance travel between Richmond and nearby destinations such as Fairfield, Martinez, Berkeley, Emeryville and Oakland.

- EC2.6 Private Automobile Use.** Work toward creation of an urban landscape that will reduce reliance on private automobiles through land use planning and by providing amenities and infrastructure that encourage safe and convenient use of public transit, walking and bicycling.

- EC2.7 Climate-Friendly Goods Movement.** Promote the safe and efficient movement of goods by truck, rail and ship to support port operations and industrial uses. Develop strategies and programs to provide adequate infrastructure improvements and maintenance to support industrial operations in Richmond while minimizing impacts on neighborhoods and sensitive uses. Encourage the use of climate-friendly fuel and vehicles in the movement of goods, and encourage carriers to upgrade their fleets.

Actions

- EC2.A Climate-Friendly Fuel Guidelines: (see above)
- EC2.B City Vehicles Transition Program: Increase the share of climate-friendly vehicles and use of climate-friendly fuels in the City and consider including bicycles in a corporate fleet where feasible.
- EC2.C Safe and Convenient Public Transit Option: Continue to collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak and major employers in Richmond that provide shuttle service to explore the potential for expanding transit in the evenings and late nights, and for people with special needs. Also

explore the potential to enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to maintain and enhance service within the City and region. Explore strategies to address affordability, access and safety. Expand outreach and information programs to promote transit use.

- EC2.D **Transit Incentives Program:** Work with transit partners to develop an incentives program to expand transit use among residents and employees in Richmond. Target potential new riders as well as high-need population groups such as families, youth, seniors and people with disabilities. Explore the potential for supporting fare-free transit zones in major commercial areas, free or very low-cost bus passes for target groups, a streetcar system connecting the Downtown with the planned ferry terminal in the Southern Shoreline Area and online tools for providing real time information to transit riders.
- EC2.E **Bicycle and Pedestrian Plans:** Develop and implement citywide bicycle and pedestrian plans to make Richmond a more pedestrian and bicycle-friendly City. Identify gaps in the network, major travel routes and priority safety improvements. Designate a network of multi-use trails and off-street paths. Include connections to open space amenities such as Point Isabel, San Francisco Bay Trail, Point San Pablo, Point Pinole and the Richmond Greenway.
- Update design guidelines and standards for bicycle and pedestrian facilities and amenities that meet local, state and federal standards. Include a uniform citywide signage plan and comply with all Americans with Disabilities Act (ADA) requirements.
- Explore the potential to designate pedestrian priority areas or districts. Include strong connections to the downtown, recreation destinations, commercial and mixed-use streets, transit stations and schools. Address pedestrian and bicycle connections in parking lots.
- Collaborate with Contra Costa County and other jurisdictions to ensure links to the regional trail network including the San Francisco Bay Trail and coordination with the County Bicycle and Pedestrian Plan. Coordinate efforts with ongoing bicycle and pedestrian community initiatives.
- EC2.F **Bicycle Use Program:** Encourage safe and convenient bicycle use by residents, employees and visitors. Consider strategies that expand bicycling as a viable mode of transportation for people of all ages and abilities. Encourage businesses to provide bicycle amenities such as secured bicycle parking, showers and lockers for employees who bike to work.
- EC2.G **Safe Routes to School Program:** Develop a Safe Routes to School Program in collaboration with West Contra Costa Unified School District and other educational institutions to improve walking and bicycling access and safety to schools and after school programs. Also explore opportunities to create "walking school bus" programs where parents and other responsible adults can share the responsibility of escorting children to and from school by foot or bicycle.
- EC2.H **Car and Bicycleshares:** Encourage car and bicycle sharing. Collaborate with service providers to identify potential sites for locating carshares.
- EC2.I **Carpool, Rideshare and Shuttle Services:** Support transportation agency efforts to provide alternative commuting modes including carpooling, ridesharing, van and shuttle bus service for large employers or retail destinations.
- EC2.J **Port Emissions Reduction Plan:** Collaborate with the Port, local industry, and regulatory agencies to develop a comprehensive emissions reduction plan for

ship-operated emissions. Include strategies to reduce emissions from trucks, ships, locomotives and equipment. Enforce existing laws and strengthen regulations to protect human and environmental health and access available funds for clean air projects. Explore use of low-emission vehicles, short-sea shipping service, "cold ironing" and other strategies to reduce emissions. Consider the San Pedro Bay Ports Clean Air Action Plan, developed by the ports of Los Angeles and Long Beach as a model.

EC2.K Engine Replacement and Retrofitting Program: (see above)

Policies

EC3.1 Renewable Energy. Promote the generation, transmission and use of a range of renewable energy sources such as solar, wind power and waste energy to meet current and future demand and encourage new development and redevelopment projects to generate a portion of their energy needs through renewable sources.

EC3.2 Energy Efficiency and Conservation. (see above)

EC3.3 Solid Waste Reduction and Recycling. (see above)

EC3.4 Water Conservation and Reuse. Promote water conservation and recycled water use. Reduce energy consumed for treatment and transportation of water and discharge of wastewater by: encouraging installation of low-flow fixtures; using native planting for landscaping in all City-owned and operated facilities; promoting best practices and technologies for water conservation; considering water use in evaluating and approving development projects; supporting the use of graywater systems in residential, commercial and industrial uses; and encouraging new development and redevelopment projects to meet a portion of their water needs through the use of recycled water.

EC3.5 City Government Operation. Promote climate-friendly standards, practices, technologies and products in all City facilities and operations. Lead by example and set a precedent in the community to reduce greenhouse gas emissions by incorporating best practices and available technologies. Create favorable conditions for community-wide implementation of climate-friendly practices by supporting innovations and creative solutions.

Actions

EC3.A Community Choice Aggregation: Partner in community choice aggregation. Collaborate with neighboring jurisdictions to support local efforts to expand the generation and use of energy from renewable sources while increasing revenue for the City. Encourage large warehouse and retail operators to add solar panels to the roofs of their buildings and maximize generation of renewable energy.

EC3.B Renewable Energy Program: Encourage and support the generation, transmission and use of renewable energy. Advocate at the regional and state level for upgrades to the existing power grid so that it can support renewable energy production and transmission.

EC3.C Energy Demand Reduction Program: Work with energy providers to develop strategies that will reduce energy demand and promote energy conservation. Collaborate with neighboring jurisdictions to share best practices and implement regional programs to help residents and businesses meet regional demand reduction targets.

EC3.D Solid Waste Reduction and Recycling: Work with joint power authority or solid waste facility franchise holder to expand recycling programs and reduce the generation of solid wastes. Potential measures could include: providing recycling containers in parks and public spaces; establishing computer reuse and recycling programs; expanding or enhancing recycling and green waste services for all residents and businesses; and providing locations for household hazardous

wastes to be recycled. The City shall also encourage reuse depots and timber harvesting of removed urban trees. Work with solid waste franchise holder to expand the types of materials recycled and reused. Programs should also include outreach and education efforts.

EC3.E Construction and Demolition Ordinance: (see above)

EC3.F Water Conservation: Implement water conservation efforts for households, businesses, industries and public infrastructure. Include measures such as the following:

- Require low-flow appliances and fixtures in all new development;
- Work with water providers and water conservation agencies to create an incentives program that encourages retrofitting existing development with low-flow water fixtures;
- Require new development and landscaped public areas to utilize state-of-the-art irrigation systems that reduce water consumption including graywater systems and rainwater catchment;
- Encourage use of drought-tolerant and native vegetation;
- Require new plantings be grouped by hydrozones of water needs listed in the WUCOL III developed by the Department of Water Resources and the University of California Cooperative Extension (or successor document); and
- Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design including graywater systems.

EC3.G Water Recycling: Support efforts by the regional water provider to increase water recycling by residents, businesses and developers. Require water recycling and rainwater catchment in new development as appropriate to recycle water. Evaluate the use of recycled water in new and existing buildings and landscapes.

EC3.H Cogeneration and Reuse of Waste: Identify strategies to recover methane to cogenerate electricity and reuse of wastewater and biosolids generated at local wastewater treatment plants.

Policies

EC4.1 Mixed-Use and Infill Development. Promote mixed-use infill development on vacant and underutilized parcels along commercial corridors, in the Downtown area, at the planned ferry terminal and in the Hilltop area. Support local-serving mixed-use in residential areas to provide needed services and amenities close to where people live and work.

EC4.2 Compact Walkable Neighborhoods and Livable Streets. Promote safe and walkable neighborhoods and inter-connected streets through the design of streetscapes, public gathering places and all types of physical development. Provide pedestrian amenities such as sidewalks and street trees, transit and bike improvements, lighting and landscaping and appropriate traffic calming measures to ensure a safe pedestrian environment.

Support uses and public space improvements that generate street-level activity, create eyes-on-the-street, provide opportunities for community interaction and encourage a sense of collective ownership of common areas. Encourage mixed-use development that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and create incentives to remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used.

EC4.3 Green Buildings and Landscaping. (see above)

EC4.4 Green Infrastructure. Develop green infrastructure standards that relies on natural processes for stormwater drainage, groundwater recharge and flood management. Green approaches for infrastructure development are environmentally and fiscally efficient and provide long-term benefits to the community by reducing energy consumption and maintenance and capital improvement costs.

EC4.5 Local Food System (Urban Agriculture). Support sustainable local food systems including farmer's markets, community supported agriculture, urban agriculture, federal food assistance programs and healthy food retailers. Support local agriculture on vacant land as appropriate. Production and processing of food locally can reduce overall energy consumption, improve access to fresh fruits and vegetables in the community and support the local economy by keeping jobs and revenue in Richmond. Support farmers' markets, fresh food stands and community gardens to supplement the availability of healthy food in the City.

Actions

EC4.A Downtown Specific Plan: Develop a specific plan to guide capital investment, redevelopment and revitalization of the Downtown as the heart of Richmond. Incorporate key concepts from existing plans, such as the City Center Specific Plan and the Macdonald Avenue Revitalization Plan, into the specific plan. Include Macdonald Avenue, the Civic Center and the BART station in the planning area. Incorporate development standards and urban design guidelines in the specific plan.

EC4.B Corridor Improvement Plans: Develop plans for key commercial corridors in the City to guide redevelopment of these areas into mixed-use, pedestrian and transit-oriented corridors and nodes. Collaborate with regional agencies, neighboring jurisdictions and the County to develop the plans. Include development standards and urban design guidelines.

EC4.C Neighborhood Revitalization Plans: Encourage, promote and contribute to the revitalization of all neighborhoods. Collaborate with community leaders and organizations, neighborhood councils and neighboring jurisdictions to address community needs. Identify needed improvements and funding mechanisms. Actively work to reduce blight throughout the City and promote the upkeep of vacant lots.

EC4.D Infill Development Incentives Program: Encourage infill development in targeted redevelopment areas in Central Richmond. Encourage new development and redevelopment projects to provide community amenities and uses that serve priority community needs and retain the existing urban limit lines.

EC4.E Street Design Standards: Update the City's street design standards so that they support public transit, bicycles and walking on all streets. The updated standards should be consistent with and tailored to street or trail function and adjacent land use type.

Pedestrian-friendly designs should address maximum lane widths, maximum curb radii, sidewalk width, curb ramps and Americans with Disabilities Act (ADA) requirements. Bicycle-friendly design should address lane widths, street and intersection crossings and parking areas. Include guidelines for transit access.

Identify priority thoroughfares for developing green streets in the City to implement a natural systems approach for stormwater management and to expand urban greenery.

Evaluate the feasibility of reducing the number or width of travel lanes on key mixed-use streets that have excess capacity such as Cutting Boulevard, and using the capacity and/or regained width for wider sidewalks and bicycle lanes.

- EC4.F Green Streets Program: Expand the green streets program to support a sustainable approach to stormwater drainage, groundwater recharge and landscaping. Incorporate green streets standards and guidelines in all streetscape improvement projects in the City.
- EC4.G Landscape Design Guidelines: (see above)
- EC4.H Green Building Ordinance: (see above)
- EC4.I Sustainable Urban Agriculture Assessment: Work with non-profits and regulatory agencies to explore the potential for creating and sustaining local urban agriculture, including community gardens, orchards and farmers' markets. Urban agriculture has the potential to supplement the availability of fresh fruit and vegetables in the community, provide economic opportunities to Richmond residents, lower food costs, reduce overall energy consumption and build social cohesion.

The assessment could explore the feasibility of implementing the following strategies:

- Developing a site inventory and a management plan to administer the use of potential urban agricultural sites;
- Promoting urban agriculture as a desirable civic activity that improves the quality of urban life, food security, neighborhood safety and environmental stewardship;
- Supporting the development of appropriate agriculture in residential, industrial, business and open space zones;
- Establishing a community-based support system for urban growers such as tool banks, shared processing facilities, farmers' markets, community supported agriculture ventures, funding streams and technical service providers;
- Offering locally grown food to schools, hospitals, nursing homes, daycare centers, correction facilities and businesses, while creating economic opportunities for urban growers and related industries;
- Supporting WIC Farmers' Market Nutrition Program and the Senior Farmers' Market Nutrition Program that provide support for buying fresh produce at farmers' markets;
- Creating training programs for unemployed people to work in urban food-related businesses as a source of jobs;
- Working with representatives of community gardening and urban farming organizations to meet needs unique to urban farm enterprises;
- Ensuring long-term land commitment for community gardens, entrepreneurial farms and other urban agriculture ventures;
- Updating building codes to encourage rooftop gardening; and
- Developing school-based programs that integrate nutrition and gardening in order to raise awareness about the connection between healthy food choices and locally grown fresh produce.

Policies

EC5.1 Green Businesses and Jobs. Promote “green” industries to provide goods and services to fill the growing need for clean and sustainable technologies, fuels, vehicles and equipment, while providing jobs and training to Richmond residents. The green economy can stimulate Richmond’s overall economic development without undermining its environmental protection goals.

EC5.2 Environmentally Responsible Businesses and Industries. Encourage existing businesses and industries to become increasingly environmentally progressive and continue making positive contributions to the community. Encourage businesses and industries to hire locally when possible, participate in civic life and play a positive role in the community. Together with regulatory agencies, actively work with local industries to ensure compliance with all applicable environmental regulations to limit pollution and protect the community from environmental hazards.

Promote and encourage new clean and green industries that provide well-paying jobs, revenue and other community and environmental benefits; support efforts by existing industries to decrease harmful emissions and impacts; and promote a mix of uses and a range of activities on industrial land to create jobs and revenue while avoiding conflict between industrial and non-industrial uses.

EC5.3 Air Quality. Support regional policies and efforts that improve air quality to protect human and environmental health and minimize disproportionate impacts on sensitive population groups. Work with businesses and industry, residents and regulatory agencies to reduce the impact of direct, indirect and cumulative impacts of stationary and non-stationary sources of pollution such as industry, the Port, railroads, diesel trucks and busy roadways. Ensure that sensitive uses such as schools, childcare centers, parks and playgrounds, housing and community gathering places are protected from adverse impacts of emissions.

Continue to work with stakeholders to reduce impacts associated with air quality on disadvantaged neighborhoods and continue to participate in regional planning efforts with nearby jurisdictions and the Bay Area Air Quality Management District to meet or exceed air quality standards. Support regional, state and federal efforts to enforce existing pollution control laws and strengthen regulations.

Actions

EC5.A Green Business Strategic Plan: Work with local business support agencies and the Richmond Community Redevelopment Agency to develop a strategic plan to attract innovative “green” companies to Richmond, consistent with City Council Resolution 45-07, which declared Richmond a “Green Economic Development Area”. Support this effort by monitoring industry trends, assisting commercial brokers in matching companies with available sites and including a strategic marketing campaign that highlights Richmond’s strengths and strategies to prepare the local workforce for emerging green industries. Work with State and local agencies to develop criteria for green business certification for new and existing businesses. Seek opportunities to create incentives for existing businesses to participate in the program.

EC5.B Workforce Development Strategy: Continue to support efforts to expand job training opportunities for residents to enter into the workforce, with particular emphasis on green collar and other high-growth employment categories. Encourage the local community colleges, universities, the school district and adult education programs to offer more coursework and training oriented toward emerging industries such as the green industry in addition to traditional trades.

Maintain and enhance partnerships with local workforce development programs and organizations and collaborate with these programs and organizations to

ensure that new and existing industries have access to a local, work-ready and talented workforce. Support training and intervention strategies for populations that face barriers to employment including youth, the formerly incarcerated, and residents with limited English proficiency.

EC5.C Air Quality Monitoring and Reporting Program: Work with the Bay Area Air Quality Management District and other government agencies to establish and identify funding for a citywide air quality monitoring and reporting program. The air quality monitoring and reporting program would assess the cumulative impact of air pollution and toxins on human and environmental health and monitor exposure of sensitive uses such as schools, childcare centers, parks and playgrounds, housing and community gathering places.

Collaborate with the County Health Department, the Bay Area Air Quality Management District and state agencies to establish baseline exposures and to the extent feasible, document health effects associated with monitored baseline exposures and develop provisions to hold businesses and operations financially accountable for their impacts on the environment or community due to air pollution exceeding legal thresholds.

Policies

EC6.1 Habitat and Biological Resource Protection and Restoration. Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources. Protect these areas and work with the California Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, the East Bay Regional Park District and other regional agencies to identify areas for special protection and establish appropriate protection measures for these areas.

Protect resources to maximize the efficacy of natural systems and encourage sustainable development practices and conservation measures to ensure a healthy natural environment.

Protect wetlands from direct and indirect impacts of new and existing development and infrastructure. Ensure that direct and indirect impacts to wetland habitats are minimized by environmentally sensitive project siting and design.

Protect marshlands and baylands to ensure they are not polluted or damaged from bay filling and dredging.

Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas. Protect and restore creek corridors and riparian areas by restoring riparian habitat with appropriate vegetation and channel design; removing culverts and hardened channels where appropriate; improving creek access; avoiding future culverting or channelization of creeks; and ensuring appropriate and ongoing maintenance.

At a minimum, require mitigation of impacts to sensitive species ensuring that a project does not contribute to the decline of the affected species populations in the region. Identify mitigations in coordination with the U.S. Fish and Wildlife service, the California Department of Fish and Game and other regulatory agencies.

EC6.2 Low-Lying Areas in Richmond. Protect and manage low-lying areas that are likely to be affected by sea level rise and storm surges. Encourage development patterns, infrastructure and flood management practices that can adapt to potential climate change impacts in these low-lying areas.

EC6.3 Adapting to Climate Change. Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Develop a climate action plan and work with regional regulatory agencies and local property owners to develop strategies aimed at

reducing the potential impacts of climate change and sea level fluctuations. All projects proposed for construction within 300 feet of the existing shoreline (high tide) will include an evaluation of the impact of a one meter rise in sea level.

Actions

- EC6.A Open Space Plan: Develop and implement an open space plan to enhance public open space in the City. Include strategies for open space in the hills, along creeks and the shoreline, and in the urban core. Collaborate with the East Bay Regional Park district and the National Park Service to manage and maintain facilities and programs at regional and national parks.
- EC6.B Habitat Restoration: Work with other jurisdictions, public and private property owners to restore sensitive habitat that has been degraded, but has potential for rehabilitation including brownfield and contaminated sites. Seek funding opportunities from state and federal agencies and from nonprofit foundations for restoration and remediation work.
- EC6.C Urban Creek Restoration Program: Where feasible, restore creek corridors in urban areas. Creeks currently diverted in culverts or hardened channels should be restored to their natural state. Adopt regional guidelines for channel creation or modification to ensure that channels meander, have a naturalized side slope and a varied channel bottom elevation. Include improvement standards for soft bottom channels.
- EC6.D Stormwater Drainage: Provide storm drainage in accordance with best management practices and guidelines. Assess the system's ability to accommodate current and future users, sea level rises, and include all necessary improvements in development plans. Reduce runoff into creeks and the Bay, and address groundwater recharge through the use of pervious materials, retention basins, bio-swales and other methods.
- EC6.E Urban Forestry Management Plan: Continue to implement the urban forest management plan to guide landscaping practices in urban areas of the City, reduce the heat-island effect and contribute to carbon mitigation. Continue the adopt-a-tree program. Coordinate the plan with the "City of Richmond urban Forest Management/Master Plan Reforestation supplement (1997)" and related documents for this purpose. Update the plan to establish the following measures:
- Create guidelines to establish minimum planting standards and require appropriate tree species and planting densities within newly landscaped areas;
 - Update the list of trees to be used as a guideline for all tree planting and focus on local native species;
 - Identify maintenance and planting standards for street trees, ensuring that the best practices in urban forestry are being utilized including best practices for pruning around above-ground utility lines to ensure the best health and form of street trees;
 - Update zoning requirements for street trees in new developments and in parking lots;
 - Outline coordination efforts with EBMUD to offer programs or other resources to provide property owners with information on proper tree selection, proper location to reduce heat transfer effects, planting and maintenance; and
 - Establish guidelines that require all native tree habitats to be protected and when avoidance is not possible, require mitigation efforts as required by the Public and Private Tree Preservation Ordinance.

- EC6.F Disaster Preparedness and Recovery Plan: Require that all development and redevelopment projects comply with the City's Disaster Preparedness and Recovery Plan. Regularly review and update the plan and expand public training and information.

The calculations for the reduced inventory include reductions from the mitigation measures as addressed below. Several of the mitigation measures are enhancements to the General Plan actions that provide a vehicle for which to calculate the afforded reductions. Table 3.6-2 shows the reduced inventory in comparison to the BAAQMD thresholds. The assumptions and reduction calculations are detailed in Appendix C.

Sector	2020 (MT CO₂e)	2030 (MT CO₂e)
Residential	121,209	126,778
Commercial/Industrial	2,024,450	2,293,687
Transportation	435,654	404,115
Waste	65,747	74,283
Total	2,647,060	2,898,864
Service Population (SP)		
Population (# people)	115,600	132,847
Employment (# jobs)	52,420	63,538
Total	168,020	196,385
Emissions per SP	15.75	14.76
BAAQMD Threshold	6.6	
Significant?	Yes	Yes
Source: PBSJ 2010, see Appendix C.		

The City of Richmond is in the process of developing a Climate Action Plan which will provide reduction strategies for the City to attain, at a minimum, the AB 32 goal of 29 percent below Business As Usual. It is anticipated that the quantification of the General Plan Policies and Actions that have not been quantified in this analysis will afford a minimum of an additional 13.6 percent reduction, thereby meeting the AB 32 threshold. Even with this additional reduction, the emissions per service population for 2020 and 2030 are anticipated to be 13.22 and 12.23 respectively, remaining above the 6.6 BAAQMD threshold.

The incorporation of the state measures, General Plan policies and actions, and the following mitigation measures would reduce the impacts from operational emissions. However, long-term operational impacts of the proposed General Plan would result in an increase in GHG emissions and would still exceed the BAAQMD's threshold of 6.6 MT CO₂e per service population. Therefore, this impact would be considered **significant and unavoidable**.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the emissions would be substantially greater than analyzed for the City's anticipated level of growth. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate new sources of GHG emissions. Even with increased source efficiencies, the impact under the full buildout scenario would be greater than under the City's anticipated growth scenario and this impact would also be significant and unavoidable.

Mitigation Measures

The following mitigation measures have been included in the calculations for the reduced GHG inventory. Although all of the General Plan Policies and Actions outlined in this section would reduce GHG emissions, the majority of the measures cannot be quantified as listed. The following mitigation measures either strengthen the General Plan Policies and Actions such that emissions reductions can be quantified, or are additional measures that the City can incorporate to reduce emissions.

- 3.6-1 b. *All new development and all retrofits of single-family developments, multi-family developments of over 10 units, and all commercial/industrial remodels of over 10,000 square feet shall be required to exceed Title 24 standards by 20 percent by 2020 and 30 percent by 2030. This mitigation measure enhances General Plan Action EC3.C.*

Measures to reduce emissions can include, but are not limited to:

- *Install energy efficient appliances, including air conditioning and heating units, dishwashers, water heaters, etc.;*
- *Install solar water heaters;*
- *Install top quality windows and insulation;*
- *Install energy efficient lighting;*
- *Optimize conditions for natural heating, cooling and lighting by building siting and orientation;*
- *Use features that incorporate natural ventilation;*
- *Install light-colored "cool" pavements, and strategically located shade trees along all bicycle and pedestrian routes; and*
- *Incorporate skylights, reflective surfaces, and natural shading in buildings design and layouts;*
- *Replace inefficient air conditioning and heating units with new energy efficient models;*
- *Replace older, inefficient appliances with new energy efficient models;*

- *Replace old windows and insulation with top-quality windows and insulation;*
 - *Replace inefficient and incandescent lighting with energy efficient lighting; and*
 - *Weatherize existing buildings to increase energy efficiency.*
- c. *Require all new City-owned and operated facilities and 50 percent of all new development to generate at least 10 percent of their energy use from renewable sources. Enhances General Plan Action EC3.B.*
- d. *All new commercial and multi-family developments installing boilers shall be required to install energy efficient boilers such that they achieve a minimum 4.5 percent reduction in energy usage. The same reductions shall be required of all remodeled multi-family developments of over 10 units and all commercial/industrial remodels of over 10,000 square feet.*
- e. *Develop improved waste reduction and expanded recycling programs such that a 75 percent diversion rate is achieved by 2020 and an 85 percent diversion rate is achieved by 2030 for all non-construction waste streams. Potential measures could include: providing recycling containers in parks and public spaces; establishing computer reuse and recycling programs; enhancing recycling and green waste services for all residents; and providing locations for household hazardous wastes to be recycled. Enhances General Plan Actions EC3.D.*
- f. *Develop a program that requires all construction and demolition activities to evaluate energy use and waste and to reduce or mitigate construction-related impacts by 75 percent. Enhances General Plan Actions EC3.E.*
- g. *Implement an Anti-Idling Policy for heavy-duty diesel trucks, including local delivery trucks and long-haul truck transport within the City. This policy would prohibit idling of on- and off-road heavy duty diesel vehicles for more than 5 minutes. Enhances General Plan Policy EC5.3.*
- h. *Provide tax and development incentives for employers with more than 100 employees within the City to establish a trip reduction plan that would incorporate annual employee commute surveys, marketing of commute alternatives, ride matching assistance, and transit information at a minimum, and implement secure bicycle parking, showers and lockers for employees who bike to work. This measure could encourage smaller businesses to cooperate in establishing joint trip reduction plans. Enhances General Plan Actions EC2.F and EC2.I.*
- i. *Implement Citywide car and bicycle sharing programs. Collaborate with service providers to identify potential sites for locating carshares.*
- j. *Require new local-serving mixed-use in residential areas to provide needed services and amenities close to where people live and work. Require new development and redevelopment projects to provide community amenities and uses that serve priority community needs. Enhances General Plan Policy EC4.1 and General Plan Actions EC4.A, EC4.B, and EC4.D.*

- k. *Require mixed-use development along transit-oriented corridors that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used. Enhances General Plan Policy EC4.2 and Actions EC2.C, EC2.E, EC2.G, EC4.A, EC4.B, EC4.C and EC4.E.*
- l. *Collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak, and major employers in Richmond that provide shuttle service to expand transit in the evenings and late nights, and for people with special needs. Enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to maintain and enhance service within the City and region. Explore strategies to address affordability, access, and safety. Expand outreach and information programs to promote transit use. Measure results in a 10 percent expansion of transit system, and an increase in service frequency and speed for 2020; and a 15 percent expansion by 2030. Expand outreach and information programs to promote transit use. Enhances General Plan Policy EC2.C.*

Implementation of the following mitigation measures would further reduce impacts from GHG emissions. While the following measures would provide a reduction in GHG emissions, they cannot be quantified. These measures are either support measures that would further ensure the success of the General Plan actions and mitigation stipulated above, or are measures where there is not enough detail available in the 2005 Greenhouse Gas Emissions Inventory to determine a reduction percentage. Although not reiterated here, the General Plan Policies and Actions not identified in the quantified reduction measures will provide reductions in greenhouse gases. However, like the following measures, there is not enough information to provide reduction percentages for the City overall.

- m. *All new street lighting and all re-modeled or replaced street lighting shall consist of high-efficiency lamps that reduce energy consumption by a minimum of 16 percent.*
- n. *All new traffic lights and all replaced traffic lights shall consist of LED lights. This high efficiency lighting would reduce emissions from traffic lights by 90 percent.*
- o. *Require new development to incorporate water-saving measures demonstrating a minimum reduction of 20 percent in water use over a similar project completed within the previous five years. This measure enhances General Plan Action EC3.F. This measure would be enhanced by General Plan Action EC3.G.*

3.6-2 Construction and operation of the proposed project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Through the implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.6-1 and General Plan Policies, it is anticipated that emissions would be reduced

to a *less-than-significant* impact and, therefore, would not be considered cumulatively considerable.

The construction and operation of the development under the General Plan would result in the emission of greenhouse gases. Future development within the City of Richmond will be required to comply with AB 32, and with the Richmond Climate Action Plan once developed. AB 32 requires a 29 percent reduction from Business As Usual emissions by 2020. Business as Usual is defined as the anticipated emissions for 2020 without the incorporation of policies and reduction measures that are not currently implemented. With the implementation of the mitigation measures as detailed above, the reductions to the anticipated citywide emissions for 2020 and 2030 are 15.4 and 20.03 percent respectively, which would result in a significant cumulative impact.

The City of Richmond is in the process of developing a Climate Action Plan which will provide reduction strategies for the City to attain, at a minimum, the AB 32 goal of 29 percent below Business As Usual. It is anticipated that the quantification of the General Plan Policies and Actions that have not been quantified in this analysis would afford a minimum of an additional 13.6 percent reduction resulting in a 29 percent reduction for 2020 and a 34.12 percent reduction for 2030. As the reductions would meet the AB 32 threshold, the future development under the General Plan's contribution would not be cumulatively considerable.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the emissions would be substantially greater than analyzed for the City's anticipated level of growth. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate new sources of GHG emissions. Even with increased source efficiencies, the impact under the full buildout scenario would be greater than under the City's anticipated growth scenario. As stated for the anticipated level of growth, it is anticipated that the additional reductions required to attain AB 32's goal of 29 percent below BAU would be attained and, therefore, regardless of the intensity of development, the reduction goals would be met. Consequently, the General Plan's contribution under full buildout would not be cumulatively considerable.

Mitigation Measures

None required.

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3.7 GEOLOGY, SOILS, AND MINERALS

3.7 GEOLOGY, SOILS, AND MINERALS

INTRODUCTION

The section explains the regional and local geologic and seismic characteristics influencing the City. Geology, soils, and seismicity conditions are important aspects of all development projects in California. Although most projects have little or no effect on geology, any project involving construction will have some effect on soils and topography, and all may be affected by certain geologic events, such as earthquakes, even though they are protected through building codes and other construction standards and regulations.

Geologic hazards evaluated in this section include seismic conditions, such as fault movement, groundshaking, and liquefaction. Soil constraints evaluated include erosion, shrink-swell potential, and landsliding. Erosion and sedimentation issues are addressed briefly here and more fully in section 3.9 (Hydrology and Water Quality). Regulatory and physical settings are described, followed by an analysis of the potential for geologic, seismic, and soil resources impacts based on specified impact significance criteria.

Mineral resources are present in the City. The impact evaluation identifies locations where the state has designated important mineral resources, regulations governing those resources, and an analysis of how General Plan implementation could affect mineral resources.

The primary sources of information for the analysis in this section are the Issues and Opportunities Paper 3: Natural Hazards (MIG, 2006) and the Draft General Plan Update (July 2009), unless otherwise noted. Other data sources include regional studies published by federal, state, and local agencies dealing with geotechnical conditions in the area and environmental documents for projects within the City.

In response to the NOP (Appendix A), the Governor's Office of Emergency Services provided summary comments regarding the specific types of hazards that must be addressed in the General Plan Update and evaluated in the EIR. These hazards included seismic and geologic hazards, which are evaluated in this section.

ENVIRONMENTAL SETTING

Topography

The City of Richmond is characterized by a large flat area (the Bay Plain) and a series of four southeast-northwest tending ridges. From west to east, these are the San Pablo-Potrero Hills Ridge, the Berkeley Hills, the San Pablo Ridge, and the Sobrante Ridge. The most notable ridgeline is that of the San Pablo-Potrero Hills Ridge, which extends in a northwest direction along the San Pablo Peninsula from Potrero Point (west of the Santa Fe Channel) to Point San Pablo. The elevation of the range rises from sea level to almost 400 feet. Brooks Island, Castro Rocks, and Red Rock are part of the same geologic formation. The Bay Plain, which lies between the Potrero Hills

Ridge and the north ends of the Berkeley Hills and San Pablo Ridge, is characterized by a long marshy and, in places, hilly shoreline, and by extensive flatlands where the population of Richmond is concentrated.

The other three ridges, the Berkeley Hills, San Pablo Ridge, and Sobrante Ridge, are the westernmost extensions of the Briones Hills, a complex of hills and valleys noted for rugged topography and unstable slopes. Between the Berkeley Hills and San Pablo Ridge is Wildcat Canyon, a rugged, wild area, owned in large part by the East Bay Regional Park District. On the north side of the San Pablo Ridge (elevations approaching 1,100 feet), the valley of San Pablo Creek (known as the El Sobrante Valley) separates San Pablo Ridge from Sobrante Ridge (elevations up to over 800 feet).

Point Pinole Regional Park is part of a plateau that is an extension of the Sobrante Ridge. Elevation within the park ranges from sea level to 100 feet. This plateau continues southeasterly through the Hilltop Area (elevation 200 feet) into El Sobrante (elevation 300 feet) where it joins the Sobrante Ridge (as high as 800 feet). The Richmond Annex Hills lie in the southeasterly corner of the City. Rising to 160 feet above sea level, they are a northern extension of 300-foot high Albany Hill, which is located just south in Albany.

Geology

The City of Richmond is located within the Coast Ranges Geomorphic Province. This region extends from Northern California to the Transverse Ranges in Southern California. The terrain was created by tectonic forces that compressed ancient sedimentary deposits into a sub-parallel series of anticlines (concave downward) and synclines (concave upward). These folds were subsequently right-laterally faulted, uplifted, and eroded into their present configuration. Figure 3.7-1 illustrates the locations of the principal rock formations in the City that are described below.

Richmond is underlain by a complex assemblage of "Basement Rocks" known as the Franciscan Formation. The Franciscan Formation consists of sedimentary and volcanic rocks that accumulated to a thickness of more than 50,000 feet, probably in a deep part of the oceanic basin beyond the continental slope, during Late Jurassic to Late Cretaceous time. Most of the Franciscan rock types are dense, hard, and resistant and form ground that will be generally stable during earthquake shaking. However, where intensively sheared and/or weathered, these rocks disintegrate into much less stable ground, and the slopes underlain by these sheared materials are much less stable than areas of outcropping hard rock.

Above the Franciscan Formation lie tertiary marine and non-marine sedimentary and volcanic rocks. Outcrops of marine sedimentary rocks formed when the sea invaded the area south of Santa Rosa in Miocene and Eocene time (24 million to 5 million years ago) are very limited in Richmond. However, Miocene and Eocene rocks are represented by a sequence of hardened sandstone and shale. On the surface in shallow areas and under the bay waters is a combination of alluvium and bay mud.

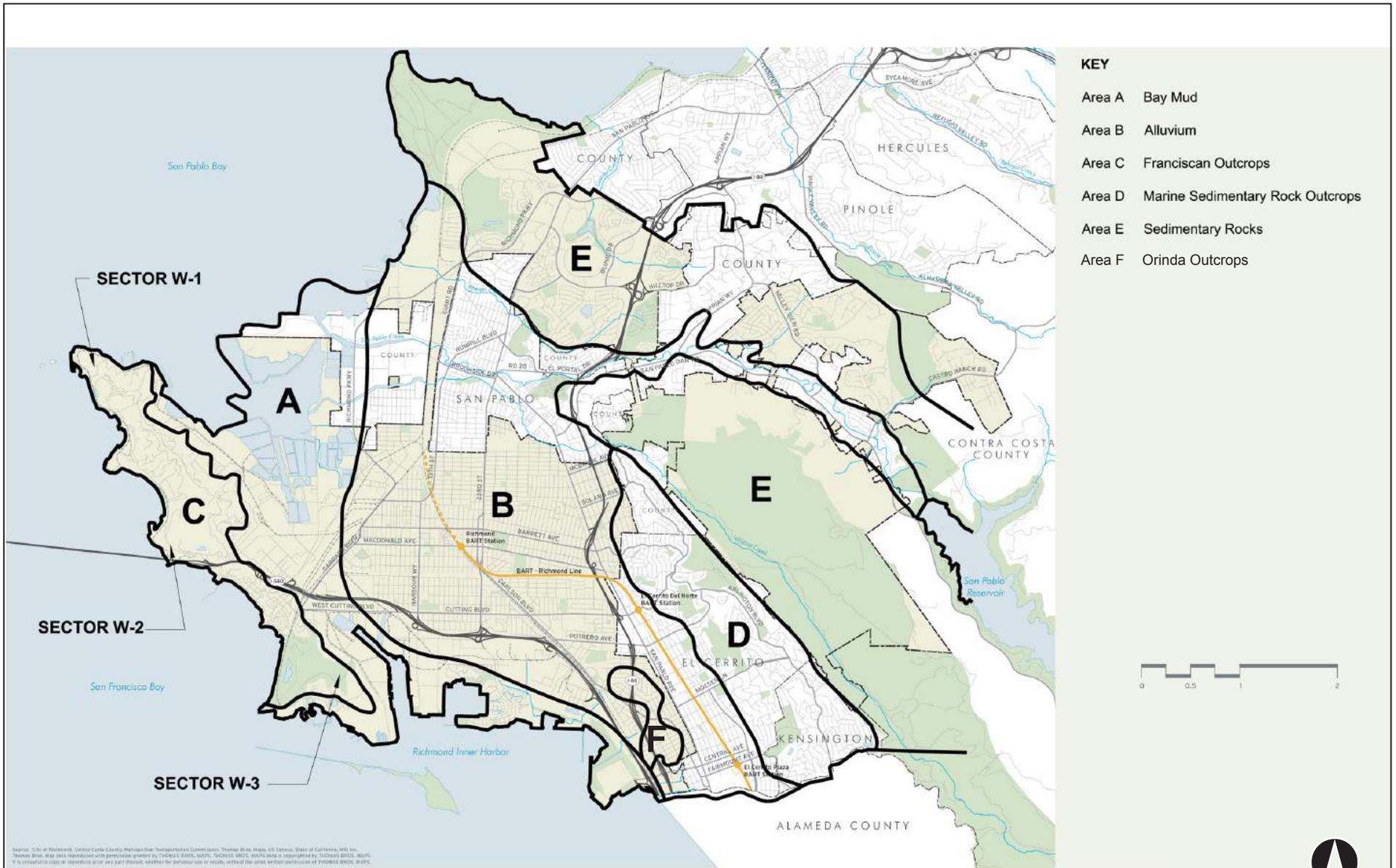


FIGURE 3.7-1
Geology and Mineral Resource Sectors



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In the El Sobrante Valley area, the bedrock is from the Contra Costa Group, a formation of poorly sorted sedimentary rocks consisting mostly of sandstone and siltstone. However, portions of the bedrock consist of marine sedimentary rocks, primarily mudstone and siltstone with lesser amounts of sandstone, of Miocene age (24 million to 5 million years ago). The San Pablo/Potrero Hills Ridge and the hills within the Richmond Annex area consist of Franciscan out-crops. This formation is composed of sandstone, serpentine, chert, greenstone, and metamorphic rocks. In geologic time comparisons, the Franciscan Formation is the oldest exposed geology in the region. In an unshered state, these rocks are dense and hard and generally stable during earthquake shaking. Soils formed on the steep slopes tend to be shallow and well drained.

Red Rock, Brooks Island, and Point Isabel all display outcrops of the Franciscan Formation; there are some differences, however, between the islands. Red Rock is mostly comprised of chert; Brooks Island is largely sandstone and shale; and Point Isabel contains a greater variety of rocks within the assemblage.

Point Pinole Park and the San Pablo Plateau lie within the Contra Costa Group. Exposures of this formation are evident east and north of the Berkeley Hills. These rocks are a friable, weakly constructed conglomerate of sandstone and siltstone, and contain significant amounts of clay material. Soils that develop on these rocks tend to be clay rich and susceptible to shrinking and swelling with a high potential for landslides on steep slopes.

The majority of the coastal lowland areas are deep alluvium soils on top of the Franciscan assemblage. Alluvium is typically a mixture of inter-bedded stiff clays, silts, gravel, and sands. Portions of these soils are derived from the eastern hills and others were deposited by marine actions during the formation of San Francisco Bay. The uppermost geologically recent sediment is a marine deposit of soft gray silty clay known as Bay Mud. There is probably some inter-layering with sands and silts near the shoreline. Bay Mud deposits underlie the Marina Bay area, the Santa Fe Channel, lands west of Castro Street and areas west of North Richmond.

The geologic conditions found in the Hilltop Mall area are similar to those found at the recent residential development to the west of Hilltop and at the Hilltop Green residential subdivision to the east of Interstate 80. The area is characterized by a series of low ridges and shallow swales. These ridges and swales reflect the geological structure of the bedrock. The Orinda Formation is the underlying rock material. The Orinda Formation consists of materials ranging from partially consolidated (partially rocklike) claystone, siltstone, sandstone and conglomerates to unconsolidated clay, silt, sand and gravel. A layer of tuff (compacted volcanic fragments) is present within the Orinda Formation.

Faults and Seismic Hazards

Repeated tectonic events in the San Francisco Bay Area resulted in a complex geologic structure with numerous folds, faults, and cross faults. Today, the most significant manifestation of these forces with respect to the City is the San Andreas fault system and Hayward Fault Zone.

The Hayward Fault Zone is the southern extension of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay), the Healdsburg fault (Sonoma County), and the Maacama fault (Mendocino County). The Hayward fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose. The Hayward fault in San Jose converges with the Calaveras fault, a similar type fault that extends north to Suisun Bay. The Hayward fault is designated by the Alquist-Priolo Earthquake Fault Zoning Act as an active fault. A characteristic feature of the Hayward fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward fault is estimated at 9 millimeters per year (mm/yr).¹

The Hayward Fault Zone runs approximately along the west ridge of Wildcat Canyon (see Figure 3.7-2) within the City. It crosses through Parchester Village and extends into San Pablo Bay. There have been two recorded incidents of major earthquakes along the Hayward fault. A (moment magnitude [MW]) 6.5 earthquake occurred on June 10, 1836 and a (MW) 6.9 earthquake occurred on October 21, 1868.

The Wildcat fault, considered an inactive branch of the Hayward fault, runs approximately parallel and close to the Hayward fault. Other inactive faults within the City include the San Pablo fault, the Franklin fault, and the Pinole fault. The San Pablo fault is thought to traverse the southwest portion of Richmond transecting the Ford Peninsula in Marina Bay and the northern side of the San Pablo Peninsula.

The San Andreas fault, located 15 miles to the west, could produce some serious consequences to Richmond. The greatest Bay Area region earthquake experienced in historic times occurred along the San Andreas fault on April 18, 1906, with a magnitude of (MW) 7.8.

The magnitude (MW) 6.9 Loma Prieta earthquake occurred in October 1989 with its epicenter about 70 miles south of Richmond. The resulting damage in Richmond was relatively slight in comparison to that in San Francisco and Oakland. Older buildings were damaged, cracking appeared in residences and commercial buildings, and there was damage in the industrial areas in the vicinity of the Port. City staff relocated from City Hall which was declared to be unsafe. There were no bridge or building collapses, and no significant fire damage. The energy released during the Loma Prieta earthquake was just 3 percent of the amount of energy released during the 1906 earthquake.

Three moderate earthquakes occurred along the Calaveras fault, twenty miles to the southeast, in 1980. The Morgan Hill Earthquake of April 24, 1984, also occurred on this fault. Their effects on Richmond were insignificant. The maximum credible earthquake on this fault is of the order of magnitude (MW) 6.3.

1 Environmental Science Associates, Chevron Energy and Hydrogen Renewal Project Draft EIR, SCH #2005072117, prepared for City of Richmond, May 2007, p. 4.7-7.

Six significant earthquakes have occurred in the San Francisco Bay Area, commencing with the 1868 earthquake. Other faults between 1868 and 1906 were estimated as being in the range of magnitude (MW) to 6.0 to 6.5.

After the 1989 Loma Prieta earthquake, the USGS together with other scientists prepared a study that estimates that there is a 62 percent probability of at least one magnitude (MW) 6.7 or greater earthquake, capable of causing widespread damage, striking somewhere in the San Francisco Bay region before 2032. Such major earthquakes may occur in any part of the region that extends from Healdsburg down to Salinas. The probability of such earthquakes occurring on the Hayward and Rogers Creek faults is 27 percent. It was further projected that there was at least an 80 percent chance of one or more magnitude (MW) 6 to (MW) 6.6 earthquakes occurring in the Bay region before 2032.

Groundshaking

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (MM) intensity scale (see Table 3.7-1) is commonly used to measure earthquake damage due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

Earthquake Intensity	Effects Observed	Average Peak Acceleration
I	Earthquake shaking not felt. But people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them: trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	< 0.0015 g
II	<i>Effect on people:</i> Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	< 0.0015 g
III	<i>Effect on people:</i> Felt by most people indoors. Some people can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake: the shaking is like that caused by the passing of light trucks.	< 0.0015 g
IV	<i>Other effects:</i> Hanging objectives swing. <i>Structural effects:</i> Windows or doors rattle. Wooden walls and frames creak.	0.015 g-0.02 g ^a
V	<i>Effect on people:</i> Felt by everyone indoors. Many estimate duration of shaking. But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ban had struck the walls. <i>Other effects:</i> Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. <i>Structural effects:</i> Doors close, open, or swing. Windows rattle.	0.03 g-0.04 g

TABLE 3.7-1		
MODIFIED MERCALLI SCALE OF EARTHQUAKE INTENSITIES		
Earthquake Intensity	Effects Observed	Average Peak Acceleration
VI	<p><i>Effect on people:</i> Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened.</p> <p><i>Other effects:</i> Hanging objectives swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objectives displaced or upset.</p> <p><i>Structural effects:</i> Weak plaster and Masonry D* crack. Windows break. Doors close, open, or swing.</p>	0.06 g-0.07 g
VII	<p><i>Effect on people:</i> Felt by everyone. Many are frightened and run outdoors. People walk unsteadily.</p> <p><i>Other effects:</i> Small church or school bells ring. Pictures thrown off walls, knickknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rustle.</p> <p><i>Structural effects:</i> Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced pampers and architectural ornaments fall. Concrete irrigation ditches damaged.</p>	0.10 g-0.15 g
VIII	<p><i>Effect on people:</i> Difficult to stand. Shaking noticed by auto drivers.</p> <p><i>Other effects:</i> Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver.</p> <p><i>Structural effects:</i> Masonry D* heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.</p>	0.25 g-0.30 g
IX	<p><i>Effect on people:</i> General fright. People thrown to ground.</p> <p><i>Other effects:</i> Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees.</p> <p><i>Structural effects:</i> Masonry D* destroyed; Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Reservoirs seriously damaged. Underground pipes broken.</p>	0.50 g-0.55 g
X	<p><i>Effect on people:</i> General Panic.</p> <p><i>Other effects:</i> Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into small craters, and, in muddy areas, water fountains are formed.</p> <p><i>Structural effects:</i> Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.</p>	> 0.60 g
XI	<p><i>Effect on people:</i> General panic.</p> <p><i>Other effects:</i> Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.</p> <p><i>Structural effects:</i> General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.</p>	> 0.60 g
XII	<p><i>Effect on people:</i> General panic.</p> <p><i>Other effects:</i> Same as for Intensity X. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.</p> <p><i>Structural effects:</i> Damage nearly total, the ultimate catastrophe.</p>	> 0.60 g
<p>Notes:</p> <p>a. g is gravity = 980 centimeters per second squared.</p> <p>*Masonry A: Good workmanship and mortar, reinforced, designed to resist lateral forces; Masonry B: Good workmanship and mortar, reinforced;</p> <p>*Masonry C: Good workmanship and mortar, unreinforced; Masonry D: Poor workmanship and mortar, weak materials like adobe.</p> <p>Sources: Richter, C.F., <i>Elementary Seismology</i>, 1958; Analytical Environmental Services, <i>Point Molate Mixed-Use Tribal Destination Resort and Casino Project Draft EIS/EIR</i>, Table 3.2-3, July 2009.</p>		

Scientists predict groundshaking for an event on the Hayward fault will be severe to violent along the length of the fault. Rupture of the full Hayward fault would generate structurally damaging ground motions in Richmond ranging from Modified Mercalli intensity VII to X.^{2,3} Figure 3.7-3 shows the approximate locations and MM estimates in Richmond for an earthquake on the Rodgers Creek-North Hayward fault for a Magnitude 7.1 earthquake (ABAG earthquake planning scenario) on the Rodgers Creek and North Hayward fault. The information depicted on the map prepared by ABAG is intended for planning use only, and is not intended to be site-specific. Rather, it depicts the general risk within the City. The relative risk from community to community. Intensities may be incorrect by one unit higher or lower.

Liquefaction

Liquefaction may occur when loose, unconsolidated, saturated fine- to medium-grained sandy soils are subjected to ground vibrations during a seismic event. This usually occurs in areas where the groundwater table is within 50 feet below the ground surface, and is generally associated with uncompacted, saturated, or nearly saturated, non-cohesive sandy and silty soils. When loose soil sediments are shaken, a sudden increase in pore water pressure causes the soils to lose strength and behave as a liquid. If the liquefying layer is near the ground surface, the effects may resemble those of quicksand. If the layer is deep below the ground surface, it may provide a sliding surface for the material above it and/or cause differential settlement of the ground surface, which may damage building foundations by altering weight-bearing characteristics. Liquefaction can affect soils to 50 feet deep during prolonged periods of groundshaking.

Figure 3.7-4 illustrates potential liquefaction locations, which were estimated by AN West, Inc. Consulting Engineers, which developed geotechnical conditions information for the Issues and Opportunities Paper 3: Natural Hazards (MIG, 2006). These locations are generalized, based on limited soils testing.

As identified by the consulting engineers, liquefaction occurs along creeks and within the Bay Plain area. Potential liquefaction locations include an alluviated zone along the course of San Pablo and Wildcat Creeks where loose saturated sands and gravel are present, smaller isolated zones in North Richmond, the Burlington Northern Santa Fe rail yards, lands north and east of Harbor Channel, and isolated areas north and east of Marina Bay. There are also bands of alluviated land along Interstate 80 from Cutting Boulevard to Wildcat Creek, Cutting Boulevard from San Pablo Avenue to the Union Pacific Railroad, and along the Union Pacific Railroad from Cutting Boulevard to North Richmond.

The State has not designated any liquefaction hazard areas in the City under the Seismic Hazard Zones Mapping Program (see Regulatory Setting, below).

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- 2 Association of Bay Area Governments, Shaking Hazard Intensity Maps, March 2007. <http://gis.abag.ca.gov/website/Shaking-Maps/viewer.htm>
 - 3 U.S. Geological Survey, Working Group On California Earthquake Probabilities, Earthquake Probabilities in the San Francisco Bay Region: 2002–2031, USGS Open-File Report 03-214, Chapter 7, 2003.

**ABAG
Earthquake Shaking Scenario**

Modified Mercalli Intensity
Shaking Severity Level

- X-Very Violent
- IX-Violent
- VIII-Very Strong
- VII-Strong
- VI-Moderate
- V-Light



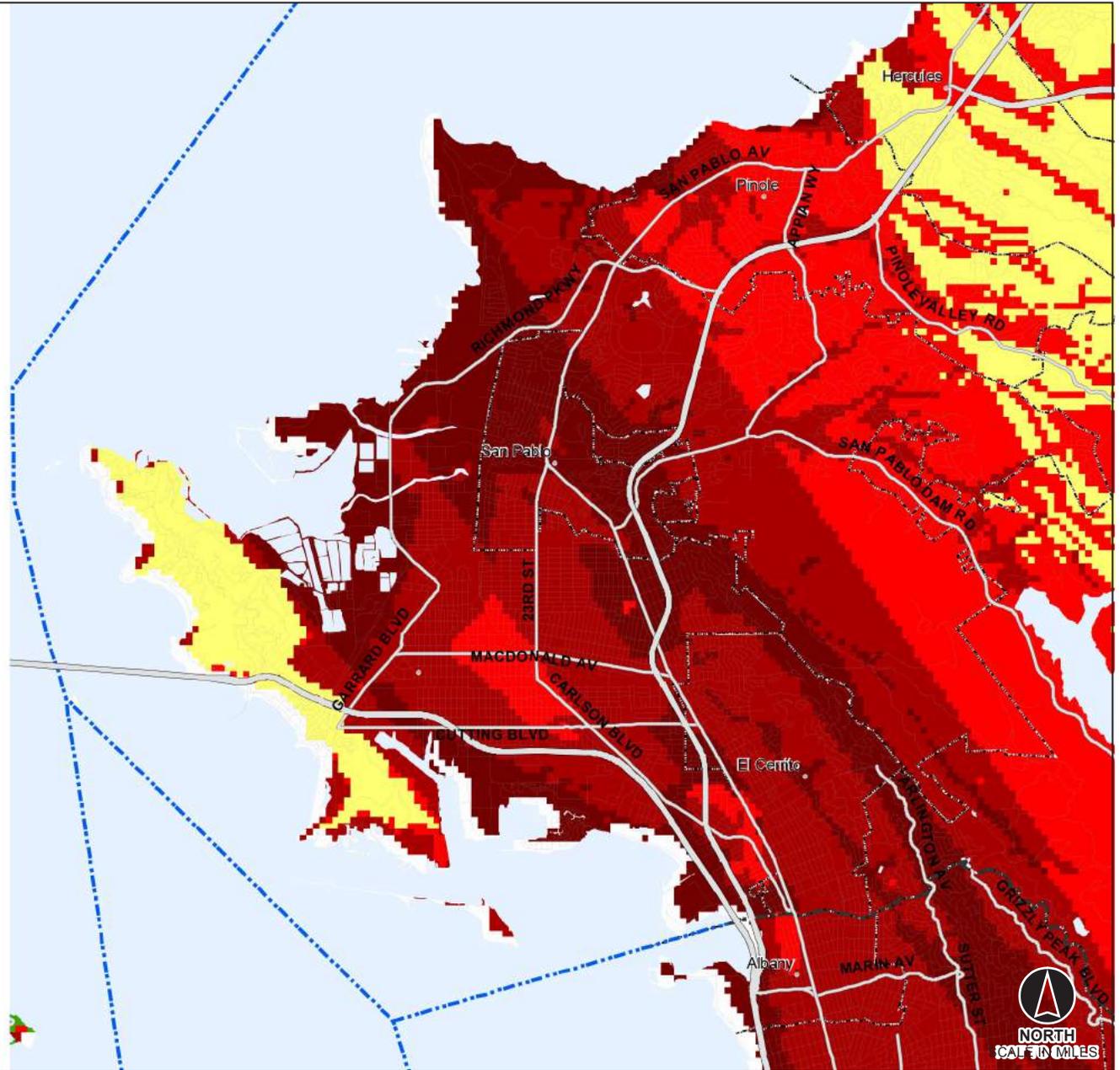
Scale: 1 inch = 1.36 miles

This map is intended for planning use only, and is not intended to be site-specific. Rather, it depicts the general risk within neighborhoods and the relative risk from community to community. Intensities may be incorrect by one unit higher or lower.

This map is available at <http://quake.abag.ca.gov>

Source: ABAG Earthquake Program, June 2004

ABAG Geographic Information Systems



**FIGURE 3.7-3
ABAG Earthquake Shaking Scenario:
Rodgers Creek and North Hayward Fault Earthquake - Magnitude 7.1**



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Richmond GPU EIR

Tsunami and Seiche

Tsunamis (seismic sea waves) are long period waves that are typically caused by underwater disturbances (landslides), volcanic eruptions, or seismic events. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level. There have been 19 recorded tsunamis in the Bay Area during the period of 1868 to 1968. The maximum wave height associated with these tsunamis was just under 15 feet at the Golden Gate Tide Gage in 1868. After natural attenuation across the Bay, estimates have been made that the wave height was approximately half that on the Richmond shoreline and reduced to nothing by the Carquinez Strait.⁴

The West Coast and Alaska Tsunami Warning Center in Alaska and the Pacific Tsunami warning Center in Hawaii monitor potential tsunamis. The Centers currently issue warnings when a 7.5 magnitude earthquake or greater occurs within 3 hours tsunami travel time of the epicenter, and issue watches when the travel time is within 3 to 6 hours of the epicenter. Information is transmitted to the Governor's Office of Emergency Services Warning Control Center and local emergency managers.

There are no State or other officially designated tsunami evacuation zones within the City.

A seiche is an earthquake-generated wave within enclosed or restricted bodies of water such as lakes and reservoirs caused when an earthquake ground wave matches the natural period of oscillation of the body of water. Seiche risk within the shoreline areas would be minimal because there are no large confined bodies of water with the depth of water to resonate with earthquake generated shaking. Catastrophic damage can result during earthquakes from a dam failure or from large masses of earth that might be broken loose and slide into a reservoir or the Bay. The major risk of seiches in the City would be that earthquake movement of water within San Pablo Reservoir might overtop the dam.

Landslides

Landsliding is a form of ground failure where there is a relatively rapid downslope movement of a mass of soil, rock and rock debris. The term is also used here to include mudslides and earthflows. Landsliding is affected by the degree of water saturation, strength of rocks, slope angle, mass and thickness of deposit and type and extent of vegetative cover. Landslides occur as a result of shearing between layers of soil below the ground surface. In clay the ground slumps or drops in a mass, in Bay Mud the ground spreads laterally. Soil flows occur when the cohesion of the soil fails generally after heavy rainfall. Rainfall saturates the soil, adding weight and decreasing friction. Landslides occur typically after heavy rainstorms following a slow build up of saturated soil after a seasonal total of 10 to 15 inches of rainfall. Most landslides occur on slopes greater than 15 percent. Landslides impact adjacent areas by removing support from upslope areas and by imposing greater load on to downslope properties and structures.

4 Environmental Science Associates, Chevron Energy and Hydrogen Renewal Project Draft Environmental Impact Report, prepared for City of Richmond (SCH # 2005072117), May 2007, p. 4.8-11.

The rotational slump (a drop of a mass of soil with movement of the base outwards) is a common slide failure in the Bay Area and occurs slowly with rates of movement of 5 feet per year. Debris flows can be very slow to rapid and can occur as fast as 5 feet a day of movement. Debris flows most commonly occur on slopes between 50 to 100 percent in steepness. Significant debris flow can occur when a storm from 4 to 8 inches occurs following seasonal rainfall of 10 to 15 inches. Typically, debris flows will occur in the middle or end of winter. Deeper slides typically occur late in the wet season after the water has migrated deep into the ground.

There are three areas within the City that have been subject to major landsliding activity in recent years: the El Sobrante Valley where landslides have occurred on both the San Pablo and Sobrante Ridges, the Point Richmond area along the San Pablo/Potrero Hill Range, and the Berkeley Hills. Other slides have occurred within the Hilltop area and along the more northern reaches of the San Pablo/Potrero Hills Ridge; however, the geology within these areas is generally more stable than in the Sobrante Ridge, San Pablo Ridge, and the Berkeley Hills.

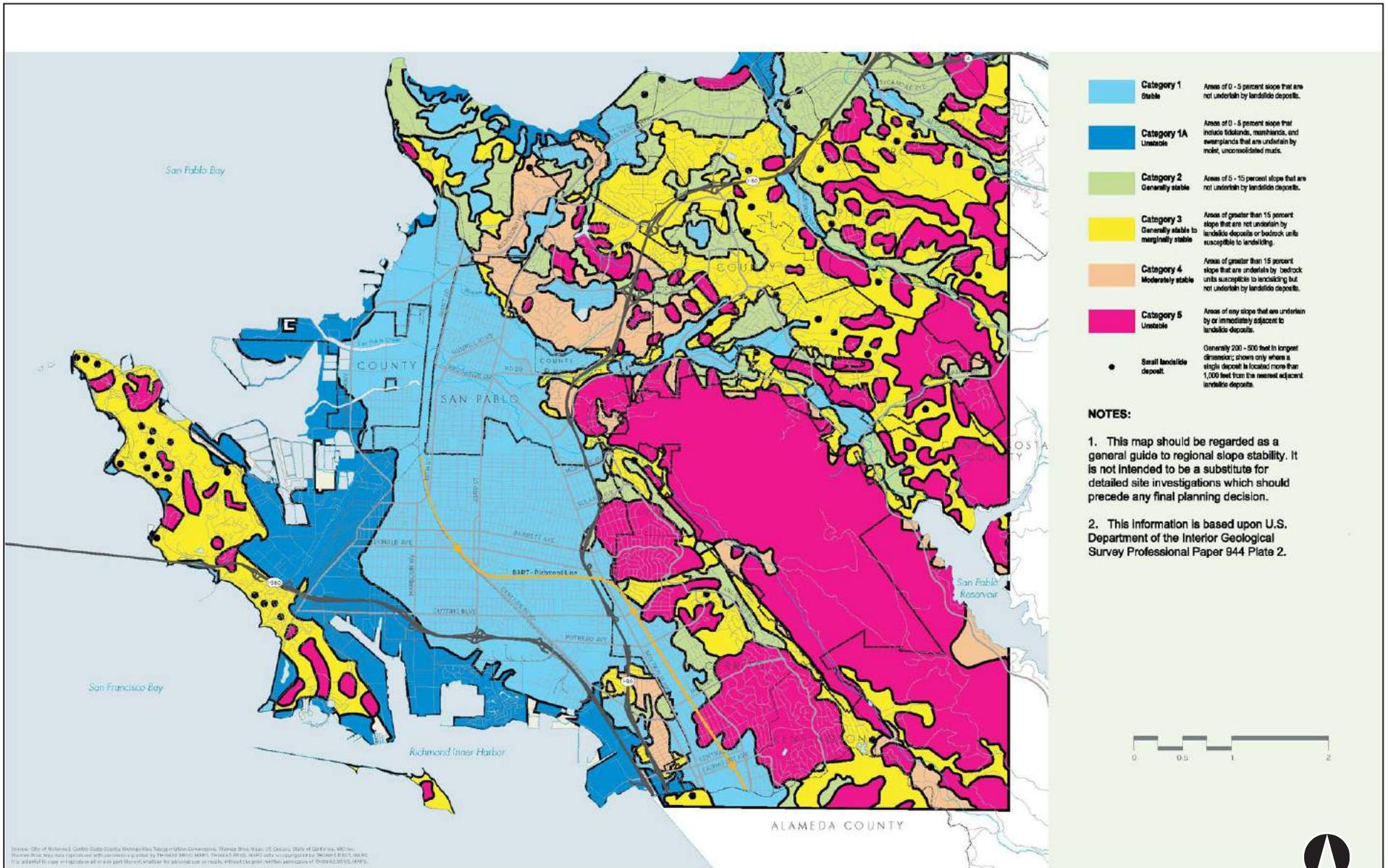
The El Sobrante Valley area has proved to be unstable and prone to landsliding and was intensively reviewed following landsliding after heavy rains. On record with the City are numerous soil studies and environmental impact reports that have been prepared on proposed developments in the El Sobrante Valley area. The El Sobrante Geotechnical Study, which reported on the various geological hazards, was included as Addendum 2 to Part B of Volume Two of the August 1994 Richmond General Plan, Technical Appendix. Landsliding in the study area was considered to be a more significant primary geologic hazard than earthquake shaking and faulting, and also a more significant problem than expansive soil and soil creep on the hillsides.

Landslide activity occurred in 1983 in the Point Richmond area as a result of major rainstorms. Landsliding is common in the area to the south and east of the Richmond Parkway/I-80 interchange. A slide that occurred on the I-80 to the north of this location was confined to the embankment fill placed during construction of the I-80 and would probably only have involved the upper few feet of the underlying soils and bedrock.

Areas of potential landslide hazard are shown in Figure 3.7-5.

Soils and Related Hazards

Soil types found in Richmond include: Tierra Loam, Millsholm Loam, Los Osos Clay Loam and Clear Lake Clay. The predominant drainage class of these soils, which is a measure of the expected natural frequency and duration of wet periods, are moderately well drained or better. In most areas of Richmond, the groundwater infiltration rate is slow or very slow. Drainage in areas of the City outside of the Bay Plain area is relatively rapid due to steep topography, which is also a contributing factor to surface runoff and erosion (see section 3.9, Hydrology and Water Quality, for additional information). Soils classified as poorly drained (Clear Lake Clay) are found in the Bay Plain portion of the City which overlaps with those areas that are the most urbanized in Richmond. The generally fine-grained nature of the clay and loam soils in Richmond tends to retard percolation into the water table, but the underlying sediments contain sufficient medium to coarse-grained material to permit



Source: City of Richmond, 2009.



FIGURE 3.7-5
Landslide Potential

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limited infiltration into the underground aquifer, particularly along the pervious channels of the City's many creeks.

Expansive Soils

Expansive soil occurs in clay soils and results in the shrinking and swelling of such soils with change in moisture conditions. The shrinking and swelling cause problems with building foundations, slabs-on-grade, and pavement, unless identified and addressed during design and correctly undertaken during construction. Expansive soil is prevalent in the Bay Plain area.

Subsidence and Settlement

Subsidence is the sudden (over a period of seconds to days) sinking of an area with little or no horizontal motion. In the Bay Area, it is caused primarily by excessive groundwater or natural gas withdrawal. However, these activities are not conducted within the City and, based on limited subsidence data, there is only slight subsidence in comparison to other waterfront areas around the San Francisco and San Pablo Bays.

Settlement is the gradual downward movement of an engineered structure (e.g., a building) caused by the compaction of the unconsolidated material below the foundation. The addition of fill to alluvial and Bay Mud areas will cause settlement. Analysis of the settlement for a 10-foot-high levee on Bay Mud in the location of Wildcat Creek indicated that it would settle 1.2 feet with half of that occurring within 12 years.

Artesian Conditions

Seeps and springs on hillsides can cause problems if not investigated and proper drainage provided. In the Bay Plain area of Richmond, sand layers between clay layers build up artesian pressure that may burst through the soil layer above when excavation is undertaken above. Appropriate drainage measures may be necessary.

Mineral Resources

Mineral production in the City has been largely limited to sand, gravel, and rock products. Mining was at one time undertaken in the study area for manganese, crude oil, and clay. Mining for sandstone and crushed rock was until recently limited to a quarry on Canal Boulevard near the Port of Richmond and at Point Molate. Both quarries have ceased operation.

The Office of Surface Mining, under the direction of the State Mining and Geology Board, has classified some lands within the City as Mineral Resource Zone-2 (MRZ-2), which indicates the existence of a deposit that meets certain criteria for value and marketability. The State has also designated these areas as regionally significant "sectors." These locations are shown in Figure 3.7-1 (Geologic Map).

Sector W-1 is located on the knobby bayfront hills of the north end of the San Pablo-Potrero Hills Ridge. San Pablo Bay runs along the entire northeastern boundary of the project area. Property to

the south is undeveloped. Other potential sources of crushed rock exist along the ridge but cannot be mined because nearby land is developed as a petroleum product tank farm.

Sector W-2 is located to the south of Sector W-1 on the San Pablo-Potrero Hills Ridge, about one-quarter mile north of the Richmond-San Rafael Bridge toll plaza. This quarry was in production from 1907 until recently. The principal uses for material from this quarry have been riprap, railroad ballast, and aggregate.

Sector W-3 is located on the eastern slope of San Pablo-Potrero Hills Ridge at Point Potrero and contains Richmond's second crushed stone quarry operation which has also recently ceased quarrying operations. This Sector also contains the remains of an old clay quarry that began operation in 1907. The clay derived from Franciscan shale was used in the manufacture of fire brick and other brick products.

According to the California Department of Conservation, the 50-year demand for aggregate to the south and east of the San Francisco Bay is about 45 percent permitted, with the remainder not met by permitted sources. The two small quarries in Richmond that have recently ceased operation used to produce less than 0.5 million tons per year. Aggregates are brought to Richmond from quarries in San Rafael, Vallejo, and the Livermore area.

REGULATORY CONTEXT

Federal

There are no federal regulations that are directly applicable to geotechnical hazards or mineral resources aspects of the proposed project. Erosion control standards are required under the federal National Pollution Discharge Elimination System (NPDES) permit process for storm drainage discharge for construction activities that have the potential to cause erosion that can, in turn, cause sedimentation in receiving waters. The NPDES permit requires implementation of nonpoint source control of stormwater runoff through the application of a number of Best Management Practices (BMPs) at construction sites. These BMPs are meant to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies.

State

Alquist-Priolo Earthquake Fault Zoning Act

The State legislation protecting the population of California from the effects of fault-line ground-surface rupture is the Alquist-Priolo Earthquake Fault Zoning Act. In 1972, the State of California began delineating Earthquake Fault Zones (called Special Studies Zones prior to 1994) around active and potentially active faults to reduce fault rupture risks to structures for human occupancy. This Act has resulted in the preparation of maps delineating Earthquake Fault Zones. The Act provides for special seismic design considerations if developments are planned in areas adjacent to active or potentially active faults.

Active faults are generally defined as those faults that show evidence of any or all of the following:

1. Topographic or physiographic expressions suggestive of recent fault movement.
2. Fault creep indicated by distortions of the works of man.
3. Records of surface rupture in historic times, either within or adjacent to the study area.
4. A history of seismic activity as recorded by instrumental means.

Projects within earthquake fault zones require geologic evaluation to determine if a potential hazard from any fault, whether previously recognized or not, exists. No structure may be placed across the trace of an active fault and an area within 50 feet of an active fault is presumed to be underlain by active branches of the fault unless proven otherwise.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (California Public Resources Code, Division 2, Chapter 7.8) became effective in 1991 to identify and map seismically hazardous areas for the purpose of assisting cities and counties in preparing the safety elements of their general plans and to encourage land use management policies and regulations that reduce seismic hazards. These regulations apply to public buildings and a large percentage of private buildings in the State. The recognized hazards include strong groundshaking, liquefaction, landslides, or other ground failure. These effects account for approximately 95 percent of economic losses caused by earthquakes. The Act has resulted in the preparation of maps delineating Liquefaction Zones and Earthquake-Induced Landslide Zones of Required Investigation. The official Seismic Hazard Zones map for the Richmond Quadrangle was released in 1993. There are no mapped liquefaction hazard zones in the City.⁵

California Building Code

The state regulations protecting human-occupied structures from geo-seismic hazards are contained in California Code of Regulations, Title 24, Part 2 (the California Building Code [CBC]). These regulations apply to public buildings and a large percentage of private buildings in the state. All projects submitted for permit application on or after January 1, 2011 will need to show complete compliance with the 2010 CBC. City and county codes are permitted to be more stringent than the CBC, but are required to be no less stringent. The City of Richmond Building Code consists of the 2009 International Building Code, as amended by the 2010 CBC, and as further modified by City of Richmond amendments designed to be used in conjunction with the 2010 CBC and the 2010 California Green Building Standards Code.

Chapter 16 of the Code deals with structural design requirements governing seismically resistant construction (Section 1604), including (but not limited to) factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design (Sections 1613.5 through 1613.7). Chapter 18 of the Code includes (but is not limited to) the requirements for foundation and soil investigations (Section 1803); excavation,

5 California Geological Survey, Seismic Hazard Zones Mapping Program, Richmond Quadrangle, 1993. http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_rich.pdf.

grading, and fill (Section 1804); allowable load-bearing values of soils (Section 1806); and the design of footings, foundations, and slope clearances (Sections 1808 and 1809), retaining walls (Section 1807), and pier, pile, driven, and cast-in-place foundation support systems (Section 1810). Chapter 33 of the Code includes (but is not limited to) requirements for safeguards at work sites to ensure stable excavations and cut or fill slopes (Section 3304). Section 3304.1 of the Code includes (but is not limited to) grading requirements for the design of excavations and fills (Sections J106 and J107 of the 2010 CBC) and for erosion control (Sections J109 & J110 of the 2010 CBC).

Construction Standards for Roadways and Bridges

The State of California has established construction standards and design criteria for roadways to safeguard life and property. Construction standards and seismic design criteria are contained in such regulatory codes as Caltrans' Seismic Design Criteria Version 1.2 (December 2001), Highway Design Manual, section 110.6, Earthquake Consideration (November 2001) and section 113, Geotechnical Design Report (November 2001), or similar codes adopted by a city for roadway corridor protection. These criteria deal with pavement and subsurface utility design (flexible joints and couplings, overpass construction, etc.), slope stability (especially slumping, settling, and liquefaction in fills), alignment modification to reduce exposure to fault rupture or intense groundshaking, and ground failures such as liquefaction. Prior to construction, geotechnical studies are required to be undertaken: recommended seismic-protection measures are required to be accommodated in the project design. The recommendations provide the required protection from the anticipated effects of seismic groundshaking. Adherence to these standards of protection is mandatory and would reduce the risk of injury or death from earthquakes to the maximum extent technically practicable.

The State guidelines protecting bridges and overpasses from geo-seismic hazards are contained in Caltrans' Bridge Design Specifications, Bridge Memos to Designers, Bridge Design Practices Manual, and Bridge Design Aids Manual. These manuals are updated regularly and provide state-of-the-art information to address geo-seismic issues that affect the design of transportation infrastructure. Bridge design is required to be based on the "Load Factor Design methodology with HS20 44 live loading (a procedure to incorporate the estimated weight of the vehicles and/or pedestrians on the bridge with the weight of the bridge for loading calculations)." Seismic resistant design is required to conform to the Bridge Design Specifications, and section 20 of Bridge Memos to Designers, as well as the Caltrans Seismic Design Criteria.

Mineral Resources

Sections 2761(a) and (b) and 2790 of the Surface Mining and Reclamation Act (SMARA) provide for a mineral lands inventory process termed classification-designation. The California Division of Mines and Geology, and the State Mining and Geology Board are the state agencies responsible for administering this process. The primary objective of the process is to provide local agencies, such as cities and counties, with information on the location, need, and importance of minerals within their respective jurisdictions. It is also the intent of this process, through the adoption of Draft General Plan mineral resource management policies, that this information be considered in future local land-use planning decisions. Areas are classified on the basis of geologic factors, without regard to

existing land use and land ownership. The areas are categorized into four MRZs. Of the four categories, lands classified as MRZ-2 are of the greatest importance because they identify significant mineral deposits of a particular commodity. MRZ-3 areas are also of interest because they identify areas that may contain additional resources of economic importance. Areas designated by the Mining and Geology Board as "regionally significant" are incorporated by regulation into Title 14, Division 2 of the California Code of Regulations. Such designations require that a lead agency's land use decisions involving designated areas are made in accordance with its mineral resource management policies, and that they consider the importance of the mineral resource to the region or the state as a whole and not just the lead agency's jurisdiction.

SMARA also addresses the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining on public health, property, and the environment. SMARA's requirements apply to all surface mining operations in California that disturb more than one acre or remove more than 1,000 cubic yards of material including, but not limited to, prospecting and exploratory activities, dredging and quarrying, streambed skimming, borrow pitting, and the stockpiling of mined materials.

Local

City of Richmond Municipal Code

The City of Richmond Municipal Code section 12.44 contains provisions for excavation and grading that require measures to control erosion. Any project that involves disturbing more than 50 cubic yards of soil is required to obtain a grading permit pursuant to the City's grading ordinance. The permit requires the preparation of an erosion control plan.

Section 12.46 regulates mining activities and requires conformance with applicable sections of the State Surface Mining and Reclamation Act (SMARA).

Article 6 of the Municipal Code identifies the requirements for compliance with applicable sections of the California Building Code pertaining to geotechnical considerations. Section 6.12 (Code for the Seismic Retrofit of Hazardous Unreinforced Masonry Bearing Wall Buildings) specifically addresses requirements for mitigating safety hazards associated with older buildings.

Hillside Physical Constraint Area Ordinance

Zoning Ordinance section 15.04.510 D regulates development on hillside areas to preserve hills, ridges, and their natural features.

Multi-Hazard Mitigation Plan

Contra Costa County Office of Emergency Services and 12 incorporated cities in the county, including the City of Richmond, are participating in the process of creating a county-wide multi-hazard mitigation plan, which will enable the county and the City to take ongoing action to reduce or eliminate long-term risks to human life, property, and the environment from many types of natural hazards, such as earthquakes. Grant funding for the plan is through the Federal Emergency

Management Administration (FEMA). Public workshops are currently being held to solicit input into the plan.⁶

IMPACTS AND MITIGATION MEASURES

Method of Analysis

The geotechnical characteristics of a project site determine its potential for structural and safety hazards that could occur during construction and/or operation of a proposed project. The conditions presented in the Issues & Opportunities Paper 3: Natural Hazards, supplemented as necessary with widely available industry sources, were used to document regional and local geology. The following analysis considers the potential effects of components of the proposed General Plan described in Chapter 2, Project Description, of this EIR. Where potential geological or soils hazards are identified in the City, such hazards are assumed, at a programmatic EIR level, to affect any potential development within the City. Site assessment studies for specific structures would be required by the City to be undertaken at any proposed building site to characterize the extent and nature of geotechnical conditions at each proposed building site prior to issuing building permits.

The following analysis illustrates that the design-controllable aspects of building foundation support, protection from seismic ground motion, and soil or slope instability are governed by existing regulations of the State of California and the City of Richmond. The techniques implementing these regulations are generally recognized by geotechnical consultants in the Bay Area to be applicable and feasible. Implementation of applicable regulations, along with use of appropriate techniques would reduce, eliminate, or avoid potential risks associated with these hazards. The analysis acknowledges that compliance with these regulations is required, not optional. Compliance must be demonstrated by the project applicants within the City to have been incorporated in the project's design before permits for project construction would be issued.

The primary hazard associated with tsunami and seiche is flooding, which is evaluated in Impact 3.9-10 in section 3.9, Hydrology.

Potential effects related to mineral resources were evaluated through a review of mineral resource locations, as identified by the City, compared to locations where future development is planned by the proposed General Plan (i.e., the change areas).

Standards of Significance

For the purposes of this EIR, impacts related to geology and soils are considered significant if the proposed project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:

6 Contra Costa County. Local Multi-Hazard Mitigation Plan. www.contracosta.ca.gov/index.aspx?NID=2302. September 2009.

- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
 - ii) Strong seismic groundshaking;
 - iii) Seismic-related ground failure, including liquefaction; or
 - iv) Landslides;
- Result in substantial soil erosion or the loss of topsoil;
 - Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
 - Be located on expansive soil as defined in the California Building Code, creating substantial risks to life or property; or
 - Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

There would be no impacts related to soils supporting septic tanks or alternative wastewater disposal systems because wastewater is conveyed and treated within the City's wastewater collection system. As a result, this potential impact would not be relevant in Richmond, and no additional analysis is required or provided.

Adverse impacts in any of the above categories would be considered unavoidable significant effects of the project if they could not be (a) reduced to an acceptable level of risk, (b) eliminated, or (c) avoided by using existing techniques, generally recognized by geotechnical consultants in the Bay Area to be applicable and feasible.

For the purposes of this EIR, impacts related to mineral resources are considered significant if the proposed project would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- Result in the loss of availability of a locally-important mineral resource recovery site delineated in the General Plan, specific plan or other land use plan.

Project-Specific Impacts and Mitigation Measures

- 3.7-1 Buildout of the proposed General Plan would not expose people or structures to fault rupture, strong seismic groundshaking, or seismic-related ground failure beyond an acceptable level of risk which is minimized through adherence to the California Building Code. This is considered a *less-than-significant impact*.**

Within the City, there is one Earthquake Fault Zone encompassing the Hayward fault. The Hayward fault runs approximately along the west ridge of Wildcat Canyon, crossing through Parchester Village and extends into San Pablo Bay.

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Fault rupture almost always follows preexisting faults, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by groundshaking. Projects within earthquake fault zones require geologic evaluation to determine if a potential hazard from any fault, whether previously recognized or not, exists.

From a review of regional and local geo-seismic conditions, it is apparent that the City would be subjected to at least one major earthquake during the life of the plan. The resulting vibration would cause damage to buildings and infrastructure (primary effects) and could cause ground failures in loose alluvium, landslide deposits, Bay Mud, or poorly compacted fill (secondary effects).

The most susceptible structures to these types of hazards are unreinforced masonry buildings or buildings constructed on unreinforced brick foundations, which could have been constructed before building codes were adopted. Some newer buildings constructed before earthquake-resistant provisions were included in the codes could also be damaged during an earthquake. Unless the buildings are identified and properly reinforced, building occupants, visitors, or workers could be exposed to potential hazards from falling debris or structural failure. Older masonry buildings without seismic reinforcement (unreinforced masonry) are the most susceptible to the type of structural failure that can result in injury or death. Wood-frame buildings one or two stories high (e.g., single-family dwellings) are considered to be the most structurally resistant to earthquake damage.

Regulatory Considerations for Reducing Seismic Risk

The policies and criteria of the State Mining and Geology Board state that no structure may be placed across the trace of an active fault and an area within 50 feet of an active fault is presumed to be underlain by active branches of the fault unless proven otherwise.

To reduce the primary and secondary risks associated with seismically induced groundshaking, it is necessary to take the location and type of subsurface materials into consideration when designing foundations and structures. In the City of Richmond, commercial, institutional, and large residential buildings and all associated infrastructure are required to reduce the exposure to potentially damaging seismic vibrations through seismic-resistant design, in conformance with Chapters 16 and 16A, Structural Design, section 1613, Earthquake Loads, of the CBC, as adopted by the City.

Adherence to the Building Code, as required by state and City regulations, would ensure maximum practicable protection available for users of buildings and associated infrastructure. Adherence would include:

- Use of CBC seismic standards as the minimum seismic-resistant design for all proposed facilities
- Seismic-resistant earthwork and construction design criteria, based on the site-specific recommendations of a California-registered civil engineer in cooperation with the project's California-registered geotechnical and structural engineers (section 1802 ff and 1802A ff)
- An engineering analyses that demonstrates satisfactory performance of alluvium or fill where either forms part or all of the support, especially where the possible occurrence of liquefiable soils exists
- An analysis of soil expansion potential and appropriate remediation (compaction, removal/replacement, etc.) prior to using any expansive soils for foundation support

To address potential hazards associated with older buildings that may present seismic safety hazards, the City would be required to implement the provisions of its Code for the Seismic Retrofit of Hazardous Unreinforced Masonry Bearing Wall Buildings (Municipal Code section 6.12).

The design of the roads, bridges (vehicular and pedestrian overcrossings), and underground utilities (especially gas and water pipelines) would be required to comply with adopted design criteria, or with other accepted non-building structure standards to reduce the primary and secondary risks associated with seismically induced groundshaking.

In addition to CBC regulations that are enforced and monitored at the local level, proposed General Plan policies and implementing actions, listed below, are intended to regulate land use, development standards, and construction practices to reduce the risk to humans and property in the event of an earthquake or other geological activity.

Policy

SN1.1 Geologic and Seismic Safety. Minimize risk of injury, loss of life and property damage from seismically induced and other known geologic hazards. Regulate land use and apply development standards and construction practices to reduce the risk to humans and property in the event of an earthquake or other geological activity.

Actions

- SN1.A Earthquake Fault Zone. Utilize the existing Alquist-Priolo Earthquake Zone Maps to guide the location of development and utilities to safe areas, and enforce use restrictions where necessary. Where development is proposed within the zone, require study of potential impacts related to fault movement in the design of all structures, roadways, utility lines and other facilities.
- SN1.B Building Structure Safety Standards. Regularly review and update building standards and guidelines to ensure that all structures in private, public or quasi-public ownership including municipal buildings are designed to protect people and property from hazards.
- SN1.C Geotechnical Review Guidelines. Regularly review and update geotechnical review guidelines for major redevelopments or new developments to determine the degree of seismic and geologic hazards that might be expected for a particular structure or location. Guidelines should require site-specific geotechnical studies on a case-by-case basis for projects proposed to be built on, or adjacent to, inactive bedrock faults or other potential geologic hazards

including geologic anomalies, slope instability or other potentially hazardous conditions. Ensure that the investigation is performed by technically qualified staff.

The preceding explanations of seismic issues indicate that the Building Code requires a site-specific geotechnical investigation and report for each construction site that (a) identifies seismic hazards and (b) contains appropriate recommendations and design criteria that conform to the analysis and implementation criteria described in the CBC, Chapters 16, 16A, 18, and 18A. Proposed Action SN1.C would require the City review all development proposals for CBC compliance. Thus, a regulatory framework exists including the proposed General Plan Update, the CBC, and the Municipal Code to address seismic hazards issues, including the risk of fault rupture and strong groundshaking and related secondary hazards. In view of these requirements, implementation of the proposed General Plan would have a ***less-than-significant impact*** regarding exposing people or property to seismic hazards.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to review to determine if it would result in exposure of people or structures to fault rupture, strong seismic groundshaking, or seismic-related ground failure beyond an acceptable level of risk in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.7-2 Adherence to the California Building Code would ensure that development under the proposed General Plan would not be subject to risk from settlement and/or subsidence of land, lateral spreading, or expansive soils, which could create risks to life and property. This is considered a *less-than-significant impact*.

Available information on subsidence indicates that there is only slight subsidence risk in Richmond, in comparison to other waterfront areas around the San Francisco and San Pablo bays. However, the addition of fill to alluvial and Bay Mud areas could cause settlement and, as shown in Figure 3.7-4, portions of the change areas are located in areas with liquefaction potential. Three types of settlement can occur: pile settlement caused by building loads; consolidation settlement in the layer of young soil of subsurface material; and seismically induced compaction settlement in artificial fill. Settlement can occur either uniformly or differentially. Uniform settlement in a building can create problems of poor drainage and potential failure of underground utility connections. Differential settlement can cause mechanical problems within a structure, although these can be minimized if the structural engineers are aware of the site conditions. For example, land that is subject to settlement can be surcharged before the building or road construction; that is, a calculated load of temporary dirt fill can be placed on the soil for a predetermined period of time. This has the

effect of forcing consolidation of the underlying soils. Based on a review of subsurface conditions in the City, the possibility of settlement should be investigated during early planning stages prior to any project's construction. Such investigation and treatment is a requirement of the City's Building Code.

Expansive soil is prevalent in the Bay Plain area. Expansive soils result in the shrinking and swelling of soils in moisture conditions, which causes problems with building foundations, slabs-on-grade, and pavement unless identified and addressed during design and corrected during construction.

Seeps and springs on hillsides can cause problems if not investigated and proper drainage provided. In the Bay Plain area of Richmond, sand layers between clay layers build up artesian pressure that may burst through the soil layer above when excavation is undertaken above. Appropriate drainage measures may be necessary.

The variability in soil conditions and potential for soil-related geotechnical hazards could increase the risk to people and structures, if soil characteristics were not appropriately identified and accounted for in project design. For example, using unsuitable materials would have the potential to create heaving, subsidence, or collapse problems leading to excavation wall failure, building or bridge settlement, and/or utility line and pavement disruption. The risk of soils collapse and settlement would be highest in areas containing fill. Lateral spreading and collapse could occur in unsupported walls of pits excavated in the existing fill or loose alluvium.

To eliminate any adverse effects of weak materials in the alluvium on buildings or non-building structures for human occupancy, the buildings and structures would need foundations that do not depend on weak soils for support. This can be accomplished by such methods as removing any existing unstable alluvium and replacing it with select fill (non-expansive, non-organic, appropriately sized mix of materials); covering any existing unstable alluvium with select fill; extending the foundations below any existing fill using cast-in-place piers, piles, or similar deep-foundation design.

It is relatively common to re-engineer weak soils specifically for stability prior to use. This can be done for the support of surface parking areas and light structures. An acceptable degree of soil stability can be achieved for expansive material by the required incorporation of soil treatment programs (replacement, grouting, compaction, drainage control, etc.) in the grading and construction plans to address site-specific soil conditions. A site-specific evaluation of soil conditions is required, as stated, above, and must contain recommendations for ground preparation and earthwork specific to the site, and incorporated into the construction design.

General Plan Policies SN1.1 and Implementing Actions SN1.C and SN1.D would reduce impacts related to expansive or unstable soils through development proposal compliance with the CBC and the geotechnical review guidelines. The Building Code requires a site-specific foundation investigation and report for each construction site that (a) identifies potentially unsuitable soil conditions and (b) contains appropriate recommendations for foundation type and design criteria that conform to the analysis and implementation criteria described in the CBC. As indicated, a regulatory framework exists to address soils issues, including the risk of soil expansion, subsidence, and settlement. In view of these requirements, implementation of the proposed General Plan would have

a ***less-than-significant impact*** regarding exposing people or property to the hazards related to settlement and/or subsidence of land, lateral spreading, or expansive soils.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to the same General Plan policies as well as state and local laws that oversee building in California to minimize potential impacts from settlement and/or subsidence of land, lateral spreading, or expansive soils, which could create risks to life and property. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.7-3 Project-specific review and conformity with the City's Hillside Preservation Ordinance would ensure that development under the proposed General Plan would not result in soil erosion that would result in long-term safety concerns or slope instability beyond an acceptable level of risk. This is considered a *less-than-significant impact*.

Soil erosion is a naturally occurring process. The agents of soil erosion are water and wind, each contributing a significant amount of soil loss. The effects of erosion are intensified with an increase in slope (as water moves faster, it gains momentum to carry more debris), the narrowing of runoff channels (which increases the velocity of water), and by the removal of groundcover (which leaves the soil exposed to erosive forces). Development under the proposed General Plan would not result in significant topsoil loss. The areas where topsoil could be present is generally limited to existing undeveloped areas designated agricultural lands, so development permitted under the proposed General Plan would not convert those lands to urban uses that could, in turn, reduce topsoil.

The potential for soil erosion can be accelerated and increased by cut-and-fill activities, such as may be needed for future development. When completed, surface improvements, such as buildings and paved roads, decrease the potential for erosion onsite, but can increase the rate and volume of runoff, potentially causing off-site erosion. If unmitigated, eroding soil can clog drainages and cause flooding, slope instability, and additional erosion by diverting water flow.

Grading for most structures that would be built under the General Plan is expected to be minimal, however, consisting of grading for foundations, building pads, access roads, and utility trenches in areas that are already developed. Excavations for utility trenches and foundations typically involve less than five feet of change in ground surface elevations. Most road and pad grading typically would be less than two feet deep. Nonetheless, deeper excavations could accompany the emplacement of underground facilities in the flatlands or road cuts in the uplands.

Because one of the major effects associated with grading is sedimentation in receiving waters, erosion control standards are set by the RWQCB through administration of the National Pollution Discharge Elimination System (NPDES) permit process for storm drainage discharge. The NPDES permit requires implementation of nonpoint source control of stormwater runoff through the application of a number of Best Management Practices (BMPs). These BMPs are meant to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies. A Storm Water Pollution Prevention Plan (SWPPP), as required by the RWQCB, is required to describe the stormwater BMPs (structural and operational measures) that would control the quality (and quantity) of stormwater runoff. Erosion and sedimentation issues are addressed more fully in section 3.9, Hydrology and Water Quality.

The following proposed General Plan Policies and Implementing Actions would reduce impacts related to erosion.

Policy

CN2.3 Natural Topography and Hillside Protection. Protect natural topography to preserve and enhance Richmond's natural beauty and require developers to concentrate residential development below the 400 foot elevation. The natural characteristics of the Berkeley Hills, San Pablo Ridge, El Sobrante Ridge, Point Potrero and San Pablo Peninsula should be protected and enhanced by regulating allowable methods of site preparation, grading, soils repair, foundation design and topographic alteration, as well as the height, color, material and siting of structures and roadways, quantities of cut and fill, placement of utility crossings and removal of vegetation.

Action

CN2.E Hillside Physical Constraint Area Ordinance. Continue to implement the Hillside Physical Constraint Area Ordinance, which prohibits large-scale redistribution of earth and alteration of topographic conditions on sloping sites.

Policy

CN2.6 Protect Soil and Reduce Erosion. Minimize soil depletion and erosion. Prevent erosion caused by construction activities. Retain natural vegetation and topography and minimize grading of hillsides.

Policies CN2.3 and CN2.6 addresses erosion and the need for site controls. In addition, the City of Richmond Municipal Code section 12.44 contains provisions for excavation and grading that require measures to control erosion. Any project that involves disturbing more than 50 cubic yards of soil is required to obtain a grading permit pursuant to the City's grading ordinance. The permit requires the preparation of an erosion control plan. The City's Hillside Physical Constraint Area ordinance regulates development on hillside areas to preserve hills, ridges, and their natural features, which also helps reduce erosion potential. In addition, implementation of Mitigation Measure 3.9-4 as required in section 3.9 Hydrology and Water Quality of this EIR would require additional measures such as construction scheduling and temporary and permanent sediment controls. Thus, erosion would not be a substantial hazard and implementation of the proposed General Plan would have a ***less-than-significant impact*** regarding soil erosion.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to the same General Plan policies as well as state and local laws that oversee building in California to minimize loss of topsoil and to reduce any potential for erosion. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.7-4 Development under the proposed General Plan would not result in landslide hazards beyond an acceptable level of risk. This is considered a *less-than-significant impact*.

There are three areas within the City that have been subject to major landslide activity in recent years: the El Sobrante Valley where landslides have occurred on both the San Pablo and Sobrante Ridges, the Point Richmond area along the San Pablo/Potrero Hill Range, and the Berkeley Hills. Other slides have occurred in the Hilltop area and along the more northern reaches of the San Pablo/Potrero Hills Ridge; however, the geology in these areas is generally more stable than in the Sobrante Ridge, San Pablo Ridge, and the Berkeley Hills. Development in those areas under the proposed General Plan Update could expose people and property to landslide hazard. As shown in Figure 3.7-5, portions of the City, including portions of some of the change areas, are located in areas categorized as unstable. The following proposed General Plan Policies and Implementing Actions would reduce impacts related to landslides.

Policy

SN1.1 Geologic and Seismic Safety. (see above)

Action

SN1.C Geotechnical Review Guidelines. (see above)

Policy

CN2.3 Natural Topography and Hillside Protection. (see above)

General Plan Policy SN1.1 and its implementing action direct that land use, development standards, and construction practices are to be used to reduce the risk to humans and property from geological activity such as naturally occurring landslides. Policy CN2.3 is intended to protect hillside areas by regulating site preparation, grading, soils repair, foundation design and topographic alteration, quantities of cut and fill, placement of utility crossings, and removal of vegetation. The City's Hillside Physical Constraint Area ordinance regulates development on hillside areas to preserve hills, ridges and their natural features, which help reduce potential landslide hazard due to human activity.

As required under the Building Code, development in areas prone to landslides requires a geotechnical investigation involving both geological and soils evaluation to identify potentially unsuitable soil conditions, such as landslides, and to develop appropriate recommendations for mitigating associated hazards. For example, landslide repair typically involves removing soil, incorporating a crushed rock and piped drainage system, and replacing the soil as an engineered fill. Pile supported retaining walls are used to prevent soil creep. Swales and ditches are used to convey water away from the top of slopes prone to landslides. During design and construction, proper grading practices involving good compaction, keyways and benches in slopes, surcharging of downslope areas, proper subdrain system installation, flatter slopes, and the provision of toe support are important for avoidance of landsliding. It is also important to ensure that increases in impervious areas, such as paved and roofed areas, are limited and properly addressed in design. Design includes consideration of ditching, landscape watering, and maintenance of drainage systems.

In view of these requirements and the availability of standard engineering methods to mitigate potential hazards, implementation of the proposed General Plan would have a ***less-than-significant impact*** regarding exposing people or property to landslide hazards.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to the same General Plan policies as well as state and local laws that oversee building in California to minimize risks due to landslide hazards. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.7-5 Development under the proposed General Plan would not affect mineral resource availability. This is considered a *less-than-significant impact*.

Sandstone and shale aggregates are present in the City, and the State has designated three MRZ-2 locations as regionally significant sectors (W-1, W-2, and W-3) in the San Pablo-Potrero Hills Ridge Area. There are potential sources of crushed rock in Sector W-1, but they cannot be mined because of the tank farm on the ridge to the west. Quarries in the other two sectors have ceased operations. Although extraction operations are limited, the sector and MRZ-2 designations remain in effect until changed by the State Mining and Geology Board.

The proposed project does not propose any mineral extraction, nor would it involve any changes in existing extractive mineral resource operations within the City, including the change areas. Changes in land use or development at the designated sectors that would limit availability of or access to these sectors, if any, would be subject to the requirements of the Surface Mining and Reclamation

Act (SMARA) sections 2762-2763, as described in the Regulatory Setting. In addition, the following proposed General Plan Policies and Implementing Actions would reduce impacts on mineral resources.

Policy

CN2.8 Mineral Resources. Preserve mineral resources in undeveloped areas that have been classified by the State Mining and Geology Board as having statewide or regional significance for possible future extraction. Avoid nuisances, hazards or adverse environmental, public health and safety impacts associated with mineral extraction by employing methods such as development setbacks, buffers, screening and other appropriate measures. In locations where mineral extraction is no longer a viable practice, provide environmentally sensitive remediation and reuse.

General Plan Policy CN2.8 would minimize the potential for future development to threaten the availability of mineral resources. General Plan Policy CN2.8 would require that the best management practices available be used in order to avoid nuisances, hazards, or adverse environmental, public health, and safety impacts including development setbacks, buffers, screening and other appropriate measures. Therefore, potential impacts associated with availability of mineral resources and land use compatibilities would be less than significant.

Development under the General Plan would increase the number of buildings, roadways, and other structures that would use aggregate materials in their construction. Aggregates are brought to Richmond from quarries in San Rafael, Vallejo, and the Livermore area. Future growth (with or without the project) would incrementally contribute to reduction of aggregate resources and the subsequent depletion of those resources. The depletion of aggregate resources could have economic effects by limiting future growth and employment opportunities. However, this would not result in a physical change in the environment within the General Plan area, and this is considered a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to the requirements of the Surface Mining and Reclamation Act and the same General Plan policies reduce to impacts on mineral resource availability. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

The context for the analysis of cumulative soils, geology, and seismicity impacts is the City of Richmond, including all cumulative growth therein, as represented by full implementation of the

General Plan. The proposed General Plan would attract an increased number of people to an area exposed to the potential effects related to seismic hazards such as groundshaking, landslides, or liquefaction. Implementation of the General Plan would allow an increase in the number of structures that could be subject to the effects of expansive soils or other soil constraints that could affect structural integrity, roadways, or underground utilities. Site preparation and development would create temporary and/or permanent ground surface changes that could alter erosion rates.

Potentially adverse environmental effects associated with seismic hazards, as well as those associated with expansive soils, topographic alteration, and erosion, are site-specific and generally do not combine with similar effects that could occur with other projects in the City or elsewhere. Implementation of the provisions of the City's Building Code, the National Pollution Discharge Elimination System permit requirements, and the General Plan Safety Policies would ensure that potential site-specific geotechnical conditions and soil conditions would be addressed fully in the design of future development and that potential impacts would be maintained at less-than-significant levels. Therefore, the proposed General Plan would result in *less than significant* cumulative geologic, seismic, and soil impacts.

REFERENCES

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- Environmental Science Associates, *Chevron Energy and Hydrogen Renewal Project Draft EIR*, SCH #2005072117, prepared for City of Richmond, May 2007.
- U.S. Geological Survey, Working Group On California Earthquake Probabilities, Earthquake Probabilities in the San Francisco Bay Region: 2002–2031, USGS Open-File Report 03-214, Chapter 7, 2003.

3.8 HAZARDOUS MATERIALS

3.8 HAZARDOUS MATERIALS

INTRODUCTION

This section of the EIR assesses potential adverse environmental, health, and safety impacts that could be caused by exposure to hazardous materials resulting from implementation of the proposed General Plan. It identifies the types of hazardous materials that are used or may be present in the City, general locations where those materials are used, and the extensive regulatory framework in place to manage risks to human health and the environment associated with that use.

The primary source of information for the Environmental Setting, and upon which the analysis is based, is the Issues and Opportunities Paper 3: Natural Hazards (MIG, 2006), unless otherwise noted. Other data sources include a variety of federal, state, and local agency databases and web sites that identify locations where hazardous materials are used.

There were no comments on the Notice of Preparation (Appendix A) that address hazardous materials concerns associated with General Plan implementation.

The reader is referred to section 3.3, Air Quality, for information on hazardous air emissions (e.g., from mobile sources such as vehicles and from stationary sources such as industries).

ENVIRONMENTAL SETTING

Hazardous Materials Use

Hazardous materials are routinely used, stored, and transported in the City and are associated with industrial and commercial/retail businesses, as well as in educational facilities, hospitals, and households. Hazardous materials use is generally in proportion to the mix and types of land uses in an area. In Richmond, approximately 27 percent of the acreage within the City consists of commercial and industrial land uses. Commercial uses in Richmond include local-serving retail businesses located along mixed-use corridors and region-serving businesses located in the Downtown, Hilltop Mall, and the Central Avenue corridor. Richmond's industrial past is reflected in the large amount of land dedicated to port and industrial uses. Richmond is one of three cities in the Bay Area that operates a commercial port. Within the City limits are a large refinery, railroad yards, multiple manufacturing, assembly, and warehousing businesses, research and development facilities, and a landfill (West Contra Costa County Sanitary Landfill). Most of the heavy industrial uses are located south of Interstate 580 and west of the Richmond Parkway.

The hazardous materials may be stored in small quantities in buildings and structures, in aboveground storage tanks (ASTs), underground storage tanks (USTs), drums, and other types of containers. Typically, USTs are used by businesses, such as gasoline stations.

Oil refineries handle, store, and process large quantities of flammable materials and acutely toxic substances. Processing, transportation, and transfer operations are the primary activities that have the potential for posing a human health and environmental risk of hazardous materials releases.

Some of the industrial/manufacturing facilities use certain classes of hazardous materials that require accidental release scenario modeling and risk management plans to protect surrounding land uses. Regulations pertaining to these types of facilities are summarized in the Regulatory Setting. In Richmond, there are seven facilities that because of the volume and type of hazardous materials use are required to prepare and maintain Risk Management Plans: Airgas Dry Ice, Chevron Richmond Refinery, Dreisbach Enterprises, General Chemical West-Richmond Works, Linde, Safeway Beverage Plant, and Veolia ES Technical Solutions.¹

Hazardous Waste

Hazardous waste generators in the City include industries, businesses, public and private institutions, and households. Federal, state, and local agencies maintain comprehensive databases that identify the location of facilities using large quantities of hazardous materials, as well as facilities generating hazardous waste.

The primary sources of hazardous waste originating in the study area are the petroleum refinery, manufacturing and processing that use chemicals, research laboratories, trucking facilities, and automotive repair.

Businesses generating between 100 and 1,000 kilograms (approximately 220 to 2,200 pounds) of hazardous waste per month (“small quantity generators”) and businesses that generate more than 1,000 kilograms (2,200 pounds) of hazardous waste, or over 1 kilogram (2.2 pounds) of acutely hazardous waste per month (“large quantity generators”) must operate in compliance with the federal Resource Conservation and Recovery Act (RCRA) and Hazardous Solid Waste Amendments (HSWA) laws and regulations. The federal EPA requires businesses to report RCRA- and HSWA-waste generation and shipments. According to EPA data, there are 177 small quantity generators and 34 large-quantity hazardous waste generators in the study area.

Hazardous wastes from these facilities are removed and transported out of the City to disposal and/or treatment sites that are licensed by the state, unless they are handled at one of six EPA-permitted hazardous waste disposal or treatment facilities in the City. There are no landfills in the City that are currently permitted to accept hazardous waste.² No hazardous wastes are accepted at the West Contra Costa County Landfill (WCCSL).

In addition to EPA-regulated large quantity and small quantity hazardous waste generators, hazardous wastes are generated by residential uses and some businesses. These wastes are not regulated by the EPA, but the City of Richmond operates programs to collect and properly dispose of

1 Contra Costa County Health Services, http://cchealth.org/groups/hazmat/risk_management.php, accessed September 4, 2009.

2 A closed Class I Hazardous Waste Management Facility (HWMF) is located adjacent to the WCCSL Class II sanitary landfill.

household hazardous waste (HHW). Data for the WCCSL show that the municipal solid waste stream contains small quantities of HHW, but its occurrence in the municipal solid waste stream is low, often comprising less than 0.5 percent in incoming waste.³

Hazardous Materials Transportation

Trucking on highways and rail transport is the most common method of transporting hazardous substances and hazardous waste in and around the City of Richmond. I-80 and I-580 as well as major arterials such as Richmond Parkway and Cutting Boulevard are primary transportation facilities on which hazardous materials and wastes may legally be transported. Other local roadways may also be used, subject to any local restrictions.

Three rail lines traverse the City: Union Pacific, BNSF, and Richmond Pacific. These rail lines are public carriers (regulated by the Public Utilities Commission [PUC]), the federal government – through railroads' common carrier obligation – requires railroads to transport hazardous substances whether the rail company wants to or not. Any shipper that chooses to use rail to transport hazardous materials may do so, provided the shipper and rail car(s) transporting the materials meet all federal rail safety rail transportation requirements for hazardous materials. The number of cars carrying hazardous materials through the City at any one time varies from train to train, as do the types and amounts of hazardous materials transported between origins and destinations. While the shippers and the railroads maintain comprehensive records where a rail car (including pressurized tanks carrying hazardous materials) is at any time, to maintain rail security, this information is not published.

Contaminated Sites

Business practices and the laws that regulate hazardous materials use and disposal have changed dramatically over the years. Many businesses through intentional action, lack of awareness, or accidental occurrences, or those that pre-date current requirements, have caused contamination on and around their properties. Historic and current land uses in which hazardous materials were used have the potential to cause environmental contamination (soil and water) as a result of inadvertent releases or improper disposal methods. Federal, state, and local government agencies are responsible for ensuring that sites where hazardous materials releases have occurred are properly investigated and cleaned up if the release poses a human health or environmental risk.

Agency databases provide information about sites that are being investigated and/or cleaned up. The listed sites are those that are being actively investigated and/or remediated under the oversight of one or more agencies. The information regarding sites is based on databases current as of August 2009. Throughout the life of the General Plan, some sites may be cleaned up, and new sites may be identified. Consequently, site-specific evaluations are recommended prior to any development to obtain the most current information about a site or an area.

3 Contra Costa County, WCCSL Bulk Materials Processing Center and Related Actions Draft EIR (SCH #2002102057), November 2003, p. 11-5.

Cortese List Sites

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the state, local agencies and developers to comply with the CEQA requirements in providing information about the location of hazardous materials release sites. Government Code section 65962.5 requires the California Environmental Protection Agency to update the Cortese List every year. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

The agency data resources that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements are listed below:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database.
- List of Leaking Underground Storage Tank Sites from State Water Resources Control Board (SWRCB) GeoTracker database.
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit.
- List of "active" Cease and Desist Orders (CDO) and Corrective Action Orders (CAO) from the SWRCB.
- List of hazardous waste facilities subject to corrective action pursuant to section 25187.5 of the Health and Safety Code, identified by DTSC. (There are no sites in Richmond on this list).

Information summarized from these databases is presented below.

Hazardous Waste and Substances Sites (DTSC Envirostor)

There are 24 sites in the City listed on DTSC's Envirostor database.⁴ Thirteen of the sites have been certified by DTSC as remediated, but require operational and maintenance land use controls. Eleven sites are still actively being investigated and/or remediated, and land use restrictions have been imposed at some of the sites.

Underground Storage Tanks (GeoTracker)

Prior to comprehensive regulation beginning in the early 1980s, older underground storage tanks – primarily used for gasoline – were single-walled steel tanks. The State of California now requires replacement of older tanks with new double-walled tanks, with flexible connections and monitoring systems. However, many of the older tanks have leaked as a result of corrosion and detached fittings. Extensive federal and state legislation addresses underground fuel storage tanks (USTs), including replacement and cleanup. The State Water Resources Control Board has been designated

4 California Department of Toxic Substances Control, EnviroStor, Search: Richmond, California, accessed September 3, 2009.

the lead regulatory agency in the development of UST regulations and policy. State law and regulations pertaining to USTs are in the California Health and Safety Code, Chapter 6.7, and the California Code of Regulations (CCR) Title 23, commonly referred to as the “California Underground Storage Tank Regulations.” State programs include leak reporting and investigation regulations, and standards for clean up and remediation. UST cleanup programs exist to fund the remediation and contaminated soil and groundwater caused by leaking tanks. California’s program is more stringent than the federal program, requiring that all tanks be double-walled, and prohibiting gasoline delivery to non-compliant tanks.

The San Francisco RWQCB maintains a listing of the known leaking USTs and remediation actions occurring within the City. As of August 2009, there were over 300 cases in the City listed in the UST database. Of those, over one-half are considered closed cases (either by the SWRCB or the County, which oversees some of the investigations). Fifty-six sites are actively undergoing investigation and/or remediation. The majority of the active sites are gas stations. Industrial facilities associated with petroleum refineries and transfer also comprise a large number of active sites.⁵

“Superfund” or Other Listed Sites

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) was developed to protect water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, the U.S. EPA maintains a list of all contaminated sites in the nation that are currently undergoing clean-up activities or have in the past undergone clean-up. This list is known as the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities, including sites that are on the National Priorities List (NPL) or under consideration for the NPL (“Superfund”). There are two NPL sites in the City: Liquid Gold Oil Corporation at Hoffman Boulevard and S. 47th Street, and United Heckathorn at 8th and Wright streets. The Liquid Gold Oil Corporation operated a re-refinery and recycled oil facility from 1972 to 1984. Waste motor oil, organic solvents, bunker oil, diesel, and other mixtures stored in tanks leaked or spilled onto the ground and were discharged into ponds, sumps, and ditches that drained to wetland areas. Remedial investigations and cleanup was performed. Although the site was de-listed from the NPL in 1995, it remains an “active” site under DTSC oversight and has land use restrictions.⁶ The United Heckathorn site is former shipyard, agricultural chemical warehouse, and formulating facility, currently a bulk loading and unloading facility for large ships. The site was contaminated with metals and pesticides (DDT, in particular). DDT was also found in sediments and shellfish in the adjacent Lauritzen Canal. Extensive environmental investigations were conducted in the 1990s; remedial actions that included removal of affected soil and sediment, placement of a protective cap, and marine monitoring were completed in 1999. Post-remediation monitoring indicates the remediation goals for DDT and dieldrin in water and sediments have not been maintained. Additional testing was performed in 2008, and a focused Feasibility Study is being

5 State Water Resources Control Board, GeoTracker. Search: Richmond, California, accessed September 3, 2009.

6 California Department of Toxic Substances Control, EnviroStor. http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=07290039, Search: Richmond, California. Accessed October 22, 2009.

prepared to address these issues. The site, with land use restrictions, remains on the NPL under US EPA oversight. Certification of cleanup is expected in 2013.⁷

Asbestos, Lead, Mercury, and Polychlorinated Biphenyls in Structures and Building Materials

Asbestos, a naturally-occurring fibrous material, was used as a fireproofing and insulating agent in building construction before such uses were terminated due to liability concerns in the late 1970s. Because it was widely used prior to the discovery of its adverse health effects, asbestos may be found in a variety of building materials and components such as insulation, walls and ceilings, floor tiles, and pipe insulation. Friable (easily crumbled) materials are particularly hazardous because inhalation of airborne fibers is the primary mode of asbestos entry into the body. Non-friable asbestos is generally bound to other materials such that it does not become airborne under normal conditions.

Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and in soils around buildings and structures painted with lead-based paint. In 1978, the federal government required the reduction of lead in house paint to less than 0.06 percent (600 parts per million [ppm]). However, some paints manufactured after 1978 for industrial or marine uses legally contain more than 0.06 percent lead. Excessive exposure to lead (even low levels of lead) can result in the accumulation of lead in the blood, soft tissues, and bones. Children are particularly susceptible to potential lead-related health problems because it is easily absorbed into developing systems and organs.

Old light tubes, thermostats, and other electrical equipment typically contain heavy metals such as mercury. Elemental mercury can also be found in many electrical switches. Due to accidental spills and historic disposal practices before the adoption of more stringent disposal regulations, it is possible elemental mercury may be present in non-structural features of the buildings located in the planning area. At certain levels of exposure, mercury vapors are toxic and can cause kidney and liver damage.

Polychlorinated biphenyl (PCB) is an organic chemical, usually in the form of an oil that was historically used in electrical equipment. PCBs are most commonly associated with pole-mounted electrical transformers, but they were also used in insulators and capacitors in building electrical equipment. PCBs are highly persistent in the environment, and exposure to PCBs can cause serious liver, dermal, and reproductive system damage. PCBs are also a suspected human carcinogen.

Typically, the presence of asbestos, lead, PCBs, or other materials is tested at the time a structure is proposed for demolition or renovation.

7 California Department of Toxic Substances Control, EnviroStor http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=07280015, Search: Richmond, California. Accessed October 22, 2009.

Hazardous Materials Incidents

The release of a hazardous material into the environment could cause a multitude of problems to property, or human health, the significance of which is dependent on the type, location, and quantity of the material released. Although hazardous material incidents can happen almost anywhere, certain locations may be at higher risk (e.g., industries that use large quantities of hazardous materials and transport hazardous materials through the City).

Contra Costa County maintains a database of hazardous materials incidents. Since adoption of the last General Plan (1994), there were approximately 300 reported incidents. Smaller incidents involved the discovery of illicit disposal of household-type wastes and unknown substances and items associated with illegal drug labs. Larger incidents involved spills or emissions at industrial facilities, at refineries, or road transportation accidents.

The City of Richmond Fire Department operates a hazmat team to respond to hazardous materials incidents. In the event of a large hazardous materials incident, other resources, such as county or state resources, may be required.

REGULATORY CONTEXT

Numerous federal, state, and local laws and regulations have been enacted to regulate the management of hazardous materials. For purposes of this report, the term “hazardous materials” refers to both hazardous substances and hazardous wastes. Implementation of these laws and the management of hazardous materials are regulated independently of the CEQA process through programs administered by various agencies at the federal, state, and local levels. An overview of the key hazardous materials laws and regulations that apply to the City is provided below.

Federal

Several federal agencies regulate hazardous materials. These include the U.S. EPA, the Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Applicable federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR). The U.S. DOT has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The U.S. Postal Service (USPS) has developed additional regulations for the transport of hazardous materials by mail. DOT regulations specify packaging requirements for different types of materials. U.S. EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations. The U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS) issues and enforces the Pipeline Safety Regulations to ensure the safety of interstate and intrastate pipelines transporting hazardous liquids, natural gas, and other flammable, corrosive, and toxic gases.

State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) has broad jurisdiction over hazardous materials management in the state. Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup, while enforcement of regulations has been delegated to local jurisdictions. Along with the DTSC, the RWQCB is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. RWQCB regulations are contained in Title 27 of the CCR. Additional State regulations applicable to hazardous materials are contained in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

Cal/EPA implements the “Unified Hazardous Waste and Hazardous Materials Management Regulatory Program” (Unified Program) regulations. The six program elements of the Unified Program are hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, aboveground storage tanks, hazardous material release response plans and inventories, risk management and prevention program and Uniform Fire Code hazardous substances management plans and inventories. The program is implemented at the local level by a local agency – the Certified Unified Program Agency (CUPA). The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction. The Contra Costa County Hazardous Materials Division of the county’s Health Services Department is the CUPA for the county, including the Richmond General Plan study area.

Department of Toxic Substances Control

The DTSC regulates hazardous waste in California primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA) of 1976, and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. In addition, DTSC reviews and monitors legislation to ensure that the position reflects the DTSC’s goals. From these laws, DTSC’s major program areas develop regulations and consistent program policies and procedures. Under RCRA, DTSC has the authority to implement permitting, inspection, compliance, and corrective action programs to ensure adherence to state and federal requirements. The Hazardous Waste Control Law (HWCL) passed in 1972 is administered by DTSC and provides for state regulation of existing hazardous waste facilities, which include “any structure, other appurtenances, and improvements on the land, used for treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous waste.”

Business Plan Act

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, contained to prevent or to mitigate injury to health or the environment. California’s Hazardous Materials Release Response Plans and Inventory Law, sometimes called the “Business

Plan Act,” aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

The State requires the owner or operator of any business that handles hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas at standard temperature and pressure, to develop and submit a business plan. The State of California Office of Emergency Services (OES), acting pursuant to Health and Safety Code section 25503.3, has developed a single comprehensive hazardous materials inventory form for businesses to use to submit their individual hazardous materials inventories. This form contains all state and federally required inventory information. Use of this form is mandatory.

California Accidental Release Program

The CalARP (CCR Title 19, Division 2, Chapter 4.5) covers businesses that store or handle more than a certain volume of specific regulated substances at their facilities. The CalARP regulations became effective on January 1, 1997, and include the provisions of the federal Accidental Release Prevention program (Title 40, CFR Part 68) with certain additions specific to the State pursuant to Article 2, Chapter 6.95, of the Health and Safety Code.

The list of regulated substances is found in Article 8, section 2770.5 of the CalARP regulations. The businesses that use a regulated substance above the noted threshold quantity must implement an accidental release prevention program, and some may be required to complete a Risk Management Plan (RMP). A RMP is a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential. The purpose of a RMP is to decrease the risk of an off-site release of a regulated substance that might harm the surrounding environment and community. A RMP includes the following components: safety information, hazard review, operating procedures, training, maintenance, compliance audits, and incident investigation. The RMP must consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day-care facilities, and must also consider external events such as seismic activity.

Above-Ground Petroleum Storage Tanks

The Above-Ground Petroleum Storage Act (APSA) applies to petroleum and petroleum products and byproducts that are stored above-ground in 55-gallon drums or larger containers. The owners and operators of these tanks are required to prepare a written Spill Prevention Control and Countermeasure (SPCC) plan conforming to applicable federal regulations. The SPCC plan must include a facility diagram, the type of product in each container, discharge prevention measures, secondary containment or other discharge or drainage controls, countermeasures for discharge recovery, response and cleanup, methods of disposal of recovered materials, and an emergency contact list.

Underground Storage Tanks

Businesses that store hazardous materials in underground tanks (including but not limited to gasoline, diesel fuels) are required to have tanks that can safely hold the materials, to ensure the integrity of the tanks and associated piping. State laws relating to underground storage tanks include permitting, monitoring, closure, and cleanup requirements. Regulations address construction and monitoring standards, monitoring standards for existing tanks, release reporting requirements, and closure requirements are contained in Chapter 6.7, Division 20 of the Health and Safety Code and Subchapter 16 of Title 23 of the California Code of Regulations, California Underground Storage Tank Regulations. Underground storage tank permitting is handled through local governmental agencies. Contra Costa County is the local agency designated to permit and inspect underground storage tanks and to implement related regulations.

Worker and Workplace Hazardous Materials Safety

Occupational safety standards exist in federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers must appropriately label containers, Material Safety Data Sheets must be available in the workplace, and employers must properly train workers.

Hazardous Materials Transportation

Section 31303 of the California Vehicle Code and DOT regulations state that hazardous materials being directly transported from one location to another (“through-transport”) must use routes with the least overall travel time (e.g., major roadways/highways instead of local streets). However, local roadways can be used for deliveries and pickups of hazardous materials wastes to or from a specific location. The California Highway Patrol (CHP) and Caltrans are the enforcement agencies for hazardous materials transportation regulations in the City. Transporters of hazardous materials and waste are responsible for complying with all applicable packaging, labeling, and shipping regulations. The California OES also provides emergency response services involving hazardous materials incidents. The City of Richmond Fire Department provides first-response to hazardous materials spills, supplemented, as necessary by County resources, as described above.

Investigation and Cleanup of Contaminated Sites

The oversight of hazardous materials release sites often involves several different agencies that may have overlapping authority and jurisdiction. The DTSC and RWQCB are the two primary State agencies responsible for issues pertaining to hazardous materials release sites. Air quality issues related to remediation and construction at contaminated sites are also subject to federal and State laws and regulations that are administered at the local level. Investigation and remediation activities

that would involve potential disturbance or release of hazardous materials must comply with applicable federal, State, and local hazardous materials laws and regulations. DTSC has developed standards for the investigation of sites where hazardous materials contamination has been identified or could exist based on current or past uses. The standards identify approaches to determining if a release of hazardous wastes/substances exists at a site and delineating the general extent of contamination; estimating the potential threat to public health and/or the environment from the release and providing an indicator of relative risk; determining if an expedited response action is required to reduce an existing or potential threat; and completing preliminary project scoping activities to determine data gaps and identifying possible remedial action strategies.

Siting of Schools On or Near Sources of Hazardous Materials

The California Education Code (section 17210 et seq.) outlines the requirements of siting school facilities near or on known or suspected hazardous materials sites, or near facilities that emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site. Recent legislation and changes to the Education Code identify DTSC's role in the assessment, investigation, and cleanup of proposed school sites. All proposed school sites that receive State funding for acquisition and/or construction must go through a comprehensive investigation and cleanup process under DTSC oversight. DTSC is required to be involved in the environmental review process to ensure that selected properties are free of contamination, or if the property is contaminated, that it is cleaned up to a level that is protective of students and faculty who will occupy the new school. All proposed school sites must be suitable for residential land use, which is DTSC's most protective standard for children.

Hazardous Materials in Structures

Asbestos is regulated as a hazardous air pollutant under the Clean Air Act and is also regulated as a potential worker safety hazard under the authority of the OSHA. Cal/OSHA considers asbestos-containing building material a hazardous substance when a bulk sample contains more than 0.1 percent asbestos by weight. Cal/OSHA requires that a qualified contractor handle material containing more than 0.1 percent asbestos by weight. Any activity that involves cutting, grinding, or drilling during building renovation or demolition, or relocation of underground utilities could release friable asbestos fibers unless proper precautions are taken. The San Francisco Bay Area Air Quality Management District (BAAQMD) also regulates asbestos abatement.

Several regulations and guidelines pertain to abatement of and protection from exposure to asbestos-containing materials (ACM) and lead-based paint. These include Construction Safety Orders 1529 (pertaining to ACM) and 1532.1 (pertaining to lead-based paint) from Title 8 of the CCR, Part 61, Subpart M of the CFR (pertaining to ACM). These rules and regulations prohibit emissions of asbestos from asbestos-related demolition or construction activities, require medical examinations and monitoring of employees engaged in activities that could disturb asbestos, specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers, and require notice to federal and local government agencies prior to beginning

renovation or demolition that could disturb asbestos. In California, ACM and lead-based paint abatement must be performed and monitored by contractors with appropriate certification from the California Department of Health Services.

The use and management of PCBs in electrical equipment is regulated pursuant to the Toxic Substances Control Act (40 CFR). These regulations generally require labeling and periodic inspection of certain types of PCB equipment and set forth detailed safeguards to be followed in disposal of such items.

Local

Contra Costa County

Hazardous Materials Area Plan

The Contra Costa County Hazardous Materials Area Plan (HMAP or Plan), adopted in 2005, is designed to protect human health and the environment through hazardous materials emergency planning and community right-to-know programs, which apply to the City. It describes the overall hazardous materials emergency response organization within Contra Costa County, establishes the lines of authority and coordination for hazardous materials incidents affecting Contra Costa County, and identifies the roles and responsibilities of local, State and federal government agencies necessary to minimize the impacts of a hazardous materials incident.

Hazardous Waste Management Plan

The Contra Costa County Hazardous Waste Management Plan, approved by the State in 1990, is the primary planning document for hazardous waste produced by facilities within the county. This plan outlines the procedures that county regulatory and response agencies use for managing, monitoring, containing, and removing hazardous materials from the site of an actual or threatened accidental release. The plan also identifies the agencies within the county responsible for the effective management of hazardous materials produced or generated.

City of Richmond

Hazardous Waste Management Element

The Hazardous Waste Management Element of the Richmond General Plan was adopted in 1994, following state approval of Contra Costa County's Hazardous Waste Management Plan (HWMP).⁸ It sets forth the City's goals and policies regarding handling, treatment, recycling, transfer, storage, transportation, and disposal of hazardous waste. The City references applicable portions of the

8 The state approved Contra Costa County's Hazardous Waste Management Plan prepared in accordance with the Tanner Bill (AB 2948) in 1990. As allowed under state law, each city within the County had the option to adopt a city hazardous waste management plan containing specified elements consistent with the approved County plan, incorporate applicable portions of the County plan, by reference, into the city General Plan, or enact an ordinance requiring all applicable zoning, subdivision, conditional use permits to be consistent with the County plan. The City chose to adopt its own hazardous waste management plan as part of the General Plan.

County HWMP as a basis for the City's plan, and requires that the siting of specified hazardous waste management facilities be consistent with the planning and criteria contained in the County HWMP.⁹

Household Hazardous Waste Element

The City's Household Hazardous Waste Element (an element separate from the City's General Plan) was adopted in 1991. The element describes generation of household hazardous waste (HHW) in Richmond, and evaluates strategies for collecting, handling, and disposing of HHW.

Industrial Safety Ordinance

The City of Richmond has adopted an Industrial Safety Ordinance (Municipal Code Chapter 6.43). This ordinance imposes regulations that supplement the requirements of California Health and Safety Code, Article 2 Chapter 6.95 concerning hazardous materials management, and is intended to prevent and reduce the probability of accidental releases of regulated substances that have the potential to cause significant harm to the public health and increase participation by industry and the public to improve accident prevention. These measures include submission of a safety plan to the City, stringent requirements for the contents of a safety plan and safety program, public review of the safety plan, authorization for the City to require changes in the safety plan or safety program, an expansion of the list of regulated substances beyond those covered by the federal and state Risk Management Program regulations and authorization for the City to expand audits and inspections to all units within the stationary source.¹⁰ There are two facilities located in the City of Richmond that are subject to this ordinance: Chevron Richmond Refinery and General Chemicals West Richmond Works.¹¹

IMPACTS AND MITIGATION MEASURES

Method of Analysis

The analysis of impacts associated with hazards and hazardous materials is based on available information on potential hazards that exist or may exist within the City along with a review of databases and hazardous materials lists containing information on hazardous materials sites. The analysis assumes that all future and existing development within the City complies with all applicable laws, regulations, design standards, and plans, and that the City and/or Contra Costa County (as appropriate) monitors and enforces such compliance.

9 City of Richmond, General Plan, Safety Element, Addendum to Hazardous Waste Management Plan, August 1994.

10 City of Richmond Municipal Code, section 6.43.

11 Contra Costa County Health Services, ISO List. www.cchealth.org/groups/hazmat/industrial_safety_ordinance_list.php. September 2009.

Standards of Significance

For the purposes of this EIR, hazardous materials impacts are considered significant if the proposed project would:

- Create a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or
- Be located on a site which is included on a list of hazardous materials sites (Cortese List) compiled pursuant to Government Code section 65962.5 and, as a result, would create a significant hazard to the public or the environment.

Project-Specific Impacts and Mitigation Measures

3.8-1 Implementation of the proposed General Plan would involve the routine use, storage, transportation, and disposal of hazardous materials in existing and proposed land uses. However, it would not create a significant hazard to the public or the environment. As a result, the proposed General Plan would have a *less-than-significant impact* with respect to use, storage, handling and disposal of hazardous materials.

The General Plan identifies change areas that would be designated to accommodate growth in the proposed General Plan, and it identifies the range of activities that could be expected to occur in proposed land use designations. The Business/Light Industrial land use designation includes research and development, light industrial, and warehousing. The Marine and Waterfront Commercial land use designation supports water-oriented businesses and activities including boat repair and marinas. The Industrial land use designation supports activities that require large parcels for manufacturing, assembly, and storage of goods. This land use designation may allow for warehousing and civic uses such as corporation yards and water treatment plants. The Port land use designation supports activities related to a working waterfront including port terminals, warehousing, commercial fishing, ship repair, and related office uses.

All of these land uses are likely to involve activities in which hazardous materials would be routinely used, stored, handled, and transported. Hazardous waste would also be generated.

Routine Hazardous Materials Use

The General Plan promotes the continuation of existing industrial and commercial activities as a viable and necessary element for the City's economy. It does not, however, propose a substantial change in land use designations or identify specific target industries or businesses that would, in turn, substantially increase hazardous materials use beyond that which already occurs.

Nonetheless, it is reasonably foreseeable that economic and employment growth under the General Plan could attract additional industries and commercial activities into the City, and provided such activities are consistent with General Plan land use designations and zoning, new development would involve routine hazardous materials use greater than existing conditions. The precise increase in the types and volumes of hazardous materials that could be present city-wide as a result of General Plan implementation is speculative, because the specific businesses that could operate in the change areas is not known, and because hazardous materials use is subject to continuous change as technologies evolve and as businesses change.

Residential and mixed-use development with neighborhood-serving retail, commercial, and office uses would also involve hazardous materials use, but at a reduced level, compared to industrial and manufacturing activities. Construction activities, regardless of the type or location of development, involve a variety of products and materials that may be a hazardous material. Wherever hazardous materials are used or stored, or hazardous waste generated, there is the potential for human exposure, and, under certain conditions, potential releases to the environment. In each situation, the potential hazards and the risks they would pose to people or the environment would depend on the nature and amount of the hazardous materials used, the location and containment measures where the materials would be used and stored, the processes and handling procedures for the materials, and the personnel dealing with the hazardous materials. The “exposure pathways” through which employees, the public, and the environment could be exposed include inhalation, ingestion, dermal (skin and eye) contact, and accidental releases that allow the hazardous materials to become airborne or enter waterways.

The potential risks associated with hazardous materials handling and storage would generally be limited to the immediate area where the materials would be located, because this is where exposure would be most likely. For this reason, the individuals most at risk would be employees or others in the immediate vicinity of the hazardous materials, rather than residents or visitors. For the most part, the health and safety procedures that protect workers and other individuals in the immediate vicinity of hazardous materials would also protect the adjacent community and environment. The pathways through which the community or the environment (e.g., local air quality and biota) could be exposed to hazardous materials include air emissions, transport of hazardous materials to or from the site, waste disposal, human contact, and accidents. However, the only primary potential pathway for public exposure to hazardous materials would be airborne emissions under normal operations or upset conditions.

As a result of hazardous materials use, there would be ongoing and likely an increase in the amount of hazardous waste generated with implementation of the proposed General Plan.

Risk of Upset/Accidental Release

As the number of commercial, industrial, and governmental operations that handle hazardous materials increase, the frequency of accidental release incidents, both on the site of the operations and on the routes used during the transport of hazardous materials, would be expected to proportionally increase.

Facility Operations

The General Plan does not identify industries and commercial businesses (including the refinery and port) that would be subject to more intense regulation and oversight than businesses (and households) that handle smaller quantities of more common materials.

Transportation

The routes currently used for transportation of hazardous materials would continue to be used through the life of the General Plan (roadway and rail), and the types of materials transported are not expected to change substantially because the location and development intensity of lands designated for industrial, commercial, research and development, and other hazardous materials-intensive uses would generally remain the same. The number of trips transporting hazardous materials would be expected to increase somewhat, however, because of the increased amount of hazardous materials generated by new commercial and industrial development. The potential for traffic accidents, due in part to the overall growth in traffic volume (to which the proposed project contributes) and congestion in the City and regional roadway network that traverses the city, would also be expected to increase. In addition, there may also be more sensitive receptors, such as those in residential uses, schools, home care facilities, and other buildings along these routes and near the businesses and government operations that handle hazardous materials. Taken as a whole, the frequency of accidental releases would be expected to increase. While the increase in the risk of exposure is most closely tied to the increases in residential population (i.e., number of people who may be exposed) and the amount of traffic on roads (i.e., frequency of traffic accidents involving vehicles carrying hazardous materials), the strongest correlation in potential accidental releases would be with the number of jobs that involve handling hazardous materials.

CFR Title 49, Parts 106 through 189, regulate the transport of hazardous substances on rail lines. Additionally, the rail industry, through the Association of American Railroads (AAR), has developed a detailed protocol on recommended railroad operating practices for the transportation of hazardous materials. The AAR issued the most recent version of this document, known as Circular OT-55-I, on August 26, 2005. The Circular details railroad operating practices for designating trains as "key trains" for certain types and amounts of hazardous substances, designating operating speed and equipment restrictions for key trains, designating "key routes" for key trains, and setting standards for track inspection and wayside defect detectors, assisting communities with emergency response training and information, and shipper notification procedures among others. These recommended practices were originally implemented by all of the Class I rail carriers operating in the United States; the most recent version of the circular also includes short-line railroads as signatories. Overall, the rail safety record has been extremely good. In 2005, 99.997 percent of rail hazardous substances shipments reached their final destination without a release caused by an accident. In fact, railroads have reduced hazmat accident rates by 86 percent from 1980 through 2005.¹²

A primary safety and security concern related to the rail transportation of hazardous materials is the catastrophic release or explosion in proximity to densely populated areas, including urban areas and

12 Association of American Railroad, "Hazmat Transport by Rail," February 2007.

events or venues with large numbers of people in attendance. Also of major concern is the release or explosion of a rail car in proximity to iconic buildings, landmarks, or environmentally significant areas. Such a catastrophic event could be the result of an accident, or a deliberate act of terrorism. The causes of intentional and unintentional releases of hazardous material are very different; however, in either case the potential consequences of such releases could be substantial. The consequences of an intentional release of hazardous material by a criminal or terrorist action are likely to be more severe than the consequences of an unintentional release because an intentional action is designed to inflict the most damage possible.

The Homeland Security Act of 2002 authorized the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce. In November 2008, the Transportation Security Administration (TSA) issued a final rule¹³ to enhance the security of the Nation's rail transportation system. This rule, codified in Title 49 of the CFR, Parts 1520 and 1580, established security requirements for freight railroad carriers; rail transit systems; and rail operations at certain, fixed-site facilities that ship or receive specified hazardous materials by rail. This rule codified the scope of TSA's existing inspection program and requires regulated parties to allow TSA and Department of Homeland Security (DHS) officials to enter, inspect, and test property, facilities, conveyances, and records relevant to rail security. This rule also requires that regulated parties designate rail security coordinators and report significant security concerns. This rule further requires that freight rail carriers and certain facilities handling specified hazardous materials be able to report location and shipping information to TSA upon request and implement chain of custody requirements to ensure a positive and secure exchange of specified hazardous materials. TSA also clarifies and amends the sensitive security information (SSI) protections to cover certain information associated with rail transportation.

Additionally, the Freight Rail Security Program is an innovative public-private partnership dedicated to assessing policies and technologies for enhancing security throughout the freight rail industry. One product of this partnership is the development of the Rail Corridor Risk Management Tool (RCRMT). The RCRMT will leverage existing technologies and accepted risk management practices where feasible, and incorporate new technologies and elements as appropriate. A second project of the Freight Rail Security Program is the Rail Corridor Hazmat Response and Recovery Tool (RCHRRT), which will integrate geographical information and risk modeling. The RCHRRT is being developed through a grant to the Railroad Research Foundation and will include participation from the rail industry. When fully developed, these tools will provide a formal methodology to assist the rail carriers in complying with the enhanced safety and security planning requirements.

Hazardous Materials Near Schools

The proposed General Plan includes land use designations that would permit schools. New schools could be sited near locations where hazardous materials would be or are used, stored, or transported. The California Education Code (section 17210 et seq.) outlines the requirements of siting school facilities near or on known or suspected hazardous materials sites, or near facilities that

13 Federal Register, Vol. 73, No. 229, p. 72130. November 26, 2008.

emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site.

Implementation of the proposed General Plan could increase the types and amounts of hazardous materials in the City relative to existing conditions. The Plan could also result in siting sensitive land uses near facilities that use hazardous materials. As a result, people could be exposed to potential health and safety risks associated with hazardous materials use, storage, transport, and waste through routine use, or through accidental releases. However, the existing regulatory framework, which is monitored and enforced at the State and local level, was designed to minimize the risks associated with hazardous materials use, and this analysis assumes the City will ensure compliance with adopted laws and regulations. Further, the General Plan proposes policies and implementing actions, listed below, that establish standards for siting of facilities with hazardous materials or wastes, as well as reinforcing the City's hazardous materials and waste compliance programs.

Policy

SN1.3 Hazardous Materials Operations. Require safe production, transportation, handling, use and disposal of hazardous materials that may cause air, water or soil contamination. Encourage best practices in hazardous waste management and ensure consistency with City, West Contra Costa County and OSHA guidelines, standards and requirements. Protect Richmond's shoreline and other natural resources from accidental occurrences by controlling the location of new hazardous waste facilities and by limiting the expansion of existing hazardous waste facilities adjacent to the shoreline and along streams or creeks. Coordinate with federal, state and local agencies and law enforcement to prevent the illegal transportation and disposal of hazardous waste.

Actions

- SN1.G Hazardous Waste Management Plan. Update the City's Hazardous Waste Management Plan every five years. Include best practices in hazardous waste management. Develop the plan in accordance with City, West Contra Costa County and OSHA guidelines, standards and requirements.
- SN1.H Hazardous Material Regulation. Regularly review and update regulations for the production, use, storage, disposal, transport and treatment of hazardous materials to reduce risk to human and environmental health.
- SN1.I Hazardous Waste Reduction. Reduce or eliminate hazardous waste generation to the maximum extent feasible through the use of effective waste strategies including: reductions in the use of hazardous substances; the use of safe substitutes; recycling; resource recovery and reuse; and on-site treatment.
- SN1.J Regularly review and update guidelines, protocols and strategies to respond to a local hazardous materials spill. Create a response plan as part of a comprehensive Hazardous Waste Management Plan.
- SN1.K Hazardous Waste Public Awareness Program. Develop an awareness program to expand public engagement in the planning and handling of hazardous waste in the community, especially at home. Educate the community about roles and responsibilities in the event of an emergency. Distribute information to the public in multiple ways and in multiple languages. Create a response plan as part of a comprehensive Hazardous Waste Management Plan.

Policy

CN6.1 Toxic and Contaminated Sites. Continue to work with the appropriate local, state, and federal agencies to promote the clean-up and reuse of contaminated sites to protect human and environmental health. Work with property owners and regional agencies to prevent, reduce or eliminate soil and water contamination from industrial operations, the Port and other activities that use, produce or dispose of hazardous or toxic substances. Implement appropriate mitigation measures and clean-up of sites that are known to contain toxic materials as a condition of reuse. Support the remediation and reuse of large, disturbed sites, such as the Winehaven complex at Point Molate and the Terminal 4 site at Point San Pablo, into mixed-use centers that provide the maximum benefit to the community without compromising the integrity of the surrounding natural areas.

Actions

CN6.B Hazardous Substance Management. Implement standards dealing with the safe management of hazardous substances in close coordination with the City Fire Department and the Department of Toxic Substance Control. The standards should require soil testing at development sites where contamination is suspected, address safe household hazardous and universal waste disposal and ensure compliance with hazardous substance regulations and safe transport of hazardous materials. Use of the latest technologies available should be considered when conducting remediation in order to expedite the cleansing process and do the least harm to the environment.

CN6.C Pollution Prevention Program. Continue to implement the City's pollution prevention program for residents, businesses and industry to provide information on pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up. The program could educate the community on laws governing the proper handling of hazardous materials, especially those laws which pertain to discharging materials into creeks and storm drains.

Compliance with existing regulations in addition to the proposed General Plan Policies and Implementing Actions would minimize the risks associated with hazardous materials and reduce this impact to ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Future development would be subject to the same General Plan policies as well as state and local laws that oversee the use, transport, and storage of hazardous materials. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.8-2 Development under the proposed General Plan would include demolition or renovation of existing structures that could contain asbestos-containing materials, lead-based paint, PCBs, or other building materials containing hazardous substances that could expose people or the environment to risks associated with those materials.

However, project-specific review and implementation of best management practices and project-specific mitigation measures would ensure that these activities would not result in a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, this is considered a *less-than-significant impact*.

Implementation of the proposed General Plan update would result in urban infill and redevelopment, along with the intensification of development within the City. As a result, existing structures may need to be demolished prior to the construction of new buildings. Depending on their age, these structures could contain asbestos in building materials such as roofing, floors, and pipe coverings, lead-based paint, or PCBs in electrical equipment.

Inadvertent releases of friable asbestos, lead, or PCBs contained in materials or items removed during demolition activities could expose people to these hazardous materials, which could result in various adverse health effects if exposures were of sufficient quantity and duration. In addition, some of the debris may meet criteria for hazardous waste and must be disposed of properly. To reduce potential human exposures to acceptable levels and to protect the environment, development activities would be required to comply with regulations and guidelines pertaining to abatement of and protection from exposure to asbestos and lead, as discussed under Regulatory Setting, as appropriate (e.g., Cal/OSHA has regulations on worker exposure to both substances). Items containing PCBs, mercury, or other hazardous substances that are intended for disposal must be managed as hazardous waste and must be handled in accordance with OSHA worker protection requirements.

Implementation of applicable regulations and standards would ensure that potential health and environmental hazards associated with asbestos, lead, or PCBs in buildings and structures to be demolished or renovated would be reduced to the extent required by law. Because these demolition and construction activities would not result in a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment, impacts would be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Existing structures that could contain asbestos-containing materials, lead-based paint, PCBs, or other building materials containing hazardous substances that could expose people or the environment to risks associated with those materials may need to be demolished prior to the construction of new buildings. If growth beyond the City's projected buildout scenario were to occur, it would be subject to applicable regulations and standards to ensure the safety of the public and the environment. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

- 3.8-3 There are locations within the City that are included on the list of hazardous materials sites (Cortese List) compiled pursuant to Government Code section 65962.5, as well as other locations where hazardous materials-related environmental contamination may be present, but the site is not yet listed. However, the existing regulatory framework and City requirements to address contaminated sites would reduce exposure hazards to the public or the environment to *less than significant*.**

As stated above, there are Cortese List sites within the City. These sites contain environmental contamination from the release of hazardous substances that can present a human health and environmental risk unless properly managed. Some of these sites have been cleaned up and others are still being investigated. Because of the extent of industrial and commercial activity, there may be other sites where contaminants may be present at levels that can pose public health and safety impacts. There has not been a city-wide survey to identify all possible sites, because such studies must be performed on a site-specific basis when land use, ground disturbance, and development footprints are known. Additionally, it is possible that underground storage tanks (USTs) that were in use prior to permitting and record keeping requirements may be present. The grading, excavation, and dewatering of sites for new development in the City could expose construction workers and the public to such known or potentially unknown hazardous substances present in the soil or groundwater. In the event undiscovered hazardous material contamination is found in the soil or groundwater during construction activities for new development in the City, such contamination could cause various short-term or long-term adverse health effects in persons exposed to the hazardous substances. In addition, exposure to contaminants could occur if the contaminants migrated from the contaminated zone to surrounding areas either before or after the surrounding areas were developed, or if contaminated zones were disturbed by future development at the contaminated location.

Contamination (if any) must be properly identified and managed prior to any development activities on any of these sites to prevent exposure of people and the environment to these hazards. The investigation and cleanup of a contaminated site would be subject to federal and State laws and regulations that are administered at the local level. Investigation and remediation activities that would involve potential disturbance or release of hazardous materials must comply with applicable federal, State, and local hazardous materials laws and regulations. DTSC has developed standards for the investigation of sites where hazardous materials contamination has been identified or could exist based on current or past uses. The standards identify approaches to determining if a release of hazardous wastes/substances exists at a site and delineating the general extent of contamination; estimating the potential threat to public health and/or the environment from the release and providing an indicator of relative risk; determining if an expedited response action is required to reduce an existing or potential threat; and completing preliminary project scoping activities to determine data gaps and identifying possible remedial action strategies. If remediation is necessary, work plans would be developed to identify the approach to clean up the site. Because remedial actions that

could involve removing soil or groundwater also have the potential to create human health and environmental hazards, a health and safety plan for remediation and construction workers would be required, and, where appropriate, contingency plans would be prepared to address unknown hazards. In addition, any actions that have the potential to generate air emissions would be subject to BAAQMD review.

Compliance with applicable regulations governing the investigation and remediation of contaminated sites is mandatory. Nonetheless, proposed General Policy CN6.1 and associated Implementation Actions CN6.A and CN6.B establish a process that must be followed to address contaminated sites that could be affected by development.

Policy

CN6.1 Toxic and Contaminated Sites. (see above)

Actions

CN6.A Site Remediation. Require property owners to comply with state and federal requirements for site remediation as a condition for approving redevelopment on contaminated sites. In collaboration with other government agencies, utilize the Department of Toxic Substance Control (DTSC) Cortese list to prioritize the remediation of city and non-city owned property to protect human and environmental health. Seek state and federal funds to implement the necessary level of clean-up.

CN6.B Hazardous Substance Management. (see above)

CN6.C Pollution Prevention Program. (see above)

The City requires those who apply to develop potentially contaminated sites to retain a Registered Environmental Assessor (i.e., a professional environmental scientist or engineer registered as an REA in California) to inspect the sites for the presence of hazardous materials and wastes. The investigations must take the form of environmental audits, and must include, at a minimum, site inspections for hazardous materials, examination of historic records, and reviews of public agency records. Reports detailing the results of the inspections are required to be submitted to the City for review. The report preparer must either certify that the site is free of hazards or recommend preparation of a site mitigation plan. If the results of the environmental audit indicate a potential for contaminated soils, the City requires the applicant to work with appropriate state and regional agencies to fully analyze the site and remediate the problem. The City checks that inspection reports are on file prior to project approval and prior to any excavation or construction. Acceptance of the site inspections report allows the proposed development to proceed to the permitting stage. All activities under this mitigation must be done in conformance with the policies and procedures presented in Chapter 11 of the County Hazardous Waste Management Plan.

In the event that site inspections uncover pesticide contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes in the project area, the inspection report preparer is required to notify the City and the City is responsible for notifying the Contra Costa County Health Services Department. Under the direction of the appropriate agencies, a site remediation plan must be prepared by the project applicant that would (1) specify measures to be taken to protect workers and the public from exposure to potential site hazards both during

construction and for future maintenance and (2) certify that the proposed remediation measures would clean up the wastes, dispose of the wastes, and protect public health in accordance with federal, state, and local requirements.

Permitting or work in the areas of potential hazard is not allowed to proceed until the site remediation plan is on file with the City. In accordance with OSHA requirements, any activity performed at a contaminated site must be preceded by preparation of a separate site health and safety plan (prepared by the project applicant and filed with the City) for the protection of workers and the public. All activities under this mitigation must be done in conformance with policies and procedures in Chapter 11 of the County Hazardous Waste Management Plan.

The potential for future activities in the City to cause or contribute to soil or groundwater contamination would be reduced through Implementation Action CN6.C, which encourages pollution prevention by informing residents, businesses and industry about pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up.

With the existing regulatory framework and City of Richmond requirements to address contaminated sites, implementation of the proposed General Plan would not create a significant hazard to the public or the environment. Impacts would be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Known or unknown contaminated sites could expose construction workers and the public to hazardous materials. The investigation and cleanup of a contaminated site would be subject to federal and State laws and regulations that are administered at the local level. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

The context for the analysis of cumulative hazardous materials impacts is the City of Richmond, including all cumulative growth therein, as represented by full implementation of the proposed General Plan. The proposed project does not identify specific projects that could be developed, but implementation of the proposed General Plan would allow an increase in the number of structures or land uses that could be subject to the hazardous materials regulation.

Potentially adverse environmental effects associated with the use, storage, use, transportation and disposal of hazardous materials usually are site-specific in occurrence, although their long-term impacts may be regional in extent. Individual incidents generally do not combine with similar effects that could occur with other projects in the City. Implementation of the provisions of the City's

Municipal Code, EPA, DOT, Fed/OSHA, Cal/OSHA, and CUPA permitting processes, and the General Plan policies would reduce potential hazardous materials cumulative impacts to less-than-significant levels.

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3.9 HYDROLOGY AND WATER QUALITY

3.9 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section of the EIR discusses local and regional hydrologic conditions that might be impacted by the Richmond General Plan (proposed General Plan), including drainage, flooding, water quality, and groundwater. A description of the hydrologic setting, including relevant laws and policies, is followed by an analysis of possible hydrologic impacts.

Documents used for this analysis include Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), the existing Richmond General Plan and Hydrology Technical Appendix (last updated in 1993), the 2006 Draft Public Infrastructure Facilities Issues and Opportunities report prepared for the proposed General Plan, and the 2007 Water Quality Control Plan for the San Francisco Bay Basin (SF Basin Plan) from the San Francisco Bay Area Regional Water Quality Control Board (RWQCB). Unless otherwise noted, this document uses 2007 baseline data.

Comments on the Notice of Preparation requested that the EIR analyze the effects of the proposed General Plan on water quality. As noted above, the effects of the proposed project on water quality are addressed in this section.

ENVIRONMENTAL SETTING

Hydrology and Drainage

Drainage Features. Richmond is a 52.6-square-mile city on the northeastern edge of San Francisco Bay. The City is bounded by the Point Pinole peninsula and San Pablo Bay to the north, the Berkeley Hills to the east, and the City of El Cerrito to the south. Richmond includes the San Pablo Peninsula, which divides the San Pablo Bay from San Francisco Bay. The City boundaries include Brooks Island, Brother Island, and half of Red Rock Island.

Topographically, Richmond is characterized by a large flat area, which is referred to as the Bay Plain and a series of three southeast to northwest running ridges.¹ The easternmost portions of the City are located on the San Pablo and Sobrante Ridges, which were formed through geologic uplift on the Hayward and Wildcat Faults. The San Pablo Peninsula is also marked by steep topography due to the San Pablo-Portero Hills Ridge, a formation consisting of Franciscan outcroppings that runs the length of the peninsula from the Richmond Inner Harbor to San Pablo Bay.

The City of Richmond is characterized by a large flat area (the Bay Plain) and a series of four southeast-northwest tending ridges. From west to east, these are the San Pablo-Potrero Hills Ridge, the Berkeley Hills, the San Pablo Ridge, and the Sobrante Ridge. The most notable ridgeline is that of the San Pablo-Potrero Hills Ridge, which extends in a northwest direction along the San Pablo

1 City of Richmond, 1992a.

Peninsula from Potrero Point (west of the Santa Fe Channel) to Point San Pablo. The elevation of the range rises from sea level to almost 400 feet. Brooks Island, Castro Rocks, and Red Rock are part of the same geologic formation. The Bay Plain, which lies between the Potrero Hills Ridge and the north ends of the Berkeley Hills and San Pablo Ridge, is characterized by a long marshy and, in places, hilly shoreline, and by extensive flatlands where the population of Richmond is concentrated.

The other three ridges, the Berkeley Hills, San Pablo Ridge, and Sobrante Ridge, are the westernmost extensions of the Briones Hills, a complex of hills and valleys noted for rugged topography and unstable slopes. Between the Berkeley Hills and San Pablo Ridge is Wildcat Canyon, a rugged, wild area, owned in large part by the East Bay Regional Park District. On the north side of the San Pablo Ridge (elevations approaching 1,100 feet), the valley of San Pablo Creek (known as the El Sobrante Valley) separates San Pablo Ridge from Sobrante Ridge (elevations up to over 800 feet).

Point Pinole Regional Park is part of a plateau that is an extension of the Sobrante Ridge. Elevation within the park ranges from sea level to 100 feet. This plateau continues southeasterly through the Hilltop Area (elevation 200 feet) into El Sobrante (elevation 300 feet) where it joins the Sobrante Ridge (as high as 800 feet). The Richmond Annex Hills lie in the southeasterly corner of the City. Rising to 160 feet above sea level, they are a northern extension of 300-foot high Albany Hill, which is located just south in Albany.

The most notable surface water feature in the vicinity is the San Francisco Bay Estuary. This 1,600-square-mile estuary was formed where the fresh waters of the Sacramento and San Joaquin Rivers flow into Suisun Bay, then the San Pablo Bay, and finally empty into the San Francisco Bay, converging with salt water from the Pacific Ocean. The San Francisco Bay Estuary functions as the only drainage outlet for waters of the Central Valley and creates a natural topographic division between the northern and southern coastal mountain ranges. Existing and restored wetlands, marshes, and mudflats along the Richmond shoreline depend on the fluctuating salinity and water levels created by seasonal variations in freshwater flows and by the daily tides.

Richmond is located within both the San Pablo Basin and Central Basin Hydrologic Planning Areas, and discharges to both the San Pablo Bay and San Francisco Bay Central. Several creeks flow through the City including Garrity, Rheem, San Pablo, Wildcat, Baxter, and Cerrito creeks. The largest watersheds are Wildcat Creek, which originates in Tilden Park (Berkeley), and San Pablo Creek, which originates in Orinda.

The City of Richmond contracts with Veolia Water North America to operate and maintain its storm drainage facilities. The storm drain system is designed to handle the flow of a 10-year, 24-hour storm event. However, as noted below under the Flooding discussion, the existing system is generally inadequate for collecting and conveying that storm event.

Climate. Richmond's Mediterranean climate consists of relatively warm, wet winters and cool, dry summers. As shown in Table 3.9-1, the average total precipitation measured at the National Climate

Data Center's Richmond Station, located in downtown Richmond, is 22.97 inches per year.² The majority of rainfall (90 percent) occurs from November through April (Table 3.9-1). Average monthly precipitation at this gauge ranges from approximately 0.04 inches in July to 4.75 inches in January. Average monthly temperatures vary from about 50.0 degrees Fahrenheit in December to 65.2 degrees Fahrenheit in September.³ Monthly average minimum and maximum temperatures are listed in Table 3.9-1.

Land Cover. Several land cover factors shape the runoff and infiltration patterns of Richmond, the most important of which are the distribution and types of soils found throughout the City, as well as its topography, and the extent of the City's impervious surface cover.⁴

Month	Average Rainfall (in)	Average Maximum Temp (°F)	Average Minimum Temp (°F)
January	4.75	57.5	42.5
February	3.84	61.5	45.3
March	3.11	63.8	46.9
April	1.66	66.5	48.9
May	0.52	69.0	51.8
June	0.18	71.1	54.5
July	0.04	70.4	55.4
August	0.07	71.1	56.1
September	0.21	74.0	56.3
October	1.21	72.2	53.3
November	2.96	64.6	48.0
December	4.44	58.1	43.4
Annual	22.97	66.6	50.2

Notes:
 * The period of record for this station is from December 1, 1950 through December 31, 2008.
 Source: *Western Regional Climate Center, 2009a.*

Soil characteristics indicate how much precipitation would be expected to infiltrate into the groundwater under natural, undeveloped conditions, and conversely, how much of the precipitation would become surface runoff. The Natural Resource Conservation Service (NRCS) classifies soils into four hydrologic soil groups, according to their infiltration rate (NRCS, 2007):

- Group A soils are generally deep, well drained sands or gravelly sands with a high infiltration rate and low runoff potential.
- Group B soils are moderately deep, moderately well drained soils with a medium texture. These soils drain well, though not as well as Group A soils.

2 WRCC 2009a.

3 WRCC 2009b.

4 Other factors, such as vegetative cover, are also important in modeling runoff processes; however, the extent of the study area for the General Plan Update makes it difficult to characterize these factors accurately.

- Group C soils have a slow infiltration rate when wet. They often have a semi-impermeable layer that impedes percolation, and tend to be fine in texture.
- Group D soils have a very slow infiltration rate. They generally consist of clays with high shrink-swell potential, soils with a high water table, soils with a claypan layer near the surface, or shallow soils over bedrock.

As shown in Table 3.9-2, Richmond soils are generally C or D soils. As a result, in most areas of the City, the infiltration rate of soils tends to be quite slow and, therefore, stormwater runoff would be naturally high. Table 3.9-2 also shows the drainage class of Richmond soils, which is a measure of the expected natural frequency and duration of wet periods. This measure is a historical indicator of soil saturation and ponding. As shown, most of the soils within the City are moderately well-drained or better. Drainage in areas of the City outside of the Bay Plain area is relatively rapid because of the steep topography, which is also a contributing factor to surface runoff. Soils classified as poorly drained are found in the Bay Plain portion of the City, which overlap with those areas that are the most urbanized in Richmond. The generally fine-grained nature of the clay and loam soils in Richmond tends to retard percolation into the water table, but the underlying sediments contain sufficient medium- to coarse-grained material to permit limited infiltration into the underground aqueduct, particularly along the pervious channels of the City's many creeks.⁵ However, as noted under the Groundwater discussion below, the water table is close to the surface in the City's lower elevation areas because of the City's location on the San Francisco Bay and its proximity to sea level.

Soil Type	Parent Material	Hydrologic Soil Group	Drainage Class ^{b,c}
Clear Lake Clay	Alluvium	D	Poorly drained
Tierra Loam	Alluvium from sedimentary rock	D	Moderately well drained
Millsholm Loam	Residuum from sandstone and shale	D	Well drained
Los Osos Clay Loam	Residuum from sandstone and shale	C	Well drained
Fill/Urbanized Land	Varies	N/A	N/A

Notes:

a. Does not include the Wildcat Canyon and Sobrante Ridge portions of the City.

b. Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed.

c. Indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Source: *Natural Resource Conservation Service, 2007.*

Another factor influencing Richmond's drainage patterns is the type and intensity of various land uses, which, in turn, determine the extent of the City's impervious (non-porous) surfaces. Industrial, commercial, and high-density residential areas, which tend to have a high amount of impervious surfaces, are concentrated in the Bay Plain portion of the City, along its wide western side, and in the downtown core. Low-density residential uses, parks, and open spaces, which have a low amount of impervious surfaces, are concentrated along the eastern edge of the City, on the San

5 City of Richmond, 1992a.

Pablo and Sobrante Ridges adjacent to Point Pinole, and in eastern portions of Central and South Richmond areas.

Flood Hazards

The most recent FEMA Flood Insurance Study for the City of Richmond was prepared in April 1975 and was revised on June 16, 2009. Areas susceptible to flooding from the 100-year flood event⁶ are the coastal, or Bay Plain, areas south of Point Pinole and west of Castro Street, and from Marina Bay to Point Isabel. Figure 3.9-1 illustrates the distribution of 100-year flood zones throughout the City, which reflect the high level of poorly drained soils and impervious surfaces along the Bay Plain; obstructions to flow in the creeks (e.g., Grant Road crossing); increased impervious area and storm drain system capacity constraints; and proximity to San Pablo and/or Wildcat Creeks and the bays. Creek flooding has historically occurred around Union Pacific and Burlington Santa Fe railroad crossings; however, the US Army Corps of Engineers recently completed a flood control retrofit project that reduced the impediment to flow caused by railroad embankments at the channel crossings.⁷ As shown in Figure 3.9-1, low elevation areas close to the San Francisco Bay also undergo shallow ponding when heavy rains coincide with high tides in the bays and run the risk of additional hazards associated with storm waves (FEMA Zone VE).⁸

The San Pablo Reservoir, located behind the San Pablo Dam in the hills along the Sobrante Ridge, helps to retain local floodwaters.⁹ However, a study conducted by the Division of Dams Safety indicates that the earthen structure San Pablo Dam, constructed in 1920, was structurally unstable and may not withstand severe liquefaction damage and cracking in a 7.5 magnitude earthquake on the Hayward Fault.¹⁰ The East Bay Municipal Utilities District (EBMUD), which owns and operates San Pablo dam, explored alternatives for seismic upgrade of the dam. The seismic upgrade consisted of construction of a larger buttress and improvements to the foundation to seismically strengthen the dam. The San Pablo Dam Seismic Upgrade, which began in 2008, was completed in September 2010. The reservoir level limits have returned to their pre-2004 status and the dam and reservoir are fully operational.¹¹

Richmond Public Works designs new storm sewer infrastructure to collect and convey the 10-year, 24-hour storm for planning level analysis. Site specific development must design storm drains to collect and convey the 10-year 2-hour storm event.¹² In 2005, Boyle Engineering Corporation prepared a Storm Drainage Master Plan for the City.¹³ Several flooding problem areas occur, primarily as a result of the following four factors:¹⁴

- Undersized pipes for runoff, even for minor storms

6 A 100-year storm has a one percent chance of occurring every year.

7 City of Richmond, 1992a.

8 City of Richmond, 1992a.

9 City of Richmond, 1992a.

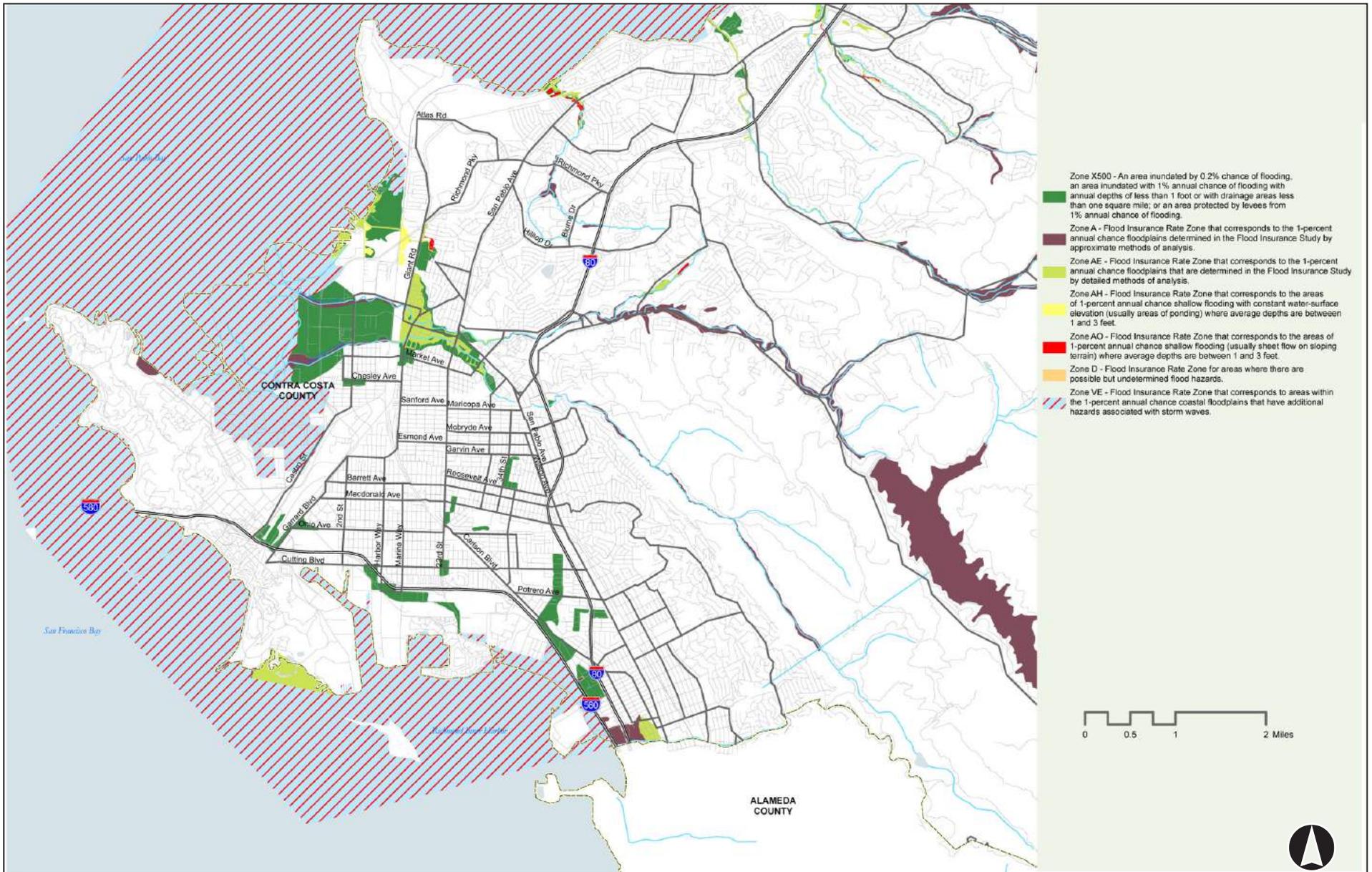
10 EBMUD, 2004.

11 EBMUD, <http://www.ebmud.com/about-ebmud/news/project-updates/san-pablo-dam-seismic-upgrade>.

12 The 10-year storm event has a 10 percent chance of occurring in any given year.

13 AN West, Inc. 2006.

14 AN West, Inc. 2006.



Source: Federal Emergency Management Agency (FEMA), DFIRM, June 2009.



FIGURE 3.9-1
Flood Hazards Zones

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Richmond GPU EIR

- Damaged curb and gutters where raised gutters and other obstructions disrupt the flow
- Area(s) without a storm drain system
- Damaged pipes or debris/large solids built up within the pipe

These problem areas are identified as being located:

- Northeast of San Pablo Dam Road and Interstate 80
- Portions of Point Richmond
- Along 1st Street near Macdonald Avenue
- Along Pennsylvania Avenue between 3rd and 9th Streets
- Along significant portions of Cutting Boulevard

Pipes and channels convey the initial stormwater runoff until capacity is exceeded. Once the capacity of the pipe/channel is reached, excess runoff flow is conveyed within the street curb and gutter system on the surface and street flooding occurs. Flooding severity is divided into two categories:

- Moderate Street Flooding (MSF), where flood depths do not exceed 8 inches above the curb flowline; and
- Potential for Severe Street Flooding (PSSF), where flood depths exceed 8 inches above the curb flowline.

The Storm Drain Master Plan identified that, at best, only 40 percent of the pipes and channels have capacity to convey the 2-year storm event and only 29 percent have capacity to convey the design (10-year) storm event. Only 20 percent of the pipes and channels have capacity to convey the 100-year storm event. Additionally, during the 2-year storm event, seven percent of the pipes and channels have a PSSF. During the 10-year storm event, 20 percent of pipes and channels have a PSSF and 32 percent have a PSSF for the 100-year storm event.

Because of the limited capacity of creeks to contain storm volumes, particularly in urban areas where there is little or no riparian or buffer zone around the channel, high intensity storms can cause more flooding-related problems than longer duration, but less intense, storms. During high intensity storms, both Wildcat and San Pablo Creeks occasionally flood in areas in the western Bay Plain of North Richmond. Estimated peak 100-year flood flows in the Wildcat and San Pablo Creeks within the confined, engineered reaches downstream of the Burlington Santa Fe railroad right of way are high for urban streams: 2,300 cubic feet per second and 5,100 cubic feet per second respectively.¹⁵

Flooding along coastal areas and channels could also occur in the event of substantial sea level rise. Global warming could result in sea level rises in San Francisco Bay of 16 inches by mid-century and 55 inches by the end of the century.¹⁶ Most shoreline impacts would occur from flooding caused by the combined effects of storm activity and higher water level because of sea level rise. However,

15 City of Richmond, 1992a.

16 BCDC, 2009.

low lying coastal areas in the City of Richmond would be subject to inundation by sea level rise alone. Figure 3.9-2 depicts the area predicted to be flooded by mid-century and by 2100.

There are no designated seiche risk areas or tsunami evacuation zones within the City of Richmond.¹⁷ However, the maximum wave height, under a ‘worst case’ scenario created by a tsunami with an origin in the Aleutians islands, was modeled at about 7.5 feet along the Richmond Bay coast and 7.9 feet within the Richmond Channel.¹⁸ The March 28, 1964 tsunami generated by the Alaska earthquake was modeled to generate a maximum wave height of 4.6 feet at the Richmond Bay coastal area and 5.6 feet within the Richmond Channel.¹⁹

Groundwater

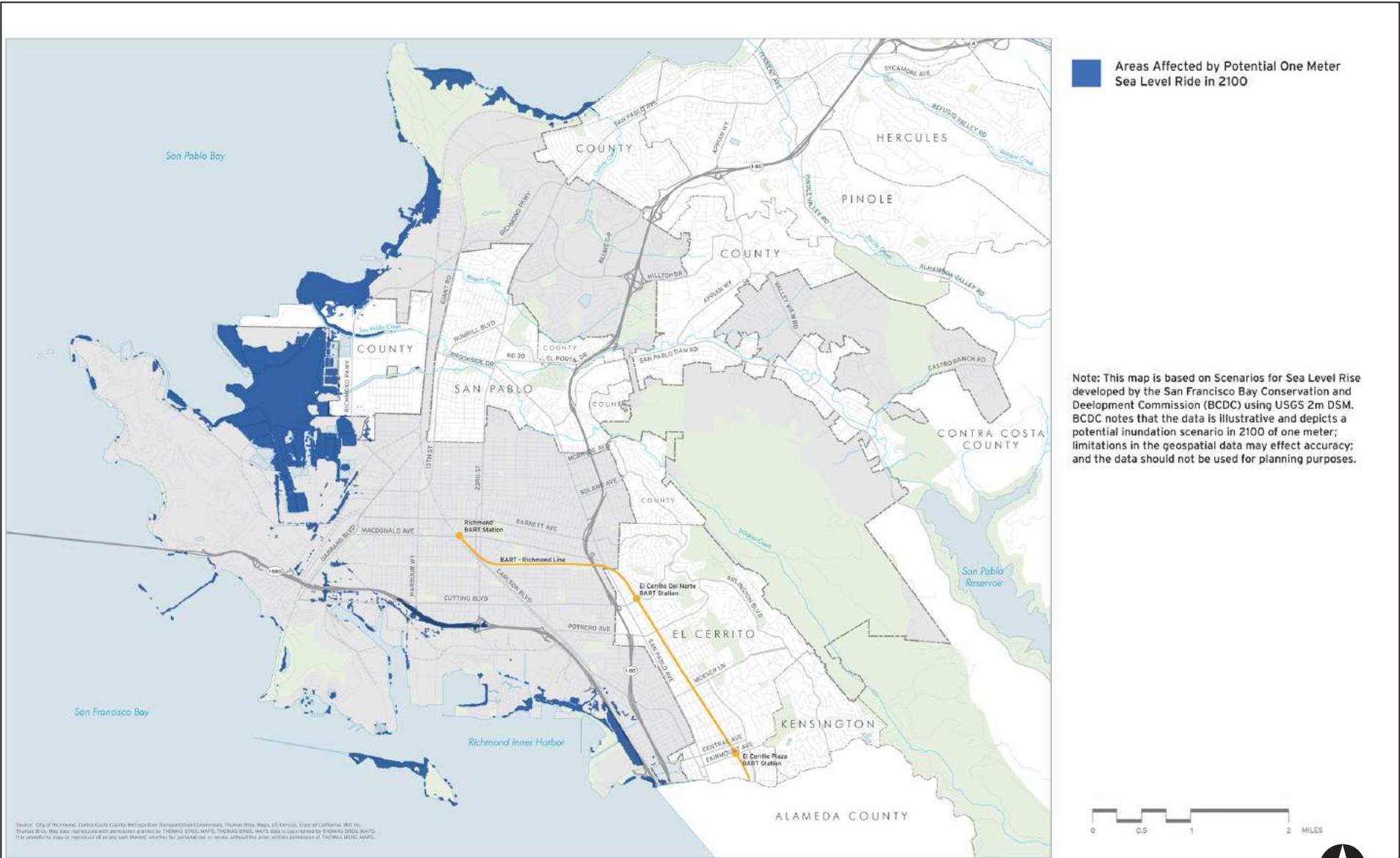
Groundwater Storage. The City is located above the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin (Basin Number 2-9.04). The 77,800-acre East Bay Plain Subbasin is composed of unconsolidated sediments of Quaternary age (i.e., less than 1.6 million years old).²⁰ The thickness of the deposits varies, from depths of one to a few hundred feet thick, depending on the proximity of the subbasin to the San Francisco Bay, with the sediments tending to increase with proximity to the bayshore. Groundwater in Richmond is very close to the surface in the low elevation or Bay plain areas.²¹

In a 1994 study, the Department of Water Resources (DWR) calculated the total groundwater storage capacity of the East Bay Plain Subbasin to be approximately 2,670,000 acre-feet (AF). However, because sea water intrusion may contaminate groundwater below mean sea level (MSL), making it unsuitable for many beneficial uses, DWR prepared a second calculation estimating the volume of water stored in sediments above MSL. This resulted in a total of approximately 80,000 AF.²² Annual basin inflows include approximately 20,000 AF of water annually, while withdrawals (including municipal and agricultural extraction) total 3,150 AF. An additional 13,500 AF of water flows out of the subbasin annually via natural subsurface outflow.²³

The 77,800-acre East Bay Plain Subbasin is identified as having the following beneficial uses in the 2007 Basin Plan: municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.²⁴

Groundwater Quality. Groundwater within the subbasin is classified as a calcium bicarbonate type, based on the predominant dissolved mineral content of the groundwater.²⁵ The US Environmental Protection Agency’s (EPA) recommended maximum concentration for total dissolved solids (TDS), a measure of salinity commonly used as an indicator of groundwater quality, is 500 mg/l. Data from

17 ABAG, 2007.
 18 Borerro et al., 2006.
 19 Borerro et al., 2006.
 20 DWR, 2004.
 21 DWR, 2004.
 22 DWR, 2004.
 23 DWR, 2004.
 24 RWQCB, 2007.
 25 DWR, 2004.



Source: City of Richmond, 2009.



FIGURE 3.9-2
Potential Sea Level Rise

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wells in the subbasin indicate that TDS in the shallow zone near the San Francisco Bay ranges from about 360 to 1,020 mg/l, in some cases exceeding the EPA's recommended maximum TDS concentration.

The 2007 Basin Plan contains groundwater water quality objectives for bacteria, inorganic and organic chemical constituents, radioactivity, and taste and odor. Groundwater impairments listed in the Basin Plan include industrial and agricultural chemical spills, underground and above-ground tank and sump leaks, landfill leachate, septic tank failures, and chemical seepage via shallow drainage wells and abandoned wells. In addition, saltwater intrusion directly attributed to over-pumping has degraded the purity of some groundwater aquifers.²⁶

Surface Water Quality

Surface water quality of the region is monitored by the RWQCB, San Francisco Bay Area Region (Region 2), according to stated goals in the 2007 Basin Plan. The Basin Plan contains surface water quality objectives for bacteria, bioaccumulation, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, population and community ecology, pH, radioactivity, salinity, sediment, suspended material and material that can settle, sulfide, tastes and odors, temperature, and toxicity.²⁷

Surface water in Richmond often contains high concentrations of dissolved minerals and other naturally occurring solids. Stormwater and irrigation runoff enter streams as overland flow, carrying the dissolved or suspended residue of both natural and human land uses. This residue can include sand, silt, clay, organic fertilizers and pesticides, heavy metals, oil and grease, animal waste, decaying leaf litter, and debris. Only industrial plants and wastewater treatment facilities discharge directly into streams. These facilities are regulated directly by the RWQCB, which grants permits for waste discharges and enforces the treatment provisions set forth in each permit.

Surface water quality in urban areas is affected by various point sources and non-point source polluters. Point sources are those that emit pollutants at a specific point, such as a pipe from a wastewater treatment plant or industrial discharger. Non-point (diffuse) sources typically discharge pollutants over a larger area, such as streets, residences, or landscaped areas. As a general rule, point source pollutants are more easily monitored; thus, pollutant discharge standards are more easily determined and enforced. Non-point source pollutants, such as those found in stormwater runoff, are more difficult to monitor and enforce through the Clean Water Act (CWA), yet they are important contributors to overall surface water quality conditions. However, pollutants in urban stormwater runoff regulated as a type of point-source discharge because a storm drainage system collects the urban runoff and discharges it at a specific point. The San Francisco and San Pablo Bays receive runoff from a range of point and non-point sources.

Constituents of and concentrations within runoff vary with surrounding land uses, topography, and amount of impervious cover, as well as the intensity and frequency of irrigation or rainfall. Runoff

26 RWQCB, 2007.

27 RWQCB, 2007.

may contain oil, grease, and metals accumulated in streets and driveways, as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas. The highest pollutant concentrations are generally in stormwater runoff generated at the beginning of the wet season and during the so-called “first-flush.” Approximately 80 percent of total accumulated pollutants are removed with the first 0.5 inch of rainfall, with street surfaces as the primary source of pollutants in urban areas.²⁸

The most common sources of stormwater pollution in urban areas are construction sites, streets, parking lots, large landscaped areas, and household and industrial materials dumped into storm drains. In some areas, rooftops can also contribute a significant amount of stormwater pollution in urban areas as materials (e.g., copper and zinc) corrode or decay and atmospheric pollutants are deposited on surfaces. Grading and earthmoving activities associated with new construction can accelerate soil erosion, even in flat areas. Grease, oil, hydrocarbons, and heavy metals deposited by vehicles and heavy equipment accumulate on streets and paved parking lots and are carried into storm drains by runoff. Pesticides, herbicides, and fertilizers used for landscape maintenance are washed into storm drains by over-watering (irrigation in excess of soil infiltration rates and plant uptake). Paints, solvents, soap products, and other toxic materials are inadvertently or deliberately deposited in storm drains in residential and industrial areas. Deposition of particulate matter and dissolution of roofing material can also contribute pollutants to urban stormwater. The federal CWA requires local municipalities to implement measures to control these types of pollutants from entering their storm drainage systems. Further discussion of federal and local regulations and compliance is presented below in the Regulatory Setting section.

The quality of stormwater runoff in Richmond is probably typical of urban watersheds with similar land uses. Runoff may contain constituents such as landscaping chemicals (e.g., nitrates, phosphates, herbicides, and pesticides), automobile and traffic pollutants (e.g., oil, grease, and metal brake dust), and sediment with associated attached pollutants from soil erosion or aerial deposition of dust. Sites within the City are used for residential, industrial, and commercial uses that may result in release of pollutants into the San Francisco Bay, the primary receiving waterbody.

The Section 303(d) List, identifying “impaired water bodies” as mandated by the CWA (see Regulatory Setting below) and prepared by the RWQCB, lists the following as impairments for the San Francisco Bay:²⁹ chlordane, DDT, dieldrin, dioxin compounds (including Diazinon, a pesticide), exotic species, furan compounds, mercury, PCBs, and selenium. San Pablo Bay has all of the above impairments, plus a nickel impairment. The sources of these impairments are generally municipal, industrial, or non-point sources. In addition, San Pablo and Wildcat Creeks are listed on the 2007 Section 303(d) List of Impaired Water Bodies because of the presence of the pesticide, Diazinon.³⁰

28 Shueler, T. R., *First Flush of Stormwater Pollutants Investigated in Texas*, Article 9 in *The Practice of Watershed Protection*, Center for Watershed Protection, 2000.

29 RWQCB, 2006.

30 USEPA, 2007.

Baxter, Cerrito, and San Pablo creeks are proposed for listing as impaired by trash on the 2008 303(d) list.³¹

Regulatory Setting

Federal

Clean Water Act. The federal CWA was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the State Water Resources Control Board (SWRCB) and the RWQCB. These programs are explained in more detail in the State Regulations section.

Section 303(c)(2)(b) and Water Quality Standards. Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body's designated beneficial use. Water quality standards applicable to the proposed project are listed in the Water Quality Control Plan for the San Francisco Bay Basin (SFB Basin Plan).

Section 303(d) and Total Maximum Daily Loads (TMDLs). Section 303(d) of the CWA bridges the technology-based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the US EPA administrator deems they are appropriate), states are to develop Total Maximum Daily Loads (TMDL). Specific TMDLs applicable to the proposed project are explained under Regional Regulations, below.

National Pollutant Discharge Elimination System. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of best management practices (BMPs). The NPDES permit system was established in the CWA to regulate point source discharges (a municipal or industrial discharge at a specific location or pipe) and certain types of diffuse discharges. As defined in the federal regulations, nonpoint sources are generally exempt from federal NPDES permit program requirements. Nonpoint pollution sources are diffuse and originate over a wide area rather than from a definable point. Urban stormwater runoff and construction site runoff, however, are diffuse-sources regulated under the NPDES permit program because they discharge to receiving waters at discrete locations. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits.

National Flood Insurance Program. FEMA prepares and distributes the FIRMs used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard

31 RWQCB, 2009

areas, including the 100-year floodplain. Richmond does not permit new residential development in 100-year flood zones. Non-residential development is allowed, albeit with restrictions on use and building design.

State

Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. In cases where the Basin Plan does not contain a standard for a particular pollutant, other criteria are used to establish a standard. Other criteria may be applied from SWRCB documents (e.g., the Inland Surface Waters Plan and the Pollutant Policy Document, California Toxics Rule) or from EPA water quality criteria developed under section 304(a) of the CWA. Numeric criteria are required by the CWA for many priority toxic pollutants. To fill in the gap between the water quality control plans and CWA requirements, on May 18, 2000 the EPA promulgated the California Toxics Rule based on the Administrator's determination that numeric criteria are necessary in the State of California to protect human health and the environment. These federal criteria are numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards, legally applicable in the State of California, for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA.

Water quality standards that apply to the San Francisco Bay Area waters are listed in the San Francisco Bay Region (Region 2) Water Quality Control Plan (SF Basin Plan). The proposed project would be subject to water quality standards set forth in the SF Basin Plan.

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwater) and directs the RWQCBs to develop regional Basin Plans. Section 13170 of the California Water Code authorizes the SWRCB to adopt water quality control plans on its own initiative.

The principal elements of the SF Basin Plan are a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Beneficial uses and water quality objectives, together, define the relevant water quality standards. In instances where water quality is better than that prescribed by the objectives, the State Antidegradation Policy applies (State Board Resolution 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California). This policy is aimed at protecting relatively uncontaminated aquatic systems where they exist and preventing further degradation. The State's Antidegradation Policy is consistent with the federal Antidegradation Policy, as interpreted by the SWRCB in State Board Order No. 86-17.

Waste Discharge Requirements. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDRs). All discharges of waste to waters of the State including both point and nonpoint source discharges are subject to regulation. Non-point source discharges are regulated under WDRs, waivers of WDRs, a basin plan prohibition, or some combination of these administrative tools. Discharges of waste directly to State waters would be subject to an individual NPDES permit, which also serves as a WDR. The RWQCBs have primary responsibility for issuing WDRs.

The proposed project is in the SFRWQCB's jurisdiction; therefore, all discharges to surface water or groundwater are subject to the SF Basin Plan requirements. The San Francisco Bay RWQCB (SFRWQCB) has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in its jurisdiction. The City is subject to the permit requirement.

NPDES General Construction Activity Stormwater Permit (Construction General Permit). The SWRCB permits all regulated construction activities under National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (Order No.2009-0009-DWQ, NPDES No. CAR000002) adopted September 2, 2009. Every construction project that disturbs one or more acres of land surface or that is part of a common plan of development or sale that disturbs more than one acre of land surface requires coverage under this Construction General Permit. To obtain coverage, the landowner or other applicable entity must file Permit Registration Documents (PRDs) prior to the commencement of construction activity, which include filing a Notice of Intent (NOI), preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP), submit other documents required by this Construction General Permit, and mail the appropriate permit fee to the SWRCB. All development projects in accordance with the proposed General Plan that disturb one or more acres or if the construction activity is part of a larger common plan of development that encompasses one or more acres of soil disturbance, or if there is significant water quality impairment resulting from the activity, are required to comply with the revised Construction General Permit.

The current Construction General Permit differs from the previous one (Order No. 98-08-DWQ) in that it includes specific minimum requirements for construction stormwater quality BMPs, a determination of sediment Risk Level, a Rain Event Action Plan, and monitoring and reporting requirements. Risk levels are based on a matrix of project sediment risk and receiving water risk. Sediment risk is based on estimated soil loss, as calculated by the Revised Universal Soil Loss Equation (RUSLE). Receiving water risk is based on whether a project drains to a sediment-sensitive waterbody. A sediment-sensitive waterbody is either on the most recent Section 303d list for waterbodies impaired for sediment; has an EPA-approved TMDL implementation plan for sediment; or has the beneficial uses of cold freshwater habitat, fish spawning, and fish migration. Because the City discharges to waters with beneficial uses of fish spawning and fish migration, development in accordance with the proposed General Plan would be at least a Risk Level 2 project subject to Numeric Action Levels and some additional monitoring requirements. If erosion potential is high, it may be a Risk Level 3 project and subject to Numeric Effluent Limits and more rigorous monitoring requirements such as receiving water monitoring and in some cases bioassessment.

BMPs are intended to reduce impacts to the Maximum Extent Practicable (MEP), a standard created by Congress to allow regulators the flexibility necessary to tailor programs to the site-specific nature of municipal stormwater discharges. Regulations do not define a single MEP standard, but reducing impacts to the MEP generally relies on BMPs that emphasize pollution prevention and source control, with additional structural controls, as needed.

Statewide General Permit for Landscape Irrigation Uses of Municipal Recycled Water (Recycled Water General Permit). In July 2009, the SWRCB adopted General WDRs for Landscape Irrigation Uses of Municipal Recycled Water (General Permit). For those eligible, the General Permit allows the use of recycled water for landscape irrigation. An Administrator may apply for coverage under the General Permit by filing an NOI, providing a complete Operation and Maintenance Plan, and submitting the appropriate fee to the SWRCB. Under this Recycled Water General Permit, recycled water must be managed in conformance with the applicable regulations contained in the Title 22 Requirements for disinfected tertiary treated water. Requirements for application rates and nutrient loading; equipment and operations; an Operations Plan; an Irrigation Management Plan; and others are incorporated into this permit.

Industrial Permit for Discharges of Storm Water Associated with Industrial Activities (Industrial General Permit). Industrial facility stormwater runoff to separate storm sewers is regulated under the statewide NPDES General Industrial Permit for Discharges of Storm Water Associated with Industrial Activities (Industrial General Permit) (WQO No. 97-03-DWQ). The Industrial General Permit requires control of pollutant discharges using Best Available Technology/Best Conventional Technology to meet water quality standards. The Industrial General Permit generally requires facility operators to: 1) eliminate unauthorized non-stormwater discharges; 2) develop and implement a SWPPP; and 3) perform monitoring of stormwater discharges and authorized non-stormwater discharges. Under the 1997 permit, light industry was excluded from coverage if there was no exposure of industrial materials to stormwater. Under the new Draft Final Industrial General Permit (2005), such facilities would not be automatically excluded from coverage but would need to apply for a Conditional Exclusion. To obtain this exclusion, dischargers must submit a certification for a Conditional Exclusion to demonstrate that there would be no contact of pollutants with stormwater. A wide range of industries is covered under the Industrial General Permit as determined by the facility Standard Industrial Classification code. It is possible that the proposed General Plan would include industrial facilities that would be covered under the Industrial General Permit.

TMDLs – State Application. States are required to assess water bodies for impairment every two years, to list those that are found as impaired on the Section 303(d) list (approved by the US EPA), and to develop Total Maximum Daily Load (TMDL) programs to control/reduce impairment. The Section 303(d) list includes the pollutant(s) contributing to impairment, sources of impairment, and a completion date for development of TMDLs. In California, the SWRCB has interpreted state law to require that implementation be addressed when TMDLs are incorporated into Basin Plans. Water bodies to which the proposed project discharges - San Pablo Bay, San Francisco Bay Central, San Pablo Creek, and Wildcat Creek - are listed in the "Impaired Water Bodies" on the Section 303(d) list.

The San Francisco Bay Central is listed³² as impaired by: chlordane, DDT, dieldrin, dioxin compounds (including Diazinon, a pesticide), exotic species, furan compounds, mercury, PCBs, and selenium. San Pablo Bay has all of the above impairments, plus nickel impairment. San Pablo and Wildcat Creeks are listed as impaired by the pesticide Diazinon. Baxter, Cerrito, and San Pablo creeks are proposed for listing as impaired by trash on the 2008 Section 303(d) list.³³

TMDLs that apply to the City of Richmond include TMDLs for pesticide toxicity in urban creeks, and TMDLs for mercury, PCBs, and selenium in the San Francisco Bay.

Regional Regulations

San Francisco Bay Basin (Region 2) Water Quality Control Plan (SFB Basin Plan). The SFRWQCB implements a number of federal and State laws, the most important of which are the State Porter-Cologne Water Quality Control Act and the federal CWA. Discharges from the City to surface and ground waters are subject to the SFB Basin Plan water quality objectives for the designated beneficial uses (water quality standards). Both bays have designated beneficial uses of industrial service and process supply; ocean, commercial, and sport fishing; shellfish harvesting; estuarine habitat; fish migration; preservation of rare and endangered species; fish spawning, wildlife habitat, water contact recreation; noncontact water recreation; and, navigation. San Pablo Creek and Wildcat Creek have designated beneficial uses of fish migration; fish spawning; warm freshwater habitat; wildlife habitat; and, non-contact water recreation. Designated beneficial uses for the East Bay Plain Subbasin include municipal and domestic supply; industrial service and process supply; and agricultural supply.

Municipal NPDES Permit. One of the primary objectives of the regulations for nonpoint source discharges is the reduction of pollutants in urban stormwater discharge through the use of structural and nonstructural BMPs. The City of Richmond is permitted under a Phase I for municipal stormwater and urban runoff discharges under NPDES General Permit No. CA0029912, Water Quality Order No. 99-058 (Municipal NPDES Permit) and subsequent amendments, for the Contra Costa County Flood Control and Water Conservation District, Contra Costa County and 16 incorporated cities in the County, which have joined to form the Contra Costa Clean Water Program (CCCWP). However, a tentative order has been prepared to cover six counties in the San Francisco Bay Region, including Contra Costa County, under a Regional General Permit (Municipal Regional Stormwater Permit). If adopted, in addition to existing provisions, this permit would include Low Impact Development (LID) requirements (Provision C.3.c.) and require limitations on increases in peak stormwater runoff rate and volume where such increased flow and/or volume is likely to cause increased erosion of creek beds and banks, silt pollutant generation, or other impacts to beneficial uses for areas not already subject to a hydrograph modification management plan/program, including the City (Provision C.3.g.). LID is a stormwater management strategy that emphasizes conservation and the use of onsite natural features integrated with engineered, small-scale treatment and hydrologic controls to more closely reflect predevelopment conditions, and minimize the need for large sub-regional and regional treatment control measures.

32 RWQCB, 2006.

33 RWQCB, 2009.

Individual NPDES Permits. The Richmond Municipal Sewer District, West County Wastewater District, EBMUD, and Stege Sanitary District are all point-source dischargers that operate under individual NPDES Permits. These individual permits include discharge rate limitations, monitoring and reporting requirements, and implementation of Best Available or Best Conventional Technologies to prevent degradation of water quality.

Local

City of Richmond Municipal Code. Hydrology policies from the City's Municipal Code pertaining to the proposed project include:

- Chapter 12.08. This Chapter requires anyone wishing to make alterations to a watercourse within the City of Richmond to obtain a permit.
- Chapter 12.22. This Chapter requires any new developments that might result in the release of stormwater pollutants to undertake all practicable measures to reduce such pollutants, in compliance with the CWA. The policy also specifies building and design measures that might help to reduce stormwater pollution.
- Chapter 12.56. This Chapter includes detailed standards of construction for building within designated flood zones.

Impacts and Mitigation Measures

Significance Criteria

The following thresholds of significance are based on Appendix G to the CEQA Guidelines. For purposes of this EIR, implementation of the proposed General Plan may have a significant adverse impact if it would do any of the following:

- Violate any water quality standards or WDRs.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Project-Specific Impacts and Mitigation Measures

3.9-1 Development under the proposed General Plan would not result in violation of waste discharge requirements (WDRs), because of existing measures to ensure compliance with the WDRs and the proposed policies and implementing actions included as part of the General Plan. This is a *less-than-significant impact*.

The relevant WDRs are the Municipal NPDES Permit or Regional Municipal Stormwater Permit, as applicable, the revised Construction General Permit, Industrial General Permit, and Recycled Water General Permit and the Richmond Municipal Sewer District, West County Wastewater District, East Bay Municipal Utility District, and Stege Sanitary District individual NPDES Permits. The relevant water quality standards are listed in the Basin Plan. The WDRs are considered protective of water quality. Following are proposed General Plan Policies and Implementing Actions that would reduce the potential for violation of WDRs.

Policy

CN3.1 Stormwater Management. Develop strategies to promote stormwater management techniques that minimize surface water runoff in public and private developments. Utilize low-impact development techniques to best manage stormwater through conservation, on-site filtration and water recycling.

Actions

CN3.A NPDES Compliance and Permit. Continue to comply with the City's National Pollutant Discharge Elimination System (NPDES) Permit and continue to implement the following action steps:

Maintain municipal infrastructure (sewer systems, roads, corporation yards, buildings) to reduce pollutants that flow into water courses;

Require development to comply with the Contra Costa Clean Water Program Stormwater Guidebook;

Work with developers to ensure compliance with the City's minimum standards and NPDES requirements;

Encourage all projects to use pervious pavements, cluster structures, disconnect downspouts, minimize land disturbance and utilize micro-detention such as low impact development (LID);

Require adequate source control measures to limit pollution generation in businesses including draining non-stormwater discharges such as swimming pools, trash and food compactor racks, vehicle outdoor storage, fire sprinkler test water and equipment washing;

Require businesses that may be susceptible to polluting stormwater to implement best management practices (BMPs) including covering drains and storage precautions for outdoor material storage, loading docks, repair and maintenance bays and fueling areas;

Inspect contamination sites to prevent illicit discharges;

Inspect municipal storm drains to eliminate illicit discharges and prevent illegal dumping;

Educate the public about stormwater pollution prevention methods and provide incentives for public participation;

Adopt an integrated pest management (IPM) policy or ordinance and advocate IPM through public education;

Manage waste generated from the cleaning and treating of copper architectural features including copper roofs; and

Adopt a local ordinance for installing a sanitary sewer connection and prohibiting discharges of copper-based chemicals or other fungicides from pools, spas and fountains.

Policy

CF1.1 A Range of High-Quality Community Facilities and Infrastructure. Maintain high-quality facilities and infrastructure to serve diverse community needs. Upgrade, maintain and expand infrastructure to meet current and future needs and provide an effective and consistent level of services and utilities in all neighborhoods. Retain existing public facilities and uses in the Downtown, and actively work to attract new public facilities, especially within walking distance of the Richmond BART/Amtrak Station. Facilities and infrastructure may include community and recreation centers, parks and playgrounds, libraries and senior centers, schools, multi-use trails, pedestrian-scale lighting, and police and fire stations.

Actions

CF1.D Storm Water Drainage. Provide storm drainage in accordance with best management practices and guidelines. Assess the system's ability to accommodate current and future users, sea level rises, and include all necessary improvements in development plans. Reduce runoff into creeks and the Bay, and address groundwater recharge through the use of pervious materials, retention basins, bio-swales and other methods.

CF1.E Waste Management Master Plan. Regularly review and update the Waste Management Master Plan to enhance existing waste management services, systems and associated programs. Assess the system's capacity to serve current and future residents, recommend improvements and identify funding mechanisms and implementation partners. Update the plan regularly to address changing needs and priorities. Ensure compliance with the relevant components of the California Waste Management Act of 1989 by continuing to work with the West Contra Costa Integrated Waste Management Authority and Republic Services to enhance West County's integrated solid waste management services and programs. Work with relevant agencies to address impending shortage of landfill space and ensure that proposals adequately address health, safety and environmental concerns.

Compliance with the WDRs would ensure that substantial violation of water quality standards would not occur. Additionally, the CWA Section 305(b) requires biannual evaluation of water quality to determine whether water quality is degrading, which would further ensure that water quality standards are not violated. Compliance with existing regulations and incorporation of measures included in the respective permits would ensure that this would be a *less-than-significant impact*.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Any future development would be subject to compliance with existing regulations to ensure compliance with the WDRs and the proposed policies and implementing actions included as part of the General Plan. Compliance with the WDRs would ensure that substantial violation of water quality standards would not occur. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-2 New development under the proposed General Plan would not be expected to substantially reduce groundwater recharge or increase groundwater use within the City. This is a *less-than-significant impact*.

New development under the proposed General Plan could increase the amount of impervious surfaces and reduce groundwater recharge by limiting the area where precipitation could infiltrate. Increased growth and development, including increased green space and park areas, could also increase the amount of water used for potable water supplies and irrigation. As discussed in section 3.13 Utilities, the City obtains its water supplies from EBMUD. EBMUD water supplies are derived primarily from the Mokelumne River. A secondary source of water is runoff from local watersheds. No new groundwater wells are planned for implementation of the proposed General Plan. Therefore, increased growth is not expected to result in increased groundwater use or lowering of groundwater tables. As noted above, the soils in the City are generally fine grained with slow to very slow permeability. Because the infiltration rate of soils in the City tends to be quite slow, stormwater runoff would be naturally high and infiltration relatively low. Thus, changes in pervious surfaces in the City would not substantially affect groundwater recharge.

The following proposed General Plan Policies and Implementing Actions would further reduce the potential for impacts on reduced groundwater recharge, including through the protection of open space.

Policy

CF1.1 A Range of High-Quality Community Facilities and Infrastructure. (see above)

Action

CF1.D Storm Water Drainage. (see above)

Policy

CN1.1 Habitat and Biological Resources Protection and Restoration. Natural habitat is essential to ensuring biodiversity and protecting sensitive biological resources. Protect these areas and work with the California Department of Fish and Game, the San Francisco Bay Regional Water Quality Control Board, the East Bay Regional Park District and other regional agencies to identify areas for special protection and establish appropriate protection measures for these areas.

Protect resources to maximize the efficacy of natural systems and encourage sustainable development practices and conservation measures to ensure a healthy natural environment.

Protect wetlands from direct and indirect impacts of new and existing development and infrastructure. Ensure that direct and indirect impacts to wetland habitats are minimized by environmentally sensitive project siting and design.

Protect marshlands and baylands to ensure they are not polluted or damaged from bay filling and dredging.

Protect and restore creek corridors and riparian areas to ensure they function as healthy wildlife habitat and biological areas. Protect and restore creek corridors and riparian areas by restoring riparian habitat with appropriate vegetation and channel design; removing culverts and hardened channels where appropriate; improving creek access; avoiding future culverting or channelization of creeks; and ensuring appropriate and ongoing maintenance.

At a minimum, require mitigation of impacts to sensitive species ensuring that a project does not contribute to the decline of the affected species populations in the region. Identify mitigations in coordination with the U.S. Fish and Wildlife service, the California Department of Fish and Game and other regulatory agencies.

Actions

CN1.I Open Space and Conservation Areas. Preserve open space areas along the shoreline, creeks, and in the hills to protect natural habitat and maintain the integrity of hillsides, creeks and wetlands. Protect existing open space, agricultural lands and parks.

CN2.A Transfer of Development Rights Program. Develop a program that targets areas for Transfer of Development Rights (TDR) which exchange development privileges from natural areas to parts of the City with infill or redevelopment potential. Work closely with the City Attorney to develop the TDR program.

CN2.B Open Space Easements. Consider opportunities for establishing open space easements where natural resources may be protected or accessed on private property. The City may accept or purchase easements from private landowners for open space and resource conservation.

CN2.C Parkland Dedication Ordinance. Update the parkland dedication ordinance that requires new development and redevelopment projects to provide adequate park and recreation opportunities to maintain the 3.0 acres per 1,000 population standard in applicable planning areas through a combination of park types as defined in the Parks and Recreation Element (to be updated and refined in the parks master plan).

Update the park impact fee ordinance that requires new development and redevelopment projects to pay a fair share to cover the cost of parkland

acquisition and improvement if the development is unable to provide adequate parkland within the project. Prioritize park dedication over impact fees. Perform a nexus study periodically to update the criteria and fees.

Include provisions that prevent a net loss of parklands in the City. Require at least a 1:1 replacement if there is any loss of public open space or parkland due to redevelopment.

- CN2.D Open Space Plan. Develop and implement an open space plan to enhance public open space in the City. Include strategies for open space in the hills, along creeks and the shore- line, and in the urban core. Collaborate with the East Bay Regional Park district and the National Park Service to manage and maintain facilities and programs at regional and national parks.
- CN2.E Hillside Physical Constraint Area Ordinance. Continue to implement the Hillside Physical Constraint Area Ordinance, which prohibits large-scale redistribution of earth and alteration of topographic conditions on sloping sites.

As noted above, no new groundwater sources are proposed under the proposed General Plan. The above Policies and Implementing Actions would further reduce the potential for groundwater impacts by preserving open space areas and increasing and enhancing open space and park acreage in the City. This would be a ***less-than-significant impact***.

Full Buildout Analysis

Under the full buildout scenario, there could be additional impervious surfaces created beyond those created under the City's projected buildout scenario. If new wells are required for additional growth, there could be a negative effect on groundwater tables; however, a proposal to increase groundwater usage would require additional environmental analysis to determine if it would result in significant effects. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-3 Construction and operation of development under the proposed General Plan could substantially alter drainage patterns that could result in substantial erosion or siltation. Implementation of General Plan Policies and Implementing Actions would render this impact *less than significant*.

Construction and development would substantially alter drainage patterns by changing the land cover, land slope, drainage pathways, and susceptibility of materials to erosive forces. Clearing, grading, and grubbing construction activities would expose bare soil to wind and water erosion. These disturbed areas would remain susceptible to erosion and sediment transport until stabilized or covered. Development on steep slopes would increase the potential for erosion because bare surfaces on steep slopes are more susceptible to erosion, and cut and fill activities could lead to

unstable slopes and enhanced erosion potential. Unless designed correctly and until stabilized, stream restoration and/or creek daylighting projects would remove engineered erosion protection and expose stream beds and banks to erosive forces from stormwater runoff. Increased impervious surfaces associated with development could also increase the rate and amount of stormwater runoff, further exacerbating the potential for creek bed and bank erosion. The following proposed General Plan Policies and Implementing Actions would reduce the impact on erosion.

Policy

CN1.1 Habitat and Biological Resources Protection and Restoration. (see above)

Action

CN1.D Creek Corridor Performance Standards. Establish performance standards for creek corridors that accomplish the following:

Offer sufficient width in and/or adjacent to preserves to allow for existing and created wildlife habitat, species sensitive to human disturbance, vegetative filtration for water quality, corridors for wildlife habitat linkage, protection from runoff, and other impacts of adjacent urban uses;

Allow for sufficient width adjacent to natural resource preserves to allow for trails and greenbelts; and

Discourage the use of herbicides and provide sufficient width for a mowed firebreak (where necessary), adjacent passive recreation uses and access for channel maintenance and flood control.

In areas of creek restoration, implement design specifications and modeled flow conditions to ensure that creek channel configuration and vegetation would withstand storm flows, that conveyance capacity is not impeded, and that the system is stabilized following construction. Design shall be conducted by a certified professional in stream restoration and fluvial geomorphology processes.

Implement construction best management practices to reduce erosion potential including, but not limited to, construction scheduled for dry season work; high flow bypass until the system is stabilized; temporary and permanent erosion and sediment controls; prevention of run-off during construction.

Implement monitoring, inspection, and maintenance programs and plans to ensure long-term continued function.

Policy

CN2.3 Natural Topography Protection. Protect natural topography to preserve and enhance Richmond's natural beauty and require developers to concentrate residential development below the 400 foot elevation. The natural characteristics of the Berkeley Hills, San Pablo Ridge, El Sobrante Ridge, Point Potrero and San Pablo Peninsula should be protected and enhanced by regulating allowable methods of site preparation, grading, soils repair, foundation design and topographic alteration, as well as the height, color, material and siting of structures and roadways, quantities of cut and fill, placement of utility crossings and removal of vegetation.

Action

CN2.E Hillside Physical Constraint Area Ordinance. (see above)

Policies

CN2.6 Protect Soil and Reduce Erosion. Minimize soil depletion and erosion. Prevent erosion caused by construction activities. Retain natural vegetation and topography and minimize grading of hillsides.

CN3.1 Stormwater Management. (see above)

Action

CN3.A NPDES Compliance and Permit. (see above)

Implementation of the policies and actions listed above would help reduce erosion impacts of the proposed General Plan. These policies call for regulating allowable methods of site preparation, grading, soils repair, foundation design and topographic alteration. They also require the use of BMPs to reduce erosion potential, that creek channel configuration and vegetation can withstand storm flows, that facilities are designed so conveyance capacity is not impeded, and that facilities are monitored, inspected, and maintained to ensure long-term continued function. These policies would ensure impacts from erosion is ***less-than-significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. The analysis related to changes in drainage patterns that could result in substantial erosion or siltation assumes full buildout conditions. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-4 Implementation of the proposed General Plan could alter drainage patterns and cause or contribute to increased runoff and flooding. This impact is *less than significant*.

Increased impervious surfaces, insufficient flood flow capacity in restored/daylighted creeks, changes in slope, and more efficient routing of stormwater runoff could all increase the rate and amount of stormwater runoff to the storm drain system or local creeks. The capacity of storm drains and creeks in the City is already exceeded in many locations. Increased runoff rate or volume could exacerbate these flood issues or cause or contribute to new areas of flooding and storm drain system capacity exceedance. If the Municipal Regional Stormwater Permit is adopted, it would only limit increased stormwater runoff when discharge is to a drainage feature susceptible to erosion; it would not limit increases in runoff to an engineered system, such as an underground pipe or lined channel. Restored/daylighted streams could also reduce storm flow conveyance because stream channels may be designed to reduce stream velocity to prevent erosion and high flows may have to be routed around restored/daylighted creeks. The following proposed General Plan Policies and Implementing Actions would reduce the impact on runoff and flooding.

Policy

CF1.1 A Range of High-Quality Community Facilities and Infrastructure. (see above)

Actions

CF1.B Capital Improvement Program. Coordinate development with the Capital Improvement Program (CIP) to ensure completion of high-priority facility and infrastructure projects. Ensure that CIP projects are prioritized in a manner that is socially equitable.

CF1.D Storm Water Drainage. (see above)

Policy

CF1.4 Concurrent Infrastructure Development. Require new development to provide proportionate facilities and infrastructure improvements as it occurs. New developments must mitigate impacts or contribute adequate infrastructure to meet additional demand for roads, parks, schools and utilities.

Action

CF1.J Regularly review and update the impact fee schedule to offset costs of new development.

Policy

CF2.4 Adequate Maintenance. Maintain infrastructure and facilities. Ongoing maintenance and upgrades protect the City's long-term investment in these facilities.

Actions

CF2.B Inter-Agency Collaboration. Support collaboration between the City and local, regional and national public, nonprofit and private service providers for the delivery and provision of high-quality services, utilities and facilities to meet current and future resident needs.

CF2.C Community Facilities Standards. Regularly review standards to ensure flexibility in design and construction of community facilities. Incorporate best practices and sustainability principles to guide new construction as well as renovations of existing facilities.

Implementation of the policies and actions listed above would reduce impacts associated with flooding and storm drain system capacity constraints. The proposed General Plan Policies and Actions would ensure that stormwater conveyance capacity constraints are remediated and maintained as development under the General Plan occurs, and that restored/daylighted creeks do not contribute to additional capacity constraints. Impacts on flooding and storm drain system capacities would, therefore, be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Effects related to alteration of drainage patterns and increased runoff and flooding assumed full buildout conditions. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-5 Buildout of the proposed General Plan could increase the amount of runoff and pollution in runoff. This impact is *less than significant*.

Pollutants in stormwater runoff depend upon the type of associated land use and cover conditions. Where the land use type does not greatly change, the type and amount of pollutants in stormwater runoff would not be substantially altered. If development were to substantially increase the amount of runoff, even if the type of land use (and therefore, the type and amount of pollutants in stormwater runoff) were not altered, the total load (or quantity) of pollutants discharged to receiving waters could increase.

Construction activities, such as clearing and grubbing, pavement removal and replacement, excavation and trenching for foundations and utilities, soil compaction, cut and fill activities, and grading, would all temporarily disturb soils. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport from the site. Erosion and sedimentation affect water quality through interference with photosynthesis, oxygen exchange, and the respiration, growth, and reproduction of aquatic species. Other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported with sediment to downstream locations. Sediment-associated pollutants could also cause or contribute to degradation of water quality.

The delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could also introduce a risk for stormwater contamination that could impact water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination, and some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and the potential contamination of drinking supplies. Pesticide use (including herbicides and fungicides) associated with site preparation work (as opposed to pesticide use for landscaping) is another potential source of stormwater contamination during construction. Pesticide impacts to water quality include toxicity to aquatic species and bioaccumulation in larger species.

Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Impacts include health hazards and aquatic ecosystem damage associated with bacteria, viruses, and vectors, and physical changes to the aquatic ecosystem. Construction impacts on water quality are potentially significant and could lead to exceedance of water quality objectives or criteria.

Following construction, the major source of pollution in stormwater runoff would be contaminants that have accumulated on rooftops and other impervious surfaces, such as driveways and pedestrian walkways. These include nutrients, oil and grease, metals, organics, pesticides, gross

pollutants (including trash, debris, and bacteria), and, in some cases, chemicals associated with industrial processes.

Nutrients that may be present in post-construction stormwater include nitrogen and phosphorous from fertilizers applied to landscaping, gross debris, and debris from atmospheric deposition of airborne sources. Excess nutrients can impact water quality by promoting excessive and/or rapid growth of aquatic vegetation, which reduces water clarity and results in oxygen depletion. Pesticides can also enter stormwater after application on landscaped areas or overspray on impervious surfaces. Pesticides are toxic to aquatic organisms and can bioaccumulate in larger species, such as birds and fish. Erosion of unprotected surfaces can contribute sediment to runoff and off-site drainage systems. Oil and grease can enter stormwater from vehicle leaks, traffic, and maintenance activities. Metals may enter stormwater as surfaces corrode, decay, or leach. Potential gross pollutants associated with operational activities include clippings associated with landscape maintenance, street litter, and pathogens (bacteria). Pathogens (from sanitary sewer overflows, spills, and leaks from portable toilets, pets, wildlife, and human activities) can affect beneficial uses such as water contact recreation, noncontact water recreation, and shellfish harvesting. Toxic chemicals in soils can also be picked up by stormwater as it passes over or through the contaminated areas.

As discussed in the Regulatory Setting section, for construction activities that would disturb more than one acre of land, contractors would be required to obtain and comply with the State General Construction Activity Stormwater Permit. General Permit applicants are required to prepare and implement a SWPPP and retain it at the construction site. This requirement would reduce potential construction impacts on runoff and pollution in runoff. The Municipal NPDES Permit includes provision C.3. for new development and redevelopment post-construction stormwater quality BMPs to reduce the potential for pollutants in stormwater runoff. The Industrial General Permit requires preparation and implementation of a SWPPP and monitoring program for all regulated industrial operations. These permits are intended to ensure compliance with state water quality standards and water protection laws and regulations. In addition, the following proposed General Plan Policies and Actions would further minimize the potential for pollutants in stormwater runoff.

Policy

CN3.1 Stormwater Management. (see above)

Action

CN3.A NPDES Compliance and Permit (see above)

Policy

CN3.2 Water Quality. Work with public and private property owners to reduce stormwater runoff in urban areas to protect water quality in creeks, marshlands and water bodies and the bays. Promote the use of sustainable and green infrastructure design, construction and maintenance techniques on public and private lands to protect natural resources. Incorporate integrated watershed management techniques and to improve surface water and groundwater quality, protect habitat and improve public health by coordinating infrastructure and neighborhood planning and establishing best practices for reducing non-point runoff.

Policy

CN6.1 Toxic and Contaminated Sites. Continue to work with the appropriate local, state, and federal agencies to promote the clean-up and reuse of contaminated sites to protect human and environmental health. Work with property owners and regional agencies to prevent, reduce or eliminate soil and water contamination from industrial operations, the Port and other activities that use, produce or dispose of hazardous or toxic substances. Implement appropriate mitigation measures and clean-up of sites that are known to contain toxic materials as a condition of reuse. Support the remediation and reuse of large, disturbed sites, such as the Winehaven complex at Point Molate and the Terminal 4 site at Point San Pablo, into mixed-use centers that provide the maximum benefit to the community without compromising the integrity of the surrounding natural areas.

Actions

- CN6.A Site Remediation. Require property owners to comply with state and federal requirements for site remediation as a condition for approving redevelopment on contaminated sites. In collaboration with other government agencies, utilize the Department of Toxic Substance Control (DTSC) Cortese list to prioritize the remediation of city and non-city owned property to protect human and environmental health. Seek state and federal funds to implement the necessary level of clean-up.
- CN6.B Hazardous Substance Management . Implement standards dealing with the safe management of hazardous substances in close coordination with the City Fire Department and the Department of Toxic Substance Control. The standards should require soil testing at development sites where contamination is suspected, address safe household hazardous and universal waste disposal and ensure compliance with hazardous substance regulations and safe transport of hazardous materials. Use of the latest technologies available should be considered when conducting remediation in order to expedite the cleansing process and do the least harm to the environment.
- CN6.C Pollution Prevention Program. Continue to implement the City's pollution prevention program for residents, businesses and industry to provide information on pollution prevention, disposal of hazardous waste and chemicals, liability and clean-up. The program could educate the community on laws governing the proper handling of hazardous materials, especially those laws which pertain to discharging materials into creeks and storm drains.

Policy

CF1.1 A Range of High-Quality Community Facilities and Infrastructure. (see above)

Action

CF1.F Public Utilities Revitalization Program. Maintain and upgrade existing water, gas, electricity, telecommunications and cable infrastructure and associated programs and services. Assess the system's ability to serve current and future residents, recommend improvements and identify funding mechanisms and partners for implementation.

Work with Pacific Gas & Electric and the pipeline franchise holders to update gas and fuel line maps. Follow guidelines for safety to ensure that future improvements do not compromise services and those services do not conflict with future development. Continue coordination efforts with Pacific Gas & Electric to update and support compliance with the Electric Undergrounding Program.

Continue to work with the East Bay Municipal Utility District to update and support compliance with the Water Supply Management Program, the Stormwater Pollution Prevention Plan and the Dam Safety Program for San

Pablo Dam. Continue to work with railroad companies on locating utilities along railroad rights-of-way.

Compliance with existing regulation related to stormwater runoff and implementation of the above Policies and Implementing Actions would reduce impacts related to polluted runoff. Implementation of the regulations, policies, and actions listed above would ensure compliance with state water quality standards and water protection laws and regulations. Impacts related to runoff and pollution in runoff would be *less than significant*.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario, because the analysis of runoff and pollution in runoff is based upon full buildout conditions. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-6 Construction and operation of development under the proposed General Plan could contribute to groundwater quality degradation. This impact is *less than significant*.

The depth to groundwater within the Bay Plain area can be within one foot below ground surface (bsg).³⁴ Development under the proposed General Plan may result in increased use of recycled water for non-potable water uses, such as landscape irrigation, that could migrate to groundwater. Recycled water typically has a higher salt content than potable water. Sea water intrusion already occurs and limits the depth of potable groundwater resources.³⁵ Additional salt loads would further reduce groundwater quality. Compliance with the Recycled Water General Permit, including requirements for an Operations Plan and an Irrigation Management Plan, would reduce potential impacts. Additionally, groundwater quality can be affected by spills and leaks of contaminants and construction activities that could expose contaminated soils to rainfall that could wash contaminants out of soils and into groundwater.

Proposed General Plan Policies and Implementing Actions that would protect groundwater during construction, reduce use of recycled water for landscape irrigation, reduce potential for contaminants in soil and water, and reduce impacts to groundwater quality are identified below.

Policy

CN3.1 Stormwater Management. (see above)

34 SWRCB, http://geotracker.swrcb.ca.gov/profile_report.asp?global_id=T0601394027, accessed September 4, 2009.

35 DWR 2004.

Action

CN3.A NPDES Compliance and Permit. (see above)

Policy

CN1.2 Local Native Plant Species. Promote the use of locally propagated native plant and tree species and remove and control the spread of invasive exotic plant species. Promote and protect native plant species in natural areas as well as in public landscaping of parks, schools, medians and planter strips. Work closely with landowners, landscapers and nurseries to remove and prevent the spread of invasive exotic plant species.

Action

CN1.G Landscape Design Guidelines. Update and implement the City's Landscape Design and Development Guidelines to conform to bay friendly landscape standards.

Use appropriate tree species and densities in buffer areas.

Ensure that medians include native plants and trees and are wide enough to support their long-term viability with the least demand for irrigation and maintenance.

Prioritize the use of locally propagated native drought-tolerant vegetation and discourage the use of invasive non-native species in home landscaping.

Tree and other plant selections for public landscaping should be made in conformance with the "City of Richmond Urban Forest Management/Master Plan Reforestation Supplement" (Chapter 10.08 of the Richmond Municipal Code).

Plants should be grouped together as per their water demand listed in the Water Use Classifications for the Landscape Species or "WUCOLS III," or successor document by the University of California Cooperative Extension for the California Department of Water Resource.

Policy

CN3.4 Water Conservation. Promote water conservation. Encourage residents, public facilities, businesses and industry to conserve water especially during drought years. Work with East Bay Municipal Utility District to advance water recycling programs including using treated wastewater to irrigate parks, golf courses and roadway landscaping and by encouraging rainwater catchment and graywater usage techniques in buildings.

Action

CN3.H Water Conservation. Implement water conservation efforts for households, businesses, industries and public infrastructure. Include measures such as the following:

Require low-flow appliances and fixtures in all new development;

Work with water providers and water conservation agencies to create an incentives program that encourages retrofitting existing development with low-flow water fixtures;

Require new development and landscaped public areas to utilize state-of-the-art irrigation systems that reduce water consumption including graywater systems and rainwater catchment;

Encourage use of drought-tolerant and native vegetation;

Require new plantings be grouped by hydrozones of water needs listed in the WUCOL III developed by the Department of Water Resources and the University of California Cooperative Extension (or successor document); and

Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design including graywater systems.

Policy

SN1.3 Hazardous Materials Operations. Require safe production, transportation, handling, use and disposal of hazardous materials that may cause air, water or soil contamination. Encourage best practices in hazardous waste management and ensure consistency with City, West Contra Costa County and OSHA guidelines, standards and requirements. Protect Richmond's shoreline and other natural resources from accidental occurrences by controlling the location of new hazardous waste facilities and by limiting the expansion of existing hazardous waste facilities adjacent to the shoreline and along streams or creeks. Coordinate with federal, state and local agencies and law enforcement to prevent the illegal transportation and disposal of hazardous waste.

Actions

- SN1.G Hazardous Waste Management Plan. Update the City's Hazardous Waste Management Plan every five years. Include best practices in hazardous waste management. Develop the plan in accordance with City, West Contra Costa County and OSHA guidelines, standards and requirements.
- SN1.H Hazardous Material Regulation. Regularly review and update regulations for the production, use, storage, disposal, transport and treatment of hazardous materials to reduce risk to human and environmental health.
- SN1.I Hazardous Waste Reduction. Reduce or eliminate hazardous waste generation to the maximum extent feasible through the use of effective waste strategies including: reductions in the use of hazardous substances; the use of safe substitutes; recycling; resource recovery and reuse; and on-site treatment.
- SN1.J Hazardous Materials Response Plan. Regularly review and update guidelines, protocols and strategies to respond to a local hazardous materials spill. Create a response plan as part of a comprehensive Hazardous Waste Management Plan.
- SN1.K Develop an awareness program to expand public engagement in the planning and handling of hazardous waste in the community, especially at home. Educate the community about roles and responsibilities in the event of an emergency. Distribute information to the public in multiple ways and in multiple languages. Create a response plan as part of a comprehensive Hazardous Waste Management Plan.

Implementation of the regulations, policies, and actions listed above would protect groundwater during construction, reduce use of recycled water for landscape irrigation, and reduce potential for contaminants in soil and water, thereby reducing impacts on groundwater quality. Implementation of these regulations and policies would ensue impacts related to ground water quality would be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. Concerns associated with groundwater quality degradation assumed full buildout conditions. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would

address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-7 Construction and operation of development under the proposed General Plan could expose people and structures to 100-year flood hazards. However, existing and proposed flood hazard regulations, policies, and implementing actions of the proposed General Plan would reduce risks to acceptable levels. The impact would be less than significant.

Areas within the City are located within 100-year flood hazard areas as identified by FEMA. Development within these areas would expose people, residences, and structures to risks from a 100-year flood event or greater. However, existing floodplain development regulations and proposed General Plan Policies and Implementing Actions would reduce effects of development within 100-year flood hazard areas to less than significant. Furthermore, there are no floodways as delineated in the FEMA June 2009 flood hazard maps. Therefore, there would be no impact on floodways and flood flows.

Policy

CN3.3 Flood Management. Minimize the flood hazard risks to people, property and the environment. Address potential damage from a 100-year flood, tsunami, sea level rise and seiche, and implement and maintain flood management measures in all creeks and in all watersheds.

Action

CN3.D Flood Control Requirements. Require new development to install and maintain flood control measures on all creeks and watersheds in coordination with the Flood Control District. Include flood prevention mitigation measures for any developments within the 100-year floodplain. Require new development to install flood control measures to address sea level rise as appropriate. Improve groundwater recharge and minimize stormwater runoff to better accommodate floodwaters.

Policy

SN1.2 Flood Management. Minimize the flood hazard risks to people, property and the environment. Address potential damage from a 100-year flood, tsunami, sea level rise and seiche, and implement and maintain flood management measures in all creeks and in all watersheds.

Action

SN1.D Flood Hazard Zone Designation. Regularly review and update areas designated as flood hazard zones in the City based on Federal Flood Insurance Rate Maps. Require special design features to prevent damage from flooding for all new development located within the areas subject to flood hazard. Include a special designation for areas that will be impacted by rising sea levels.

Policy

SN3.1 Emergency and Disaster Preparedness. Maintain staff and facilities that will continue to support a coordinated and effective response to emergencies and natural disasters throughout the City. Coordinate with neighboring jurisdictions, local employers and industries to make sure that emergency preparedness and disaster response programs equitably serve all parts of the City. Continue to maintain adequate police and fire staffing, facilities, equipment and maintenance in order to protect the community.

Actions

SN3.A Disaster Preparedness and Recovery Plan. Require that all development and redevelopment projects comply with the City's Disaster Preparedness and Recovery Plan. Regularly review and update the plan and expand public training and information.

SN3.B Multi Jurisdictional Coordination. Maintain a multi jurisdictional disaster preparedness program with other West Contra Costa County cities, utility companies and the East Bay Regional Park District. Continue to participate in the Operation Area Disaster Council to pool resources and better coordinate a comprehensive program of disaster preparedness. Coordinate emergency police and fire services and facilities with other jurisdictions. Continue to maintain aid agreements with other fire protection agencies in West Contra Costa County. Continue to participate in the joint Contra Costa and Alameda County radio communications program.

SN3.C Emergency Preparedness Exercises. Continue to hold joint fire, hazardous materials incidents, disaster drills and earthquake response exercises with adjacent communities, utility companies, larger businesses and industry, the East Bay Regional Park District and the State Office of Emergency Services in order to test and improve preparedness capabilities.

SN3.D Emergency Operations Center. Maintain a permanent emergency operations center in accordance with the City of Richmond Emergency Operations Plan.

SN3.E Corporation, Industry and Utility Emergency Plans. Regularly meet with large employers to develop and maintain up-to-date emergency plans for use in the event of a catastrophic event.

Policy

CF2.4 Adequate Maintenance. (see above)

Action

CF2.D Disaster Preparedness and Recovery Plan. Require that all development and redevelopment projects comply with the City's Disaster Preparedness and Recovery Plan. Regularly review and update the plan and expand public training and information.

Implementation of the regulations, policies, and actions listed above would reduce effects of development within 100-year flood hazard areas by requiring installation and maintenance of flood control measures on all creeks and watersheds in coordination with the Flood Control District. Impacts related to exposure of people and structures to 100-year flood hazards would, therefore, be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. The analysis of flooding assumes full buildout conditions in the Plan Area. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-8 Development within the City could be subject to dam failure inundation and sea level rise flood hazards. Implementation of General Plan Policies and Implementing Actions would render this a *less than significant impact*.

The City is located within the dam failure inundation area of the San Pablo Reservoir dam. Failure of the San Pablo dam would inundate the City west of 23rd Street and between 23rd Street and I-80 from about Macdonald Avenue to between San Pablo Dam Road and Hilltop Drive and along San Pablo Creek, east of I-80. As noted in the setting, the San Pablo Reservoir dam was structurally unstable. However, EBMUD completed a seismic upgrade consisting of a larger buttress and improvements to the foundation to seismically strengthen the dam. The San Pablo Dam Seismic Upgrade was completed in September 2010 and the reservoir level limits have been returned to their pre-2004 status and the dam and reservoir are now fully operational.

As noted above, sea level rise could occur, which could result in coastal flooding at a greater frequency and to a larger extent than currently occurs. These flood risks would also include erosion and destructive forces from wave action. Development of structures and public uses within coastal areas would be subject to greater risks.

Proposed General Plan Policies and Implementing Actions that would reduce the impact of dam failure inundation are identified below and would reduce potential flood hazards to less than significant.

Policy

SN1.1 Geologic and Seismic Safety. Minimize risk of injury, loss of life and property damage from seismically induced and other known geologic hazards. Regulate land use and apply development standards and construction practices to reduce the risk to humans and property in the event of an earthquake or other geological activity.

Action

SN1.C Regularly review and update geotechnical review guidelines for major redevelopments or new developments to determine the degree of seismic and geologic hazards that might be expected for a particular structure or location. Guidelines should require site-specific geotechnical studies on a case-by-case basis for projects proposed to be built on, or adjacent to, inactive bedrock faults or other potential geologic hazards including geologic anomalies, slope instability

or other potentially hazardous conditions. Ensure that the investigation is performed by technically qualified staff.

Policy

SN1.2 Flood Management. (see above)

Actions

SN1.D Flood Hazard Zone Designation. (see above)

SN1.E Dam Failure and Seiche Monitoring. Meet with East Bay Municipal Utility District (EBMUD) on a regular basis to discuss the viability of the San Pablo Dam, potential failures, and the EBMUD's Emergency Action Plan.

Policy

SN3.1 Emergency and Disaster Preparedness. (see above)

Actions

SN3.A Disaster Preparedness and Recovery Plan. (see above)

SN3.B Multi Jurisdictional Coordination. (see above)

SN3.C Emergency Preparedness Exercises. (see above)

SN3.D Emergency Operations Center. (see above)

SN3.E Corporation, Industry and Utility Emergency Plans. (see above)

Policy

CF2.4 Adequate Maintenance. (see above)

Action

CF2.D Disaster Preparedness and Recovery Plan. (see above)

Policy

CF1.1 A Range of High-Quality Community Facilities and Infrastructure. (see above)

Action

CF1.F Public Utilities Revitalization. (see above)

Proposed General Plan Policies and Actions that would reduce the impact of sea level rise inundation to less than significant.

Policy

EC6.2 Low-Lying Areas in Richmond. Protect and manage low-lying areas that are likely to be affected by sea level rise and storm surges. Encourage development patterns, infrastructure and flood management practices that can adapt to potential climate change impacts in these low-lying areas.

Action

EC6.A Open Space Plan. Develop and implement an open space plan to enhance public open space in the City. Include strategies for open space in the hills, along creeks and the shoreline, and in the urban core. Collaborate with the East Bay Regional Park district and the National Park Service to manage and maintain facilities and programs at regional and national parks.

Policy

EC6.3 Adapting to Climate Change. Prepare for and adapt to future impacts of changing weather patterns and sea level fluctuations. Develop a climate action plan and work with regional regulatory agencies and local property owners to develop strategies aimed at reducing the potential impacts of climate change and sea level fluctuations. All projects proposed for construction within 300 feet of the existing shoreline (high tide) will include an evaluation of the impact of a one meter rise in sea level.

Policy

CF2.4 Adequate Maintenance. (see above)

Action

CF2.D Disaster Preparedness and Recovery Plan. (see above)

Policy

CN3.3 Flood Management. (see above)

Action

CN3.D Flood Control Requirements. (see above)

Policy

SN1.2 Flood Management. (see above)

Action

SN1.D Flood Hazard Zone Designation. (see above)

Implementation of the policies and actions listed above require special design features to prevent damage from flooding for all new development located within the areas subject to flood hazard and coordination with East Bay Municipal Utility District regarding flood potential and EBMUD's Emergency Action Plan. The policies also include management of low-lying areas that are likely to be affected by sea level rise and storm surges and encourage development patterns, infrastructure, and flood management practices to adapt to potential climate change impacts. Impacts related to exposure of people and structures to flood hazards from dam inundation and sea level rise would be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. The analysis of dam failure inundation and sea level rise flood hazards assumes full buildout conditions. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.9-9 The proposed General Plan would require infrastructure improvements to accommodate increased stormwater runoff and drainage needs, the construction of which could result in physical impacts. However, standard construction measures and Best Management Practices would reduce impacts to less than significant. This is a *less-than-significant impact*.

New storm drains to serve new and existing development would be constructed under the proposed General Plan. Construction of the new storm drain systems would be subject to the same regulatory requirements and proposed General Plan Policies and Implementing Actions as described under Impacts 3.9-1, 3.9-3, 3.9-4, and 3.9-5. This would ensure that adequate drainage would be provided for new development under the General Plan and that the design would incorporate BMPs and ensure a *less-than-significant impact* related to stormwater runoff and drainage infrastructure.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. While stormwater runoff and drainage infrastructure needs would be greater under a full buildout scenario, the same regulations and policies would apply to all growth in the City. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

Cumulative growth and development within Contra Costa County would be subject to the Construction General Permit, Municipal NPDES Permit (or Regional NPDES Permit, if adopted), Industrial General Permit (for regulated industries), and Recycled Water General Permit. These waste discharge requirements have been designed to be protective of water quality – both surface water and groundwater. Compliance with these permits, including the hydrograph modification standard, would reduce the potential for erosion and siltation, transport of pollutants in stormwater runoff to receiving waters, and ensure that the use of recycled water for landscaping does not present additional environmental risk. Consequently, compliance with these permits would ensure protection of surface water and groundwater quality through implementation of BMPs, pollutant source reductions, and operations and management practices. Relevant water quality standards, with which development would be required to comply through the RWQCB, are listed in the Basin Plan. Development within Contra Costa County would also be guided by the Contra Costa General Plan and County Code and individual city general plans and municipal codes. These regulatory mechanisms include permitting and inspections to ensure compliance with the General Permits and local permits. Compliance with these existing regulatory mechanisms, potential cumulative violation

of waste discharge requirements or water quality standards, erosion and siltation, and polluted stormwater runoff would be less than significant.

Development within Contra Costa County has already altered drainage patterns such that potential inland flooding occurs during rain events and coastal areas experience flooding from the Bay. Sea level rise could exacerbate coastal flooding and flooding within channels near the Bay. Additionally, failure of the San Pablo Reservoir dam could inundate portions of several cities in Contra Costa County. Contra Costa County has a Community Warning System and is developing a County-Wide Multi-Hazard Mitigation Plan. EBMUD has improved the San Pablo Reservoir dam to reduce failure risk inundation of communities from the San Pablo Reservoir dam. FEMA and local municipal codes include minimum requirements for development within a flood hazard area, for both residential and non-residential uses. While continued development exposes people and structures to greater risks, existing regulations would ensure that risks are not substantial and cumulative impacts on flooding would be less than significant.

The current potential for coastal flooding will likely be exacerbated by a trend of rising sea levels worldwide. BCDC predicts mean sea level could rise by 16 inches by 2050 and 55 inches by 2100. The Metropolitan Transportation Commission (MTC), the region's transportation planning and financial authority, and the Association of Bay Area Governments (ABAG), the regional council of local governments, are working together on a program called FOCUS, which is aimed at assuring that future growth in the region is more compact, more centered on transit corridors and more sustainable. MTC and ABAG have also joined with the air district to address climate change through a coordinating council called the Joint Policy Committee (JPC). BCDC joined the JPC in a non-voting capacity in 2007, and state legislation was passed in 2008 that allows BCDC to become a voting member of the JPC and directs the Commission to address climate change and sea level rise in its planning activities. Contra Costa County has instituted a wide range of programs and activities that have reduced greenhouse gas emissions (emissions that contribute to global warming). Regardless, potential cumulative impacts on sea level rise remain potentially significant until a comprehensive, adaptive management plan has been developed for affected areas. The Proposed General Plan includes policies for preventing flood risks and adaptive management for future sea level rise that reduces potential impacts to less-than-significant levels. As such, the Proposed General Plan would not contribute considerably to cumulative sea level rise impacts.

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3.10 NOISE

INTRODUCTION

This section evaluates the impacts of the proposed General Plan associated with noise within the City. It describes the existing noise environment in and around the City and the potential for significant increases in noise and groundborne vibration levels due to implementation of the proposed General Plan. Potential direct and indirect impacts resulting from construction and operational activities associated with implementation of the proposed General Plan are identified, and potential mitigation measures that could avoid or reduce impacts are recommended, where feasible.

Data used to prepare this section were taken from the *City of Richmond Municipal Code*, the *City of Richmond General Plan and Zoning Ordinance Updates Program Environmental Impact Report* (1993), the *City of Richmond 2010 General Plan, Transit Noise and Vibration Impact Assessment* (2006), as well as other City documents.

Comments associated with noise impacts were received in response to the IS/NOP circulated for the proposed General Plan, including concerns regarding potential traffic noise impacts.

ENVIRONMENTAL SETTING

Fundamentals of Sound and Environmental Noise

Sound is created when vibrating objects produce pressure variations that move rapidly outward into the surrounding air, and it is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Because the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady “background” noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 3.10-1 (Representative Environmental Noise Levels) lists representative noise levels for the environment.

TABLE 3.10-1		
REPRESENTATIVE ENVIRONMENTAL NOISE LEVELS		
Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Power Saw	—110—	Rock Band
Jet Fly-over at 100 feet		Crying Baby
Subway	—100—	
Gas Lawnmower at 3 feet		
Tractor	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	Sewing Machine
Air Conditioner		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
		Refrigerator
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, Noise, Air Quality, and Hazardous Waste Management Office, *Technical Noise Supplement*, October 1998, p. 18.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- L_{eq} , the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- *CNEL*, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 5 dBA “weighting” during the hours of 7:00 P.M. to 10:00 P.M. and a 10 dBA “weighting” added to noise during the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
- L_{min} , the minimum instantaneous noise level experienced during a given period of time.

- L_{max} , the maximum instantaneous noise level experienced during a given period of time.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically above 60 dBA). People may consider louder environments adverse, but most would accept the higher levels associated with more noisy urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather and reflecting or shielding, also intensify or reduce the noise level at a location. A common method for estimating roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is normal earth or has vegetation, such as grass).

Noise from stationary or point sources (including construction noise) is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.¹

Fundamentals of Groundborne Vibration

Vibration is sound radiated through the ground. Groundborne noise is the rumbling sound caused by the vibration of room surfaces. The ground motion caused by vibration is measured as particle velocity in inches per second; in the U.S., this is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration

1 Harris Miller Miller & Hanson Inc. 2006. Transit Noise and Vibration Impact Assessment, Final Report, May.

from traffic is rarely perceptible. Ground-borne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies building vibration is perceptible only inside buildings. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Table 3.10-2 (Human Response to Different Levels of Groundborne Vibration) describes the general human response to different levels of groundborne vibration velocity levels.

HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUNDBORNE VIBRATION	
Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.
Source: Harris Miller Miller & Hanson Inc. 2006. Transit Noise and Vibration Impact Assessment, Final Report. May 2006.	

Existing Noise Environment

Land uses within the City are residential, commercial, institutional, industrial, and recreational and open space areas. Although there are many noise sources within Richmond, the primary noise source is traffic. Significant noise is also generated by railroads, BART, aircraft, and various stationary sources as described below.

Motor Vehicles

Motor vehicles commonly cause sustained high noise levels in the vicinity of busy freeways or roadways. The two major freeways that run through the City are Interstate 80 and Interstate 580. The City also has many local roads that experience high traffic volumes with resulting traffic noise in the adjacent areas. Residential and other noise-sensitive areas in these high-traffic corridors usually have some level of protection from such noise as a consequence of their setbacks from the roadsides or from the presence of walls or other barriers. Also, there is some level of noise attenuation to the interior spaces afforded by the buildings' structural materials.

Aircraft

There are no airports in the City; however, Richmond is served by two airports, the Oakland International Airport, approximately 20 miles south of the City, and the San Francisco International Airport, approximately 30 miles southwest of the City. Aircraft using both airports fly over the City, but the City is outside their 65 dBA CNEL noise impact areas.

Railroads

Several rail lines cross through the City both north to south and east to west:

- The Union Pacific and Amtrak lines generally run north/south through the City, along Carlson Boulevard in the southern part of the City, near the BART/Amtrak station in downtown, and then near the shoreline in the northern part of the City.
- The Burlington Northern Santa Fe Railway generally runs north/south through the City. This route is composed of two railway spurs south of Interstate 580 that connect near Garrard Boulevard and that continue north, running parallel to the Union Pacific and Amtrak lines.
- The Richmond Pacific Railroad contains two tracks that run east/west that connect to the main Union Pacific line. One spur runs south of Interstate 580 and connects to the Union Pacific line near the Regatta Boulevard overpass. The other runs parallel to Castro Street and connects to the Union Pacific line near Garrard Boulevard.

In addition to freight trains, Amtrak passenger trains also arrive and depart from the Amtrak station located at 16th Street and Macdonald Avenue in downtown Richmond adjacent to the BART station. These trains use the same route that Union Pacific freight trains use through the City. Amtrak operate two routes through Richmond: the Capitol Corridor route, which runs from San Jose to Auburn, and the San Joaquin, which runs from Bakersfield to Oakland. Passenger trains along this route average approximately 16 per day on the Capitol Corridor route and 4 per day on the San Joaquin. In addition to the noise generated by the trains themselves, noise is generated by train horns and warning bells where train tracks intersect roadways.

BART

BART also runs through the City to the Amtrak/BART station at 16th Street and Macdonald Avenue. The BART station in Richmond is a final destination for the Richmond-Fremont BART line, and trains arrive from and depart to the south. The BART route runs at-grade and parallel to the Amtrak line for about half a mile and then along an elevated structure that is parallel to Ohio Avenue into El Cerrito.

Stationary Sources

There are a variety of stationary sources of noise around Richmond that are common to large urban areas. In residential areas, noise is generated from heating, ventilation, and air-conditioning (HVAC) equipment, and landscape maintenance activities (such as leaf-blowing equipment and gasoline-powered lawnmowers). In commercial areas, noise comes from the operation of larger, rooftop-mounted HVAC equipment and other activities associated with commercial operations. In industrial areas of Richmond, noise is generated from the use of heavy equipment associated with shipping and loading activities, metal scrapping facilities, and recycling centers. Outdoor sporting event facilities, such as athletic fields at Richmond High School, can attract a large number of spectators for events and produce noise that can affect nearby noise-sensitive residential areas

Sensitive Receptors

Sensitive receptors are those uses that have associated human activities that may be subject to stress or significant interference from noise. Noise-sensitive receptors typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, retirement homes, churches, and libraries. All of these land uses are common in Richmond.

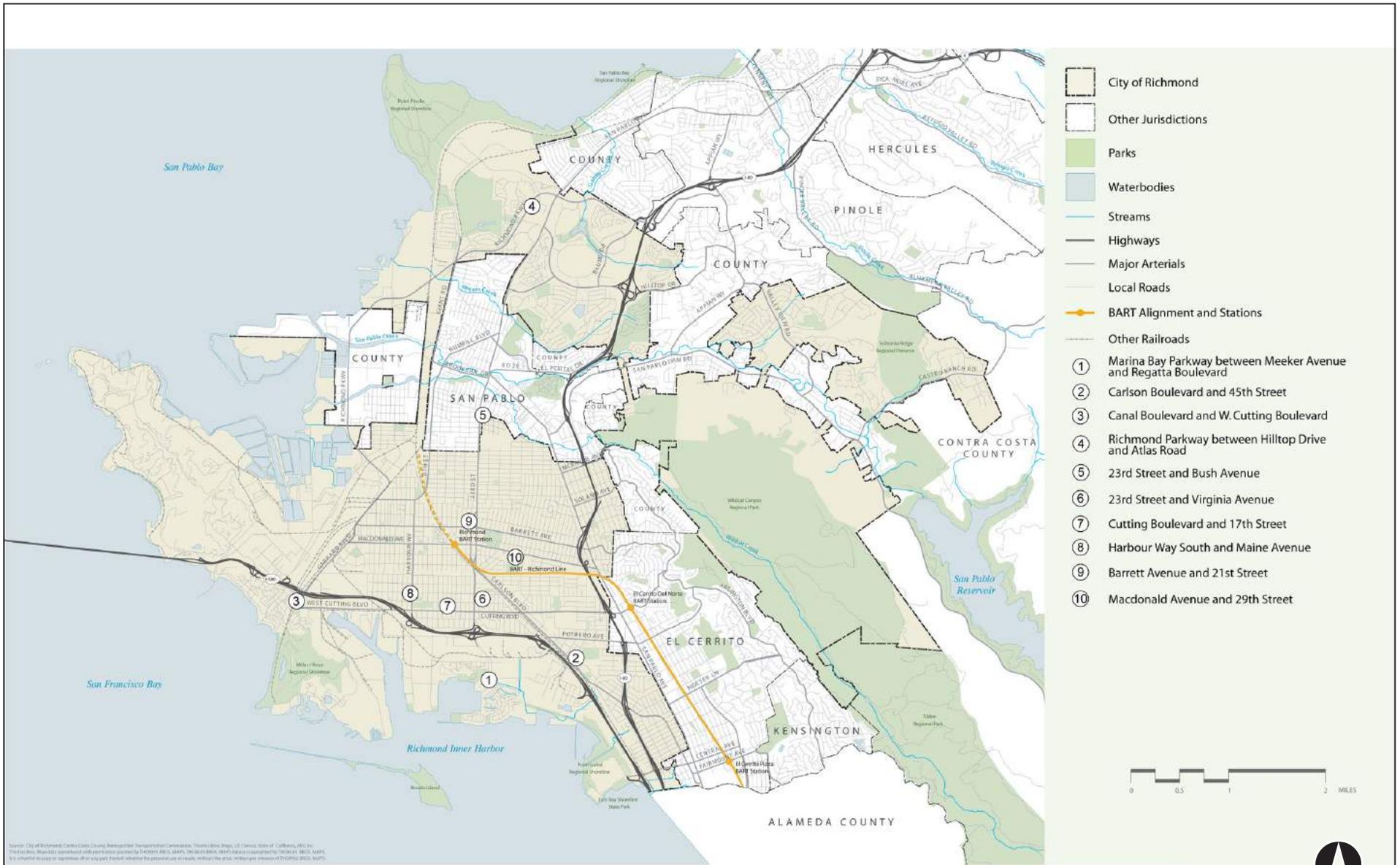
Existing Noise Levels

Measured Noise Levels

Existing ambient daytime noise levels were measured at ten locations where future development is anticipated and where sensitive receptors are already present in order to determine representative noise levels in areas with a potential for noise-land use conflicts as the City grows over time. These locations are shown in Figure 3.10-1.

The noise levels were monitored using a Larson-Davis Model 720 sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Measured noise levels for each location are identified in Table 3.10-3. Notes on local monitoring conditions and noise sources are included in the table.

Location/Start Time²	L_{eq}	L_{min}	L_{max}
1. Marina Bay Parkway between Meeker Avenue and Regatta Boulevard (Start time: 3:50 p.m.)	67.3	45.5	90.3
2. Carlson Boulevard and 45th Street (Start time: 4:25 p.m.)	70.4	59.0	93.1
3. Canal Boulevard and W. Cutting Boulevard (Start time: 5:00 p.m.)	62.9	55.3	72.0
4. Richmond Parkway between Hilltop Drive and Atlas Road (Start time: 5:50 p.m.)	69.4	49.8	87.2
5. 23rd Street and Bush Avenue (Start time: 6:30 p.m.)	70.3	54.4	84.8
6. 23rd Street and Virginia Avenue (Start time: 10:30 a.m.)	67.2	49.9	84.5
7. Cutting Boulevard and 17th Street (Start time: 10:55 a.m.)	64.8	43.0	80.8
8. Harbour Way South and Maine Avenue (Start time: 11:25 a.m.)	68.5	45.8	86.0
9. Barrett Avenue and 21st Street (Start time: 12:00 p.m.)	68.5	47.1	83.7
10. Macdonald Avenue and 29th Street (Start time: 12:45 p.m.)	64.5	45.1	86.5
Notes: 1 L _{eq} is the average noise level over the measurement period, L _{min} is the minimum instantaneous noise level over the measurement period, L _{max} is the maximum instantaneous noise level over the measurement period. 2 Measurements were made on September 19 and 20, 2006. Each measurement was 15 minutes in duration. Source: PBS&J, 2006.			



Source: City of Richmond, 2009.



FIGURE 3.10-1
Noise Monitoring Locations

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Richmond GPU EIR

Location #1: Marina Bay Parkway between Meeker Avenue and Regatta Boulevard

Monitoring was conducted just outside property line of a vacant lot, approximately 12 feet from the edge of the roadway. The lot is identified as the site for future residential units and is adjacent to existing residential units further south along Marina Bay Parkway. The primary source of noise was from traffic along Marina Bay Parkway. Secondary noise sources included occasional train horn noise from distant locations and a train pass-by along the Richmond Pacific Railroad approximately 500 feet away.

Location #2: Carlson Boulevard and 45th Street

Monitoring was conducted at the setback of residential units along Carlson Boulevard. The primary source of noise was traffic along Carlson Boulevard. Secondary noise sources included passing freight and passenger trains along the Union Pacific Railroad that runs parallel to Carlson Boulevard. Traffic noise from Interstate 580 was also present in the background. In this area, Interstate 580 runs parallel to Carlson Boulevard and the Union Pacific Railroad. The monitor was set up approximately 10 feet from the edge of the Carlson Boulevard.

Location #3: Canal Boulevard and West Cutting Boulevard

Monitoring was conducted at the setback of the Quality Inn hotel along Canal Boulevard. The primary source of noise was traffic along Canal Boulevard, which included truck traffic associated with the port and other industrial uses. Secondary noise sources included cars and trucks entering and leaving the parking area and noise from Interstate 580. Monitoring was conducted approximately 75 feet from the roadway edge and the nearest driveway where cars and trucks entered and exited the parking area.

Location #4: Richmond Parkway between Hilltop Drive and Atlas Road

Monitoring was conducted at the setback of the apartment complex along Richmond Parkway near the Hilltop Drive intersection in front of the sound wall for the adjacent single-family residences. The primary source of noise was traffic along Richmond Parkway. The reading was taken approximately 40 feet from the edge of the roadway.

Location #5: 23rd Street and Bush Avenue

Monitoring was conducted at the setback of the residential units along 23rd Street near the Richmond/San Pablo border in the City of San Pablo. Primary source of noise was traffic along 23rd Street. The reading was taken approximately 10 feet from the edge of the roadway.

Location #6: 23rd Street and Virginia Avenue

Monitoring was conducted at the setback of the residential units along 23rd Street at Virginia Avenue. The primary source of noise was traffic along 23rd Street. The reading was taken approximately 20 feet from the edge of the roadway.

Location #7: Cutting Boulevard and 17th Street

Monitoring was conducted at the setback of the residential units along Cutting Boulevard at 17th Street. The primary source of noise was traffic along Cutting Boulevard. The reading was taken approximately 40 feet from the edge of the roadway.

Location #8: Harbor Way South and Maine Avenue

Monitoring was conducted at the setback of the closest residential unit along Harbor Way South at Maine Avenue. The measurement was taken across the street from Harbor Way Elementary School. Traffic along Harbor Way South was the primary source of noise. The reading was taken approximately 12 feet from the edge of the roadway.

Location #9: Barrett Avenue and 21st Street

Monitoring was conducted at the setback of the residential units along Barrett Avenue at 21st Street. The primary source of noise was traffic along Barrett Avenue. The reading was taken approximately 10 feet from the edge of the roadway.

Location #10: Macdonald Avenue and 29th Street

Monitoring was conducted at Nicholl Park and at the approximate setback of the adjacent residential units along Macdonald Avenue. The primary source of noise was traffic along Macdonald Avenue. The reading was taken approximately 20 feet from the edge of the roadway.

Roadway Noise Levels

Existing 24-hour traffic noise levels were calculated for the roadways with the highest traffic volumes. This task was accomplished using the FHWA Noise Prediction Model (FHWA-RD-77-108). The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions.

The model was used to calculate noise levels along Richmond Parkway, Harbour Way, Cutting Boulevard, and other busy streets in the City. The existing roadway 70 dBA, 65 dBA, and 60 dBA CNEL noise contours are shown in Figure 3.10-2 (Existing Roadway Noise Contours). Existing residential uses in close proximity to these highway and roadway segments are exposed to high noise levels on a regular basis. Table 3.10-4 (Existing Roadway Noise Levels) lists the existing roadway noise levels at 100 feet from roadway centerlines.

Noise Levels Associated with Construction Activities in the City

Construction activities are a regular and on-going source of noise within the City due to the construction and/or renovation of new and existing structures. Noise levels generated by construction activities are generally isolated to the immediate vicinity of the construction site and typically occur during daytime hours in accordance with City regulations. Construction activities also

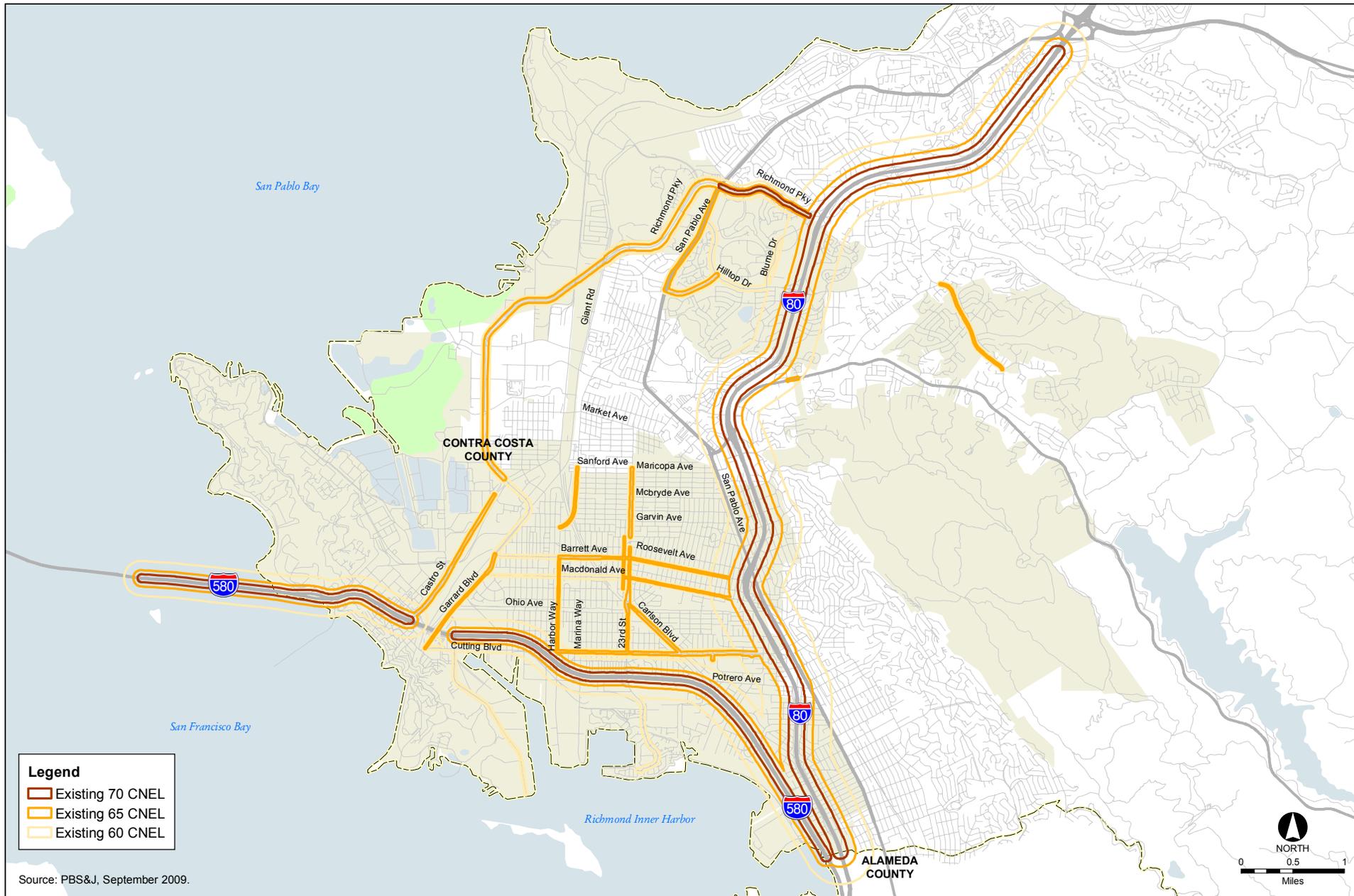


FIGURE 3.10-2

Existing Noise Contours within the City of Richmond



Roadway Segment	Reference CNEL at 100 Feet ^a	Distance to Noise Contour (feet) ^b		
		70 CNEL	65 CNEL	60 CNEL
Richmond Parkway from Blume to San Pablo	68.1	75	161	348
Blume from Richmond Parkway to Hilltop	57.8	-	-	71
Hilltop from I-580 to San Pablo	60.3	-	-	104
Robert Miller from San Pablo to Hilltop	63.5	-	79	170
San Pablo from Richmond Parkway to Robert Miller	63.8	-	83	180
Richmond Parkway from San Pablo to Giant	66.7	-	129	278
Richmond Parkway from Giant to Castro	64.0	-	86	186
Richmond Parkway from Castro to Barrett	59.9	-	-	98
13th / Pennsylvania from Sanford to Harbour	61.7	-	61	131
23rd from Sanford to Grant	63.1	-	74	160
Barrett from Richmond Parkway to Harbour	58.5	-	-	79
Barrett from Harbour to 22nd	61.0	-	54	116
Barrett from 22nd to San Pablo	61.1	-	55	119
Macdonald from Richmond Parkway to Harbour	56.8	-	-	61
Macdonald from Harbour to 22nd	59.2	-	-	88
Macdonald from 22nd to San Pablo	60.2	-	48	103
Richmond Parkway from Barrett to Macdonald	60.8	-	53	114
Harbour from Barrett to Macdonald	60.9	-	53	115
22nd from Grant to Bissell	59.9	-	46	99
23rd from Grant to Bissell	60.4	-	50	107
Castro from Richmond Parkway to I-580	63.0	-	74	159
Richmond Parkway from Macdonald to Cutting	61.0	-	54	116
Harbour from Macdonald to Cutting	61.0	-	54	116
23rd from Bissell to Cutting	61.6	-	59	128
Carlson from 23rd to Cutting	61.3	-	57	123
Cutting from S Garrard to Harbour	59.4	-	-	91
Cutting from Harbour to 23rd	62.3	-	66	143
Cutting from 23rd to Carlson	61.3	-	57	122
Cutting from Carlson to I-80	64.1	-	87	187
Canal from Cutting to Marina	57.7	-	-	70
Harbour from Wright to Marina	53.0	-	-	-
Marina Bay Pkwy from Meeker to Marina	59.8	-	-	98
Carlson from Cutting to I-80	58.3	-	-	77
Central from I-580 to I-80	61.5	-	58	126
San Pablo Dam from Barranca to El Portal	62.8	-	71	154
San Pablo Dam from Castro Ranch to City Limits	63.3	36	77	166
Castro Ranch from Hillside to City Limits	57.4	-	-	67
Valley View from Sobrante to Amend	61.3	-	56	122
I-80 from City Limits to Richmond Pkwy	77.7	324	697	1502
I-80 from Richmond Pkwy to Hilltop Dr	77.4	313	675	1455
I-80 from Hilltop Dr to El Portal Dr	77.8	331	714	1538
I-80 from El Portal Dr to San Pablo Dam Rd	77.8	332	716	1543
I-80 from San Pablo Dam Rd to Solano Ave	77.9	337	726	1564
I-80 from Solano Ave to San Pablo Ave	79.0	398	857	1846
I-80 from San Pablo Ave to Cutting Blvd	78.8	386	833	1794
I-80 from Cutting Blvd to Potrero Ave	78.3	357	769	1657
I-80 from Potrero Ave to Carlson Blvd	78.6	375	808	1741
I-80 from Carlson Blvd to Central Ave	78.4	362	780	1681
I-80 from Central Ave to City Limits	78.3	357	769	1657
I-580 from I-80 to Central Ave	74.7	207	445	960
I-580 from Central Ave to Bayview Ave	74.7	207	445	960

Roadway Segment	Reference CNEL at 100 Feet ^a	Distance to Noise Contour (feet) ^b		
		70 CNEL	65 CNEL	60 CNEL
I-580 from Bayview Ave to Regatta Blvd/Erlandson St	74.8	210	452	974
I-580 from Regatta Blvd/Erlandson St to 23rd St/ Marina Bay Pkwy	74.7	207	445	960
I-580 from 23rd St/Marina Bay Pkwy to Harbour Way/ Cutting Blvd	74.1	188	405	872
I-580 from Harbour Way/Cutting Blvd to Canal Blvd	73.5	171	369	796
I-580 from Castro St to Western Dr	74.2	190	408	880
I-580 from Western Dr to Richmond Bridge	74.1	188	405	872

Notes:
a. Distances are in feet from roadway centerline. The identified noise level at 100 feet from the roadway centerline is for reference purposes only as a point from which to calculate the noise contour distances. It does not reflect an actual building location or potential impact location.
b. Noise contour is located within the roadway lanes.
Source: PBS&J, 2009 (calculation data and results are provided in Appendix D).

typically occur for relatively short-term periods of a few weeks to a few months and then the noise sources are removed from the construction area.

Regulatory Context

Various standards have been developed to address the compatibility of land uses and noise levels. The applicable standards are presented in the following discussion. Special emphasis is placed on land uses that are considered to be sensitive to high noise levels. Typical sensitive receptors include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, and retirement homes. Each of these land use types currently occur within the City.

Federal

The federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare, particularly in urban areas. In response to the Noise Control Act, the Environmental Protection Agency (EPA) published *Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels, 1974)*. Table 3.10-5 summarizes EPA recommendations for residential land uses, i.e., the yearly average Leq not exceeding 70 dBA, or less to prevent measurable hearing loss over a lifetime; L_{dn} not exceeding 55 dBA outdoors; and 45 dBA indoors to prevent activity interference and annoyance. The EPA did not intend these findings to serve as standards, or regulatory goals, but rather as advisory exposure levels below which there would be no reason to suspect that people would be at risk from any of the identified health or welfare effects of noise.

The EPA *Levels* report also identified a 5 dBA increment above 55 dBA L_{dn} as the adequate margin of safety before there would be an adverse community reaction as evidenced by a higher frequency of complaints, among other factors.

TABLE 3.10-5		
SUMMARY OF NOISE LEVELS IDENTIFIED AS REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY¹		
Effect	Level	Area
Hearing	Leq(24 hr.) < 70 dBA	All areas
Outdoor activity interference and annoyance	Ldn < 55 dBA	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
Outdoor activity interference and annoyance	Leq(24 hr.) < 55 dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	Ldn < 45 dBA	Indoor residential areas
Indoor activity interference and annoyance	Leq(24 hr.) < 45 dBA	Other indoor areas with human activities such as schools, etc.
Note: 1. Yearly average equivalent sound levels in decibels; the exposure period which results in hearing loss at the identified level is a period of forty years. Source: U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.		

The Federal Transit Administration (FTA) has developed an extensive methodology and significance criteria to evaluate noise impacts from surface transportation modes (inclusive of motor vehicles, bus, and rail).² The FTA's criteria are clear and are generally accepted by acoustic scientists as a standard for assessing noise impacts from varied transportation sources. The FTA incremental noise impact criteria are presented in Table 3.10-6. These criteria are based on the EPA findings (as presented in *Levels* and summarized in Table 3.10-5) and subsequent studies of annoyance in communities affected by transportation noise.^{3,4} Starting from the EPA's definition of minimal noise impact as a 5 dBA change from an existing ambient level of 50 dBA L_{dn} , the FTA extended the incremental impacts criteria to higher baseline L_{dn} by requiring that increases in adverse community reaction be kept below a defined minimal level (i.e., a 2 percent increase the number of residents reporting a "high" level of annoyance when surveyed). As baseline L_{dn} increases, it takes a smaller and smaller increment to attain the same increase in annoyance (i.e., 5 dBA at 50 dBA L_{dn} , but only 1 dBA at 70 dBA L_{dn}).

There are other federal noise regulations for projects where federal funding is involved. The Federal Highway Administration requires abatement of highway traffic noise for highway projects and the Federal Railroad Administration recommends thorough noise and vibration assessments through comprehensive guidelines for any mass transit or high-speed railroad projects that would pass by residential areas. The Department of Housing and Urban Development has noise insulation standards for housing constructed with its assistance. The Federal Aviation Administration (FAA) has prepared guidelines under its Noise Compatibility Planning program for acceptable residential noise exposure near airports. According to Part 150 of the FAA guidelines, exterior aircraft

2 Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006.

3 Schultz, Theodore J. *Synthesis of Social Surveys on Noise Annoyance*, Journal of the Acoustical Society of America 64, pp. 377-405, August 1978.

4 Finegold, L., Harris, C., and von Gierke, H. *Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People*, Noise Control Engineering Journal 42, pp. 25-30, 1994.

exposures of 65 dBA CNEL or less and an interior exposure of 45 dBA CNEL or less are considered acceptable for residential uses.

Existing Noise Level	Land Use Categories 1 & 2			Land Use Category 3		
	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment
45	52	53	8	57	57	12
50	53	55	5	58	59	9
55	55	58	3	60	61	6
60	58	62	2	63	65	5
65	61	66	1	66	68	3
70	64	71	1	69	73	3
75	65	75	0	70	76	1
80	65	80	0	70	80	0

Notes:
Impact criteria are Ldn or Leq (peak hour) depending on Land Use Category given below:
Land Use Category 1: Tracts of land where quiet is an essential element in their intended purposes. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor uses. Also included are recording studios and concert halls. The noise metric for Category 1 is the outdoor Leq during the noisiest hour of activity.
Land Use Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance. The noise metric for Category 2 is the outdoor Ldn.
Land Use Category 3: Institutional land uses with primarily daytime and evening uses. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered in this category. Certain historical sites and parks are also included. The noise metric for Category 3 is the outdoor Leq during the noisiest hour of activity.
Source: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006.

State

The *State of California General Plan Guidelines 2003 (Guidelines)* promotes use of the CNEL/L_{dn} metrics for evaluating noise compatibility with land uses, as illustrated by Figure 3.10-3. In this figure, the interpretation of “normally acceptable” for a land use implies that the highest acceptable noise level is the maximum permissible to occupants of an existing structure that does not incorporate any special acoustic treatment. The *Guidelines* identifies the suitability of various types of construction relative to the range of customary outdoor noise exposures. The objective of the *Guidelines* is to provide a local community with a valid means of determining the noise environment it believes is acceptable, while allowing for the variability in perceptions of noise among different members of a community. Findings presented in EPA *Levels* influences those of the *Guidelines*, most importantly in the latter’s choice of noise exposure metrics – i.e., L_{dn} or CNEL, and in the upper limits for the “normally acceptable” exposure of noise-sensitive uses (i.e., 55 dBA L_{dn}/CNEL for low-density residential).

Other important state noise criteria can be found in Title 24 of the California Code of Regulations. It serves to codify the uniform minimum noise insulation performance standards that are required for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Title 24 calls for interior noise levels from exterior sources to not exceed 45 dBA CNEL in

Land Use Category	Community Noise Exposure - L _{dn} or CNEL, dB						
	55	60	65	70	75	80	85
Residential – Low-Density Single Family, Duplexes and Mobile Homes							
Residential – Multifamily							
Transient Lodging – Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Course, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Source: Governor's Office of Planning and Research, State of California General Plan Guidelines. 2003.

-  Normally Acceptable
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
-  Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional constructions, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
-  Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
-  Clearly Unacceptable
New construction or development should generally not be undertaken.

Source: City of Richmond, 2009.



FIGURE 3.10-3
Noise Exposure Land Use Compatibility Standards

any room of new dwellings. Dwellings shall thus be designed to ensure that interior noise levels meet this standard for at least ten years from construction. The primary means to achieve this standard is through the use of noise insulating windows, and/or sound isolation materials when constructing walls and ceilings.

Local

City of Richmond Municipal Code

Noise Ordinance

Chapter 9.52 of the City of Richmond Municipal Code provides for noise regulations within City Limits, as follows:

Section 9.52.090 – Prohibited Noises. This section prohibits noise within the City that is considered a noise disturbance including, but not limited to, the following:

1. Vibration. Operating or permitting the operation of any contraption or device that creates a vibration so as to create a noise disturbance or cause any violation of this chapter.
2. Power Tools, Machinery. Operating or permitting the operation of any mechanically powered saw, drill, grinder, lawn or garden tool, leaf blower, or similar machinery at any time between the hours of 10:00 p.m. and 7:00 a.m. on weekdays and 8:00 p.m. and 8:30 a.m. on weekends and legal holidays, or at any other time so as to create a noise disturbance or cause any violation of this chapter. Any motor, machinery, generator, pump, which, by its nature or necessary function, must be operated on a continuous or regular basis, such as swimming pool equipment, or air conditioning/heating system, shall be enclosed or muffled and maintained so as not to create a noise disturbance or otherwise violate this chapter.
3. Loading and Unloading. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, or similar objects between the hours 10:00 p.m. and 7:00 a.m. in any residential or commercial zoning district or adjacent to any noise-sensitive uses or so as to create a noise disturbance or cause any violation of this chapter.
4. Construction Activities. Causing or permitting the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work at any time between the hours of 7:00 p.m. and 7:00 a.m. on weekdays or 6:00 p.m. and 8:30 a.m. on weekends and legal holidays in any residential or commercial zoning district or adjacent to any noise-sensitive uses or so as to create a noise disturbance or cause any violation of this chapter. Prior to commencing any construction project, the project sponsor may meet and confer with the City Public Works Department to establish an appropriate construction schedule which is designed to minimize construction noise impacts and which is in conformity with the requirements of this subsection. Where construction activities on a construction project which is adjacent to any noise-sensitive use(s) are anticipated to last for a year or more, temporary noise barriers shall be constructed that break the line of sight between the noise-sensitive use(s) and the construction project, and that minimize noise impacts.

Section 9.52.100 – Exterior Noise Standards

- No uses or activities shall create levels which exceed the standards in Table 3.10-7. In addition, the exterior noise limits for any source of noise within any residential zone shall be reduced by 10 dBA between 10:00 p.m. and 7:00 a.m. The exterior noise limits for any source of noise in any zone other than a residential zone shall be reduced between 10:00 p.m. and 7:00 a.m. so that when measured at the property line of a “noise-sensitive use,” the noise does not exceed 50 dBA.

Zoning District	Maximum Noise Level in dBA (levels not to be exceeded more than 30 minutes in any hour)		Maximum Noise Level in dBA (level not to be exceeded more than 5 minutes in any hour)
	Measured at Property Line or District Boundary	Measured at Any Boundary of a Residential Zone	Between 10 p.m. and 7 a.m., ³ Measured at Any Boundary of a Residential Zone
Single-Family Residential	60	—	—
Multifamily Residential	65	—	—
Commercial	70	60	50 or ambient noise level
Lt. Industrial and Office Flex ¹	70	60	50 or ambient noise level
Heavy and Marine Industrial ²	75	65	50 or ambient noise level
Public Facilities and Community Use	65	60	50 or ambient noise level
Open Space and Recreational Districts	65	60	50 or ambient noise level

Notes:
 1. For M-1 and M-2 the measurement will be at property lines.
 2. For M-3 and M-4 the measurement will be at boundary of the district.
 3. Restricted hours may be modified through condition of an approved conditional use permit.
 Source: City of Richmond. *City of Richmond Municipal Code, 2006.*

Section 9.52.110 – Temporary noise-generating equipment. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum sound levels at affected properties will generally not exceed those listed in Tables 3.10-8 and 3.10-9, below.

	SFR-1, SFR-2, SFR-3 Zoning Districts (Single- Family Residential)	MR-1, MR-2, MR-3 Zoning Districts (Multi- Family Residential)	Commercial and Industrial Zoning Districts
Weekdays, 7:00 a.m. to 7:00 p.m.	75 dBA	80 dBA	85 dBA
Weekends, including legal holidays 9:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA

Note:
 1. Maximum sound levels for nonscheduled, intermittent, short-term operation (period less than 15 days) of mobile equipment.
 Source: City of Richmond. *City of Richmond Municipal Code, 2006.*

TABLE 3.10-9			
STATIONARY EQUIPMENT (STANDARDS FOR THE CITY)¹			
	SFR-1, SFR-2, SFR-3 Zoning Districts (Single- Family Residential)	MR-1, MR-2, MR-3 Zoning Districts (Multi- Family Residential)	Commercial and Industrial Zoning Districts
Weekdays, 7:00 a.m. to 7:00 p.m.	60 dBA	65 dBA	70 dBA
Weekends, including legal holidays 9:00 a.m. to 8:00 p.m.	55 dBA	60 dBA	65 dBA
Note: 1. Maximum sound levels for respectively scheduled and long-term operation (period exceeding 15 days or more) of stationary equipment. Source: City of Richmond. <i>City of Richmond Municipal Code, 2006.</i>			

IMPACTS AND MITIGATION MEASURES

Method of Analysis

Implementation of the proposed General Plan could result in elevated noise levels that may exceed permitted City noise levels. The primary sources of noise associated with the proposed project would be construction activities in the City and project-related traffic volumes associated with operation of those projects. Secondary sources of noise would include new stationary sources (such as heating, ventilation, and air conditioning units) and increased human activity throughout the City. The net increase in noise levels generated by these activities and other sources have been quantitatively estimated and compared to the applicable noise standards and thresholds of significance.

Aside from noise levels, groundborne vibration would also be generated during the construction phase of future projects in the City by various types of construction equipment. Thus, the groundborne vibration levels generated by construction equipment have also been quantitatively estimated and compared to applicable thresholds of significance.

Construction Noise Levels

Construction noise levels were estimated by data published by the U.S. Environmental Protection Agency (EPA). Potential noise levels are identified for on- and off-site locations that are sensitive to noise, including residences and schools.

The EPA has compiled data regarding the noise-generating characteristics of typical construction activities. These noise levels would diminish rapidly with distance from the construction site, at a rate of approximately 6 dBA per doubling of distance as equipment is generally stationary or confined to specific areas during construction. For example, a noise level of 86 dBA measured at 50 feet from the noise source to the receptor would reduce to 80 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA to 74 dBA at 200 feet from the source to the receptor. The noise levels from construction at the off-site sensitive uses can be determined with the following equation from the HMMH *Transit Noise and Vibration Impact Assessment, Final Report*: $L_{eq} = L_{eq} \text{ at } 50 \text{ ft.} - 20 \text{ Log}(D/50)$, where L_{eq} = noise level of noise source, D = distance from the noise source to the receiver, $L_{eq} \text{ at } 50 \text{ ft.}$ = noise level of source at 50 feet.

Roadway Noise Levels

Roadway noise levels have been calculated for various locations within the City. The noise levels were calculated using the FHWA-RD-77-108 model and traffic volumes from the project traffic study. The average vehicle noise rates (energy rates) utilized in the FHWA Model reflects vehicle noise rates identified for California by Caltrans. Traffic volumes used in the FHWA model are derived from the project's traffic modeling, the results of which are provided in their entirety in Appendix E and summarized in section 3.14 (Transportation/Traffic) of this document.

Vibration Levels Associated with Construction Equipment

Groundborne vibration levels resulting from construction activities occurring within the City were evaluated based on data published by Harris Miller Miller & Hanson Inc. for the Federal Transit Administration. Potential vibration levels are identified for on- and off-site locations that are sensitive to vibration, including residences and schools. In general, vibration levels at the off-site sensitive uses can be determined with the following equation from the HMMH *Transit Noise and Vibration Impact Assessment, Final Report*: $L_v(D) = L_v(25 \text{ ft}) - 20\log(D/25)$, where L_v = vibration level of equipment, D = distance from the equipment to the receiver, $L_v(25 \text{ feet})$ = vibration level of equipment at 25 feet.

Standards of Significance

For the purposes of this EIR, implementation of the proposed General Plan would have a significant impact to noise in the City if it would do any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the General Plan, the Noise Ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.

The CEQA Guidelines do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." A noise level increase of 3 dBA is barely perceptible to most people, a 5 dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness. However, as the existing level of ambient noise increases, the allowable level of project generated noise increases, but the total amount that community noise exposure is allowed

to increase is reduced. This accounts for the unexpected result that a project noise exposure that is less than the existing noise exposure can still cause impact. As a result, the following thresholds shown in Table 3.10-10 are used with respect to assessing operational roadway noise.

INTERIOR AND EXTERIOR NOISE STANDARDS	
Ambient Noise Levels Without Project (L_{dn} or CNEL)	Threshold (L_{dn} or CNEL)
< 60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
> 65 dB	+1.5 dB or more

The justification for the above thresholds are that people already exposed to high noise levels would notice and be annoyed by a small increase in the amount of noise in their community. In contrast, if the existing noise levels are already low, a greater change in community noise would be required for the equivalent level of annoyance.⁵

The CEQA Guidelines also do not define the levels at which groundborne vibration or groundborne noise is considered “excessive.” For the purpose of this analysis, groundborne vibration impacts associated with human annoyance would be significant if the proposed project exceeds 85 VdB, which is the vibration level that is considered by the Federal Transit Administration (FTA) to be acceptable only if there are an infrequent number of events per day (as described in Table 3.10-2, Human Response to Different Levels of Groundborne Vibration). In terms of groundborne vibration impacts on structures, this analysis uses the Federal Transit Administration’s vibration damage threshold of approximately 100 VdB for fragile buildings and approximately 95 VdB for extremely fragile historic buildings.⁶

Project-Specific Impacts and Mitigation Measures

3.10-1 Construction activities associated with the future land use changes under the proposed General Plan could generate noise levels that temporarily exceed acceptable noise levels. Implementation of noise limits in the City of Richmond Municipal Code would limit the exposure of sensitive receptors to temporary or periodic increases in noise levels. However, because noise from construction activities could exceed allowable noise levels, this is considered a *significant and unavoidable impact*.

The City of Richmond is an established, urbanized area. Implementation of the proposed General Plan would potentially increase the level of intensity of land uses within the City and result in additional construction activities that may exceed noise levels established in the City’s Municipal Code. Development of future projects under the proposed General Plan would require the use of heavy equipment for demolition, site excavation, installation of utilities, site grading, paving, and

5 Harris Miller Miller & Hanson Inc. 2006. Transit Noise and Vibration Impact Assessment, Final Report, May.

6 Harris Miller Miller & Hanson Inc. 2006. Transit Noise and Vibration Impact Assessment, Final Report, May.

building fabrication. Construction activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary based on the amount of equipment in operation and the location of the activity.

The EPA has compiled data regarding the noise-generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 3.10-11 and Table 3.10-12. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance for construction equipment, as identified by the EPA.⁷

NOISE RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Equipment	Noise Levels in dBA L_{eq} at 50 Feet ^a
Front Loader	73 to 86
Trucks	82 to 95
Cranes (moveable)	75 to 88
Cranes (derrick)	86 to 89
Vibrator	68 to 82
Saws	72 to 82
Pneumatic Impact Equipment	83 to 88
Jackhammers	81 to 98
Pumps	68 to 72
Generators	71 to 83
Compressors	75 to 87
Concrete Mixers	75 to 88
Concrete Pumps	81 to 85
Back Hoe	73 to 95
Pile Driving (peaks)	95 to 107
Tractor	77 to 98
Scraper/Grader	80 to 93
Paver	85 to 88
Note: a. Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table. Source: U.S. Environmental Protection Agency. 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.	

Noise that would be experienced by sensitive uses due to construction activities associated with implementation of the proposed General Plan is determined at the property lines. The nearest sensitive uses would vary at different locations in and around the City. Specific development plans have not yet been determined at individual sites; however, there is the potential that future construction activities could occur within 50 feet of sensitive receptors. Sensitive receptors within the vicinity of individual development projects would potentially experience noise levels up to 98 dBA L_{eq} as a result of routine construction activities and up to 107 dBA L_{eq} if pile driving activities were required.

⁷ United States Environmental Protection Agency. 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.

TABLE 3.10-12

TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Levels at 50 Feet(dBA L _{eq})	Noise Levels at 50 Feet with Mufflers (dBA L _{eq})
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

Source: U.S. Environmental Protection Agency. 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.

The City of Richmond Municipal Code section 9.52.110 allows for noise resulting from construction activities if they are conducted at certain times during the day and on certain days (see Tables 3.10-8 and 3.10-9). However, the potential exposure as a result of construction activities could still exceed the highest noise standard (80 dBA for multi-family residential) allowed by section 9.52.110 by up to 18 dBA (or 27 dBA if pile driving activities occur for brief intervals). To reduce the potential impacts of construction noise on nearby sensitive receptors, the proposed General Plan includes the following policies and actions:

Policy

SN4.1 Noise Levels. Work with regulatory agencies to monitor and enforce noise standards in the community. Reduce or mitigate objectionable noise sources and require new noise sources to comply with noise standards. Regulate both indoor and outdoor noise levels to protect health and safety. Use a combination of noise standards and existing noise levels to determine impacts and mitigation measures.

Actions

SN4.B Noise Study Guidelines. Regularly review and update guidelines for the analysis of noise impacts and conflicts in the community. Use the noise analysis to review development proposals to assure consistency with noise standards. Consider the following measures for mitigating noise impacts on adjacent properties:

Screen and control noise sources such as parking, outdoor activities and mechanical equipment.

Use technology to reduce noise impacts in instances where setbacks cannot be increased.

Use state of the art noise-abating materials technology and construction standards and double or triple glazed windows to meet noise standards.

Control hours of operation, including deliveries and trash pickup to minimize noise impacts.

Use the Future Noise Contours data and Municipal Codes on noise to determine if additional noise studies are needed.

SN4.C Noise Ordinance. Regularly review and update the noise ordinance to regulate noise-generating activities based upon changes in state law. Where feasible, limit the impact of noise sources on noise-sensitive uses and consider noise and vibration impacts in land use planning decisions. Require mitigation of potential noise impacts on adjacent properties. Enforce the Land Use Compatibility Standards presented in the State of California's General Plan Guidelines when

siting new uses in existing noise environments. Encourage projects to use site planning and building orientation principles as well as state-of-the-art noise-abating materials, technology and construction standards to minimize noise.

Reduce noise levels generated by roadways, railroads and other facilities by: encouraging the California department of transportation (Caltrans) to institute noise reduction measures on existing and future freeways to lessen noise impacts on areas immediately adjacent to the freeway; encouraging public agencies to ensure that their programs are consistent with those of the City as they relate to noise control; and urging strict enforcement of current federal railroad noise emission standards by the U.S. Department of Transportation.

- SN4.E Construction Traffic Plan Guidelines. Maintain guidelines for preparing traffic plans to mitigate noise, traffic and dust during major construction activity. Continue to require construction traffic plans for all developments of ten or more homes or commercial projects larger than five acres in size to regulate vehicle speeds, dust and noise mitigation, hours of operation, phased fencing plans and safety standards. The plan should ensure the safety of the public and employees during construction of major projects.

With the implementation of Policy SN4.1 and Actions SN4.B, SN4.C, and SN4.E, which emphasize the need to mitigate construction noise on a site-specific and project-specific basis, the temporary or periodic increase in ambient noise levels would be limited and the impact on sensitive receptors minimized. However, as discussed under “Thresholds of Significance”, this EIR assumes that an increase of 5.0 dBA or greater over ambient noise levels is substantial and significant. As shown in Table 3.10-3, the highest existing daytime ambient noise level monitored in the City was 70.3 dBA L_{eq} at 23rd Street and Bush Avenue. As such, the noise generated by construction activities under the proposed General Plan could result in a temporary increase in ambient noise levels above noise levels allowed under the City Municipal Code at the existing noise-sensitive uses adjacent to a project site located within the City. Therefore, despite compliance with the time and duration restrictions of the City Municipal Code, noise from construction activities could exceed allowable noise levels. Therefore, this impact would be **significant and unavoidable**.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the implementation of the proposed General Plan would potentially increase the level of intensity of land uses within the City and result in additional construction activities that may exceed noise levels established in the City’s Municipal Code. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate temporary noise from construction activities could exceed allowable noise levels. Therefore, the impact under the full buildout scenario would be greater than under the City’s anticipated growth scenario and this impact would also be significant and unavoidable.

The proposed General Plan includes policies that would reduce the noise associated with development within the Plan Area. At this time, however, the extent of additional growth and the exact nature of future effects associated with this additional growth are unknown. Therefore, it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to review to determine impacts on noise in accordance with CEQA. Future planning

efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

3.10-1 *Future projects shall incorporate project-specific mitigation measures to reduce the impact of construction noise.*

3.10-2 Construction of future new land uses under the proposed General Plan could generate or expose persons or structures to temporary groundborne vibration. Though it is unlikely that vibration would exceed levels of mere annoyance for short periods, the potential for impacts on sensitive uses renders this impact *significant and unavoidable*.

Construction-related vibration has two potential effects. First, vibration at high enough levels can result in human annoyance. Second, groundborne vibration can potentially damage the foundations and exteriors of older and potentially historic structures. Groundborne vibration that can cause this kind of damage is typically limited to impact equipment, such as pile drivers. Construction activities that would occur under the proposed project have the potential to generate low levels of groundborne vibration. Table 3.10-13 (Vibration Source Levels for Construction Equipment) identifies various vibration velocity levels for the types of construction equipment that would operate within the City during construction.

VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT				
Equipment	Approximate VdB			
	25 Feet	50 Feet	75 Feet	100 Feet
Pile Driver (Impact)	104	98	94	92
Large Bulldozer	87	81	77	75
Loaded Trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

Notes:
 The vibration levels are determined with the following equation from the HMMH *Transit Noise and Vibration Impact Assessment, Final Report*:
 $L_v(D) = L_v(25 \text{ ft}) - 20 \log(D/25)$, where L_v = vibration level of equipment, D = distance from the equipment to the receiver, $L_v(25 \text{ ft})$ = vibration level of equipment at 25 feet.
 Source: U.S. Department of Transportation. Federal Railroad Administration. 1998. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*.

Similar to noise, groundborne vibration would attenuate at a rate of approximately 6 VdB per doubling of distance. The groundborne vibration generated during construction activities would primarily impact existing sensitive uses that are located adjacent to or within the vicinity of specific projects. These sensitive uses could sometimes be located within 50 feet of the construction site or as far as several hundred feet away. Based on the information presented in Table 3.10-13, vibration levels could reach up to 87 VdB for typical construction activities and up to 104 VdB if pile driving activities were to occur. For sensitive uses that are located within 25 feet of potential project construction sites, sensitive receptors at these locations may experience vibration levels during

construction activities that exceed the FTA's vibration impact threshold of 85 VdB for human annoyance. If construction occurs more than 50 feet from sensitive receptors, the impact associated with groundborne vibration generated by the typical construction equipment would be below 85 VdB and thus would be less than significant. However, as development projects, equipment types, and construction schedules under the proposed General Plan are unknown at this time, and the proposed General Plan includes no policies or actions to prevent impacts from groundborne vibration, it is possible that construction activities could occur as close as 25 feet from sensitive receptors or pile driving activities could occur. This would result in these sensitive receptors experiencing vibration levels beyond the 85 VdB threshold for human annoyance. Therefore, impacts would be considered *significant*. Adherence to Policy SN4.1 of the proposed General Plan and the implementing actions contained therein would reduce potential construction vibration impacts, but it would not preclude the potential for significant impacts to occur. While project-specific measures, as required below, could reduce effects from construction-related groundborne vibration at sensitive receptors, because infill development would necessarily occur adjacent to existing development, measures that restrict construction activities adjacent to existing development would not be feasible. Therefore, this impact would remain ***significant and unavoidable***.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, construction of future new land uses under the proposed General Plan could generate or expose persons or structures to temporary groundborne vibration. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it could generate temporary vibration would exceed levels of mere annoyance for short periods. Therefore, the impact on sensitive receptors under the full buildout scenario would be greater than under the City's anticipated growth scenario and this impact would also be significant and unavoidable.

At this time, the extent of additional growth and the exact nature of future effects associated with this additional growth are unknown. Therefore, it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to rigorous review to determine impacts on groundborne vibration in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

3.10-2 *Future projects shall incorporate project-specific mitigation measures to reduce the impact of construction-related groundborne vibration.*

3.10-3 Implementation of the proposed General Plan could expose sensitive receptors to noise levels in excess of the existing noise standards established by the City. There are no known feasible measures to reduce train noise below a level of significance; this impact would be *significant and unavoidable*.

Due to the existing character of the City, residential, commercial, and industrial uses are located relatively close to one another and, in some instances, two or more of these uses co-exist on the same site. The proposed General Plan would allow increased density and/or mixed uses in specific areas. In general, the most significant land use changes would occur within the 16 proposed change areas listed in Chapter 2 (Project Description).

Operational sources of noise generated by implementation of the proposed General Plan would include new stationary sources, such as rooftop HVAC systems for office, commercial, and mixed-use development. Large HVAC systems associated with development can result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. As 24-hour CNEL noise levels are about 6.7 dBA greater than 24-hour L_{eq} measurements, this means that the HVAC equipment associated with the retail-commercial buildings could generate community noise levels that average between 57 to 72 dBA CNEL at 50 feet when the equipment is operating constantly over 24 hours. Proposed policies SN4.1 and SN4.2, as well as implementing actions SN4.A, SN4.B, and SN4.C (listed below), would require design considerations and measures to be incorporated into new development that would restrict operational noise levels associated with stationary equipment to ensure that existing noise levels would be maintained.

Policies

SN4.1 Noise Levels. (see above)

SN4.2 Land Use Compatibility. Minimize conflicts between land uses to protect human and environmental health and safety, preserve community character, and retain job generating activities that have long term viability. Types, intensities and ranges of use and development should be compatible with existing uses and should minimize or eliminate conflicts that adversely impact public safety, human or environmental health or generate nuisances. All new development must mitigate or avoid potential negative impacts such as noise, nuisance and pollution.

Encourage existing larger industries that have surplus land to develop modern industrial parks that could attract new and existing industries and facilitate a reduction of existing and future land use conflicts.

New development should complement the character and scale of existing neighborhoods, cultural resources, historic structures and landscapes. In particular, existing industrial and residential uses can successfully coexist through well-conceived circulation and urban design strategies including buffers (which may be in the form of sound walls and/or enclosed buildings) and transitional uses, rerouting of truck traffic and design components that mark transitions in land use. Similar to other cities that host mixed uses, consider requiring land use covenants for new development in areas where new uses may generate a perception of conflict with existing uses.

SN4.3 Transportation-Related Noise. Monitor changes in technology that will prevent and mitigate transportation related noise impacts on residential and sensitive uses in the community. Support traffic and highway improvements that will reduce noise impacts of vehicles. Alternatives to sound walls should be considered where possible.

Actions

SN4.A Noise Study Report Requirements. Require proposed commercial and industrial uses with potential noise and vibration-producing activities or new noise-sensitive uses that locate in an area with day-night average sound level (Ldn) of 55 or greater to provide noise study reports. The report should identify noise mitigation measures that limit noise to an acceptable level compared to existing conditions.

SN4.B Noise Study Guidelines. (see above)

SN4.C Noise Ordinance. (see above)

Implementation of the proposed General Plan could also involve an increase in the delivery of goods to commercial, retail, and industrial developments. Two noise sources would be associated with delivery operations: the noise of the diesel engines of the delivery trucks and the backup beeper alarm that sounds when a truck is put in reverse, as is required and regulated by Cal-OSHA. The noise generated by idling diesel engines typically ranges between 64 and 66 dBA L_{eq} at 75 feet. This noise would be temporary in nature, typically lasting no more than five minutes. Backup beepers, intended to warn persons who are behind the vehicle when it is backing up, are required by Cal-OSHA to be at least 5 dBA above ambient noise levels. These devices are highly directional in nature, and, when in reverse, the trucks and the beeper alarm would be directed towards the loading area and adjacent commercial structures.

With respect to potential impacts from rail operations, under the proposed General Plan, additional sensitive uses (primarily residential structures) could be located in close proximity to the existing rail lines discussed above. Typical commuter train noise produces a noise level of 80 dBA at 50 feet from the tracks, while a stopped commuter train would produce a noise level of 65 dBA. Per the Federal Railway Administration, noise levels associated with trains are anticipated to attenuate/reduce at a rate of 4.5 dBA for each doubling of distance. As such, noise-sensitive uses, such as residential structures, in the vicinity of rail operations would likely experience noise levels ranging from 60.5 to 75.5 dBA due to the physical movement and idling of commuter trains along the existing rail lines.

In addition to movement and idling noise levels, trains are required to use horns at any at-grade crossing for safety reasons. Depending on the type of horn used, noise levels could reach 110 dBA at a distance of 100 feet. Under the proposed General Plan, sensitive uses could be located within areas that may experience excessive noise levels due to train horns. Under new construction practices, noise levels inside structures, such as residential buildings, can be expected to be 30 dBA less than exterior noise levels. As such, the instantaneous interior noise levels attributable to residential units located within 100 feet of an existing rail line would be reduced to approximately 80 dBA when a train horn blows. This noise level would be in excess of City noise standards as established in the Municipal Code by approximately 15 dBA for instantaneous noise. However, the following implementing action is included as part of the proposed General Plan to address the potential impact of train horns:

Action

SN4.D Quiet Zone Feasibility Study. Study the feasibility of obtaining Federal Rail Administration Quiet Zone status limiting use of train horns which are a major source of noise pollution in Richmond.

The study of quiet zones would not, in and of itself, reduce potential noise impacts. Policies SN4.1 through SN4.3, as well as implementing actions SN4.A through SN4.C would reduce potential impacts with respect to rail operations. Nonetheless, the potential for rail horns to affect nearby sensitive receptors, especially along Grant Boulevard and Carlson Boulevard, would still exist, even

with implementation of the proposed General Plan policies and implementing actions. As stated previously, the proposed General Plan contains Policy SN4.1, the intent of which is to reduce or mitigate objectionable noise sources and require new noise sources to comply with noise standards. This policy would encourage developers to protect and preserve any existing neighborhoods and the sensitive residential uses contained within from traffic noise, and encroachment activities associated with future new land uses allowed under the proposed General Plan. However, these policies and implementing actions alone would not provide adequate protection because they cannot ensure that noise levels would be reduced to levels within the City's noise standards. While project-specific measures, as required below, could reduce noise effects from rail operations at sensitive receptors, it is reasonable to conclude that potential noise effects on sensitive receptors due to exposure to noise levels from nearby rail operations that exceed the established local standards may occur. As such, this impact would be ***significant and unavoidable***.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to potential noise effects on sensitive receptors due to exposure to noise levels from nearby rail operations would be the same as presented above. Future development would be subject to review to determine impacts related to noise levels from nearby rail operations in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

The proposed General Plan includes policies that would reduce the potential impacts with respect to rail operations associated with development within the Plan Area. At this time, however, the extent of additional growth and the exact nature of future effects associated with this additional growth are unknown. Therefore, it would be speculative to attempt a more detailed analysis at this time.

Mitigation Measures

3.10-3 *Future projects shall incorporate project-specific mitigation measures and maintain Quiet Zones to reduce the impact of train noise.*

3.10-4 Operation of new land uses under the proposed General Plan would not generate and expose sensitive receptors on- or off-site to excessive groundborne vibration or groundborne noise levels. This is considered a *less-than-significant impact*.

During operation of the proposed project, background operational vibration levels would be expected to average approximately 50 VdB throughout the majority of the City and especially within the residential neighborhoods, as discussed previously in this section. This is substantially less than the 85 VdB threshold. Groundborne vibration resulting from operation of the proposed project would primarily be generated by trucks making periodic deliveries to and from uses within City limits. However, these types of deliveries would be consistent with deliveries that are currently made along roadways to commercial uses within the City currently and would not be expected increase groundborne vibration substantially above existing levels. In addition, because potential operational vibration would be attributed to primarily commercial and industrial uses, the following policies would

further ensure that nearby sensitive receptors would not be exposed to excessive groundborne vibration or noise:

Policies

SN4.1 Noise Levels. (see above)

SN4.2 Land Use Compatibility. (see above)

SN4.3 Transportation-Related Noise. (see above)

Actions

SN4.A Noise Study Report Requirements. (see above)

SN4.B Noise Study Guidelines. (see above)

SN4.C Noise Ordinance. (see above)

Therefore, with inclusion of the proposed General Plan policies, operation of the proposed project would not expose sensitive receptors on or off site to excessive groundborne vibration or groundborne noise levels, and this impact would be ***less than significant***.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to operation of new land uses under the proposed General Plan would be the same as presented above. Future development would be subject to review to determine impacts related to operation of new land uses and the generation of groundborne vibration or groundborne noise levels in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None required.

3.10-5 Operation of new land uses under the proposed General Plan would generate increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels in the project vicinity. While implementation of General Plan policies would reduce impacts on sensitive receptors, the impact would remain significant and unavoidable.

Future noise levels within the City would continue to be dominated by vehicular traffic on the adjacent roadways. Other sources of noise would include new stationary sources (such as rooftop HVAC equipment) and increased human activity throughout the City.

Locations in the vicinity of the individual projects within the City could experience slight changes in noise levels as a result of an increase in the on-site population and intensification of land use densities and a concentration of vehicle trips in the immediate vicinity of a project site that could occur due to the potential new land uses allowed under the proposed General Plan. Existing traffic

noise levels are identified in Table 3.10-4. Noise levels associated with traffic generated from existing conditions within the City are calculated at the selected locations along the study-area roadway segments using traffic data from the traffic study (included in Appendix E). As stated in the Thresholds of Significance, where ambient noise levels are 60 dBA CNEL or less, a 5.0 dBA CNEL increase would be considered a substantial increase; where ambient noise levels are between 60 dBA and 65 dBA CNEL, an increase of 3 dBA would be considered a substantial increase; and if ambient noise levels are 65 dBA CNEL or greater, an increase of 1.5 dBA would be considered a substantial increase. Table 3.10-14 (Future Roadway Noise Levels Compared to Ambient Future Noise Levels) presents the average daily noise levels associated with these roadways under the proposed project and compares them to future without development of the proposed General Plan. Figure 3.10-4 depicts the future noise levels under the proposed General Plan with cumulative regional vehicle traffic.

Roadway Segment	Existing Noise Levels in dBA CNEL at 100 feet	Future Noise Levels with Development of the General Plan in dBA CNEL at 100 feet	Change from Existing Noise Levels at 100 feet	Threshold (dBA)	Exceeds Significance Threshold?
Richmond Parkway from Blume to San Pablo	68.1	69.9	1.1	1.5	No
Blume from Richmond Parkway to Hilltop	57.8	61.5	3.8	5	No
Hilltop from I-580 to San Pablo	60.3	61.1	0.8	3	No
Robert Miller from San Pablo to Hilltop	63.5	66.0	2.5	3	No
San Pablo from Richmond Parkway to Robert Miller	63.8	65.6	1.8	3	No
Richmond Parkway from San Pablo to Giant	66.7	69.3	2.6	1.5	Yes
Richmond Parkway from Giant to Castro	64.0	66.5	2.5	3	No
Richmond Parkway from Castro to Barrett	59.9	63.2	3.3	5	No
13th / Pennsylvania from Sanford to Harbour	61.7	64.0	2.3	3	No
23rd from Sanford to Grant	63.1	63.4	0.3	3	No
Barrett from Richmond Parkway to Harbour	58.5	61.2	2.7	5	No
Barrett from Harbour to 22nd	61.0	62.0	1.0	3	No
Barrett from 22nd to San Pablo	61.1	60.9	-0.2	3	No
Macdonald from Richmond Parkway to Harbour	56.8	57.8	1.0	5	No
Macdonald from Harbour to 22nd	59.2	60.9	1.7	5	No
Macdonald from 22nd to San Pablo	60.2	61.6	1.4	3	No
Richmond Parkway from Barrett to Macdonald	60.8	63.9	3.1	3	Yes
Harbour from Barrett to Macdonald	60.9	62.9	2.0	3	No
22nd from Grant to Bissell	59.9	60.5	0.6	1.5	No
23rd from Grant to Bissell	60.4	60.6	0.2	3	No
Castro from Richmond Parkway to I-580	63.0	65.2	2.2	3	No
Richmond Parkway from Macdonald to Cutting	61.0	64.2	3.2	3	Yes
Harbour from Macdonald to Cutting	61.0	63.5	2.5	3	No
23rd from Bissell to Cutting	61.6	63.0	1.4	3	No
Carlson from 23rd to Cutting	61.3	62.2	0.9	3	No
Cutting from S Garrard to Harbour	59.4	59.7	0.3	5	No
Cutting from Harbour to 23rd	62.3	64.0	1.7	3	No

TABLE 3.10-14

FUTURE (2030) ROADWAY NOISE LEVELS COMPARED TO AMBIENT FUTURE NOISE LEVELS

Roadway Segment	Existing Noise Levels in dBA CNEL at 100 feet	Future Noise Levels with Development of the General Plan in dBA CNEL at 100 feet	Change from Existing Noise Levels at 100 feet	Threshold (dBA)	Exceeds Significance Threshold?
Cutting from 23rd to Carlson	61.3	63.0	1.7	3	No
Cutting from Carlson to I-80	64.1	65.7	1.6	3	No
Canal from Cutting to Marina	57.7	58.2	0.5	5	No
Harbour from Wright to Marina	53.0	59.6	6.6	5	Yes
Marina Bay Pkwy from Meeker to Marina	59.8	60.5	0.7	5	No
Carlson from Cutting to I-80	58.3	61.7	3.4	5	No
Central from I-580 to I-80	61.5	63.7	2.2	3	No
San Pablo Dam from Barranca to El Portal	62.8	65.1	2.3	3	No
San Pablo Dam from Castro Ranch to City Limits	63.3	65.8	2.5	3	No
Castro Ranch from Hillside to City Limits	57.4	59.4	2.0	5	No
Valley View from Sobrante to Amend	61.3	61.7	0.4	3	No
I-80 from City Limits to Richmond Pkwy	77.7	78.6	0.9	1.5	No
I-80 from Richmond Pkwy to Hilltop Dr	77.4	78.0	0.6	1.5	No
I-80 from Hilltop Dr to El Portal Dr	77.8	78.4	0.6	1.5	No
I-80 from El Portal Dr to San Pablo Dam Rd	77.8	78.3	0.5	1.5	No
I-80 from San Pablo Dam Rd to Solano Ave	77.9	78.2	0.3	1.5	No
I-80 from Solano Ave to San Pablo Ave	79.0	79.4	0.4	1.5	No
I-80 from San Pablo Ave to Cutting Blvd	78.8	79.4	0.6	1.5	No
I-80 from Cutting Blvd to Potrero Ave	78.3	78.8	0.5	1.5	No
I-80 from Potrero Ave to Carlson Blvd	78.6	79.1	0.5	1.5	No
I-80 from Carlson Blvd to Central Ave	78.4	78.9	0.5	1.5	No
I-80 from Central Ave to City Limits	78.3	78.8	0.5	1.5	No
I-580 from I-80 to Central Ave	74.7	76.0	1.3	1.5	No
I-580 from Central Ave to Bayview Ave	74.7	76.2	1.5	1.5	Yes
I-580 from Bayview Ave to Regatta Blvd / Erlandson St	74.8	75.9	1.1	1.5	No
I-580 from Regatta Blvd/Erlandson St to 23rd St/Marina Bay Pkwy	74.7	75.5	0.8	1.5	No
I-580 from 23rd St/Marina Bay Pkwy to Harbour Way/Cutting Blvd	74.1	75.2	1.1	1.5	No
I-580 from Harbour Way/Cutting Blvd to Canal Blvd	73.5	74.6	1.1	1.5	No
I-580 from Castro St to Western Dr	74.2	75.8	1.6	1.5	Yes
I-580 from Western Dr to Richmond Bridge	74.1	75.5	1.4	1.5	No

Note:

a. Distances are in feet from roadway centerline. The identified noise level at 100 feet from the roadway centerline is for reference purposes only. This distance is used to account for variation in lane widths, and therefore does not reflect an actual building location or potential impact location.

Source: PBS&J, 2009 (calculation data and results are provided in Appendix D)

As shown in Table 3.10-14, six roadway segments are expected to experience a significant increase over existing conditions with the addition of future traffic volumes due to implementation of the proposed General Plan and regional growth. The increases along these six segments would constitute a substantial permanent increase in ambient noise levels due to implementation of the proposed General Plan. The following policies and implementation actions of the proposed General Plan would serve to reduce associated noise levels at nearby sensitive receptors:

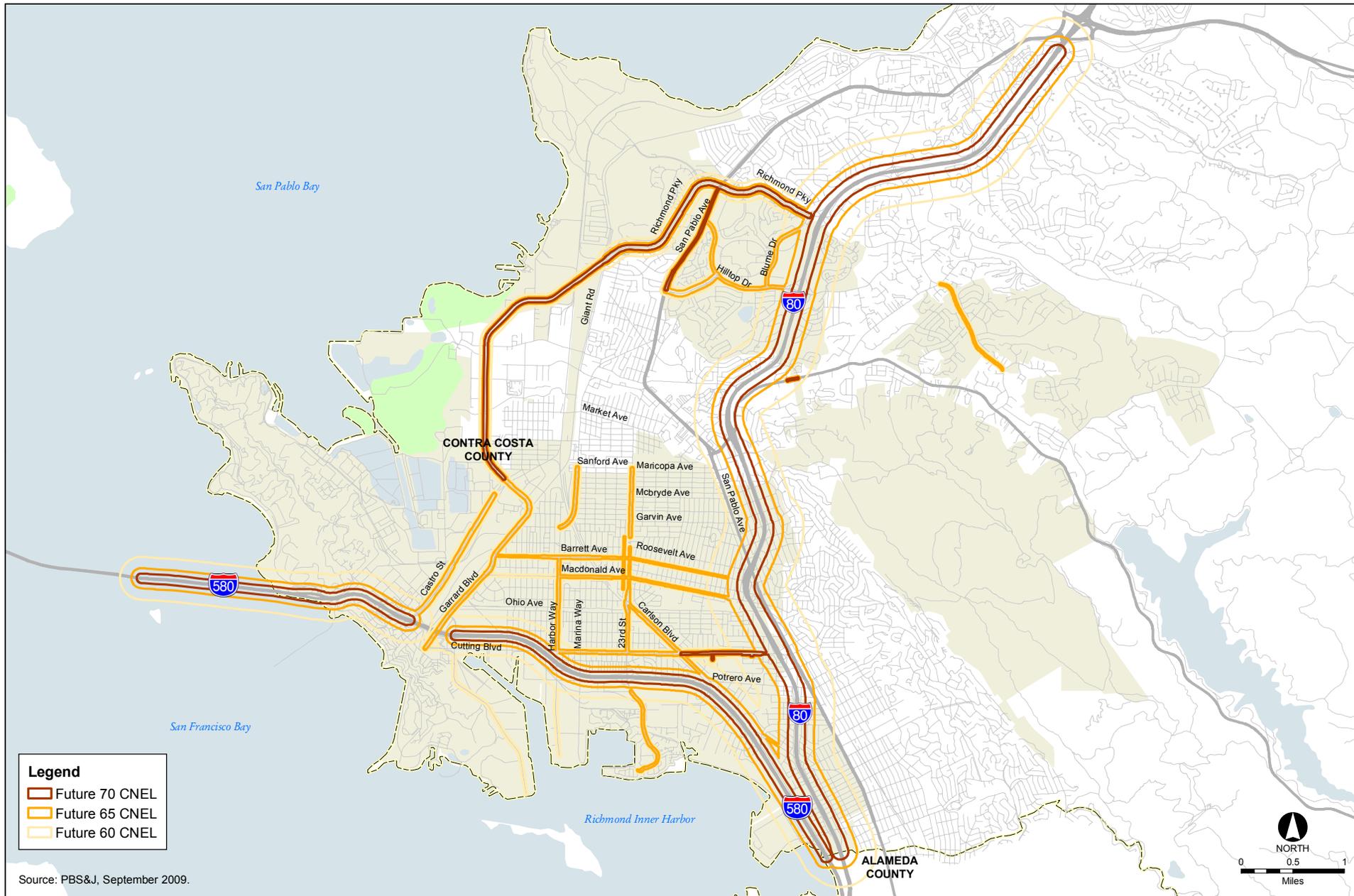


FIGURE 3.10-4

Future Noise Contours under the Proposed General Plan Update



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Policies

- SN4.1 Noise Levels.** (see above)
- SN4.2 Land Use Compatibility.** (see above)
- SN4.3 Transportation-Related Noise.** (see above)

Actions

- SN4.B Noise Study Guidelines. (see above)
- SN4.C Noise Ordinance. (see above)

Exterior noise levels in existing and proposed noise-sensitive areas can be remediated by relocating roadways, building sound walls, providing buffer zones, retrofitting older homes with insulation or applying appropriate window treatments (i.e., double-paned windows, interior storm windows, etc.) or choosing development sites in quiet areas. For new development, it is anticipated that many City standards could be met and substantial noise increases could be avoided by incorporating some of the strategies listed above. However, it would not be possible to guarantee success in all cases because funding may not be available for sound wall construction, land may not be available for buffer zones, or it may be cost prohibitive to relocate existing roadways. While project-specific measures, as required below, could reduce noise effects from transportation noise at new development, it may not be possible or feasible to include noise reduction strategies to address an increase in noise levels for existing residences located in areas adjacent to roadways or other noise generating sources. Thus, this mitigation does not meet the CEQA standard of potentially feasible. Therefore, the impact would be considered **significant and unavoidable**.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the operation of new land uses under the proposed General Plan would generate increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels in the project vicinity. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate new operational increased local traffic volumes. Therefore, the impact under the full buildout scenario would be greater than under the City's anticipated growth scenario and this impact would also be significant and unavoidable.

Mitigation Measures

3.10-5 Future projects shall incorporate project-specific mitigation measures to promote non-motorized transportation to reduce the impact of traffic noise.

Cumulative Impacts

Cumulative impacts are only addressed for those thresholds that have a project-related impact, whether it is less than significant, significant, or significant and unavoidable. If "no impact" occurs, no cumulative analysis is provided for that threshold as the project would not contribute under these thresholds. The geographic context for the analysis of cumulative noise impacts depends on the

impact being analyzed. For construction impacts, only the immediate area around a project site (in this case the City of Richmond or adjacent cities, where applicable) would be included in the cumulative context. For example, construction impacts related to noise dissipate/attenuate quickly as the distance between the construction site and the receptor increases. As a result, and because the project impacts discussed above address all development within the City limits, only those construction projects located inside of the City but within a distance of no more than 1,000 feet from City boundaries would be considered in the cumulative context of construction noise.

For operational/roadway related impacts, the context is the increase in roadway volumes as a result of existing and future development in the City. It should be noted that future roadway volumes include regional growth calculations as they would affect traffic volumes within the City, and are thus considered cumulative. Traffic-related noise increases discussed under Impact 3.10-5 are, therefore, cumulative in nature, as project generated and future regional traffic levels are considered.

Periodic and temporary noise levels would be generated by construction of future development under the proposed General Plan along with other construction in the vicinity. As discussed in Impact 3.10-1, future development resulting from the proposed General Plan, by itself, would potentially expose some receptors to noise levels in excess of acceptable City standards. Construction noise impacts are localized in nature and decrease substantially with distance. Consequently, in order to achieve a substantial cumulative increase in construction noise levels, more than one source emitting high levels of construction noise would need to be in close proximity to a noise receptor. Construction activity associated with individual projects in the immediate vicinity (up to 1,000 feet) may overlap with other construction activity from more than one project in the City or construction in other adjacent jurisdictions. Thus, the possibility exists that a substantial cumulative increase in construction noise levels could result from construction associated with multiple projects under the proposed General Plan if they are carried out in close proximity to one another at the same time. Therefore, since the construction of future development allowed under the proposed General Plan could occur concurrently and adjacent to similar development/construction within 1,000 feet of City limits, cumulative impacts would be *significant and unavoidable*.

As discussed in Impact 3.10-2, construction of new land uses under the proposed General Plan would produce temporary vibration impacts. As discussed in Impact 3.10-2, the construction-related vibration impact would be significant and unavoidable. Due to the localized nature of vibration impacts, the overall cumulative impact would also be limited due in part to the fact that all construction would not occur at the same time or at the same location. Only receptors located in close proximity to each construction site would be potentially cumulatively affected by each activity. As individual development projects under the proposed General Plan may be constructed concurrently with one another or other related projects, it is possible that construction from two or more projects would simultaneously occur at distances of 50 feet or less from existing nearby receptors. Therefore, vibration from construction of future new land uses within the City and immediately surrounding areas could potentially combine with construction vibration of the proposed project to result in a potentially significant cumulative impact. As such, the proposed General Plan's contribution to this impact would be considered cumulatively considerable.

With the increase in growth anticipated under the proposed General Plan Update, additional rail operations may occur under cumulative conditions. As a result, sensitive receptors under cumulative conditions may be exposed to additional noise associated with the increased rail operations. Therefore, since rail operations could expose sensitive receptors under the cumulative condition to noise levels above established standards, this would be considered a *significant* cumulative impact. As discussed above, some of the exposure to rail noise would be attributable to the proposed project. Therefore, the proposed project's contribution to this impact would be considered cumulatively considerable.

Groundborne vibration could conceivably be generated by operation of individual projects in the City, including those anticipated under the proposed General Plan. However, since the uses contemplated in the proposed General Plan would not be considered uses that would generate substantial sources of groundborne vibration, vibration impacts are not anticipated from a programmatic perspective during operation of the proposed project. Consequently, there would be no cumulative operational groundborne vibration impacts on any on-site or off-site receptor. This impact would be a *less-than-significant cumulative impact*.

As noted above under Impact 3.10-5, substantial permanent increases in noise would occur primarily as a result of increased traffic on local roadways due to the proposed project, related projects, and other regional growth. Cumulative traffic-generated noise impacts have been assessed based on the total change from existing conditions to the future cumulative with-General Plan condition. As shown in Table 3.10-5, cumulative traffic, including that as a result of the proposed General Plan, would result in substantial increases in noise along six roadway segments compared to existing conditions. The contribution of the proposed project to future roadway noise levels would be considered cumulatively considerable with respect to the projected exceedance of identified thresholds of significance.

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3.11 PARKS AND RECREATION

3.11 PARKS AND RECREATION

INTRODUCTION

This section describes the current recreational uses in the City and in the surrounding area and reports ways in which implementation of the City of Richmond General Plan Update (proposed General Plan) could lead to an increased demand for recreational facilities, physical deterioration of recreational facilities, and/or the creation or expansion of recreational facilities, the construction of which could have an adverse physical effect on the environment.

Data used to prepare this section were taken from the City of Richmond Municipal Code, the City of Richmond General Plan - Open Space and Conservation Element (General Plan) (1994), the City of Richmond General Plan and Zoning Ordinance Updates Program Environmental Impact Report (1993), the Draft City of Richmond 2010 General Plan, as well as other City documents. Full bibliographic entries for all reference materials are provided in footnotes of this section.

Comments associated with parks and recreation were received in response to the NOP circulated for the proposed General Plan Update. These comments stated the need to update existing and potential regional parklands and trails; the need to identify, mitigate, or avoid any potential impacts on parks and open land facilities; potential impacts on recreation areas resulting from development and/or redevelopment; and the need to protect scenic, recreational, and open space lands. One comment expressing concern on impacts on park and recreation space was received during the scoping meeting held on February 28, 2008. These comments are addressed in this section.

ENVIRONMENTAL SETTING

Existing Park, Open Space, and Recreational Facilities

The City of Richmond has a total of 4,312 acres of parklands and open space, which account for 22 percent of the land area in the City. Of these parklands, 4,029 acres are owned and operated by regional agencies, and 283 acres are City-owned facilities or jointly used by the City and other public or private entities. In addition, the City of Richmond is home to the Rosie the Riveter National Historic Park. Table 3.11-1 summarizes the number and acreage of the various parks in the City.

Type	Count	Acres
City-Owned Parks	74	251
Regional Parks and Open Space	7	4,029
Joint-Use Parks	5	32
Total	86	4,312

Source: City of Richmond, East Bay Regional Park District.

City Parks and Facilities

The City of Richmond owns and operates 74 parks, consisting of compact parks which include pocket parks, overlooks, pathways, neighborhood parks, and community parks. Recreational facilities at these parks include play lots, play fields, eight community centers, two senior centers, the swim center, an indoor recreation complex, and a municipal natatorium, The Plunge.

Compact Parks

Compact parks are small public spaces that encourage small group and individual activities. These parks are typically one acre in size and can include pocket parks, play lots, viewpoints, overlooks, and plazas. Compact parks are located near residential areas or integrated into commercial areas. The service area for compact parks is a quarter-mile. Table 3.11-2 identifies existing compact parks.

Park Name	Location	Acres
Abraham Braxton Park	South 50 th /Plaza Circle	0.6
Boat Ramp		0.02
Downtown Plaza	12 th and Macdonald	1.2
Elm Play lot	8 th and Elm	0.5
Hensley Park	7 th and Factory	0.14
Humboldt Park	Humboldt and Solano	0.4
Humphrey Play lot	Humphrey and 26 th	0.2
Huntington Park	Carlson and Huntington	0.3
Janice Park	Nichol and Washington	0.1
Kern Play lot	Kern between McBryde and Garvin	0.3
Mendocino Play lot	Mendocino and Burlingame	0.4
Monterey Play lot	Monterey and Carl	0.05
Solano Play lot	Solano and 38 th	0.2
Stuart Play lot	5 th and Barrett	0.8
Virginia Play lot	18 th and Virginia	0.2
Total		5.41
Source: City of Richmond, 2009.		

Neighborhood Parks

Neighborhood parks function as a focal point or an activity center for neighborhoods and have amenities such as picnic areas, play areas for children, open areas for informal group activity, landscaping, ball fields, organized fitness features, or special purpose facilities such as a community center. They are typically one to 10 acres in size and have a service area of 0.5 mile. Table 3.11-3 identifies existing neighborhood parks.

TABLE 3.11-3

NEIGHBORHOOD PARKS IN RICHMOND

Park Name	Location	Acres
Atchinson	Bissell and Curry	4.3
Barbara and Jay Vincent	End of Peninsula	6.0
Bay Vista	Richmond Parkway	0.7
Belding-Garcia	18 th and Colinga	2.0
Boorman	25 th and Maine	4.0
Burg	Clinton and 30 th	1.1
Central	Central and Yolo	2.6
Country Club Vista	Richmond Parkway	2.6
Crescent	Hartnett and Bayview	3.2
Hilltop Green	R.H. Miller and Groom	6.3
John F. Kennedy	South 41 st and Cutting	5.0
Judge Carroll	West Cutting Garrard	2.5
Lucas	10 th and Pennsylvania	7.2
Lucretia Edwards	End of Marina Way South	2.0
Mar Vista	Zara and Mount	1.7
Nevin	Nevin and 6 th	4.4
North Richmond Ballpark	Filbert and Verde	8.2
Parchester	Collins and Williams	2.1
Rain Cloud	Rain Cloud off Amend Drive	1.4
Sheridan Point	End of Harbour Way	1.0
Shields-Reid	1410 Kelsey and Gertrude	5.9
Shimada Friendship	Marina Bay Parkway	3.0
Southside	6 th and Virginia	3.5
State Court		2.1
	Total	89.37

Source: City of Richmond, 2009.

Community Parks

Community parks serve a larger geographic area than compact and neighborhood parks and address specific community needs. These parks may include active features for large groups and passive open areas, fields and facilities to serve athletic events, community centers and buildings, and pathways and trails to connect with neighborhoods and greenways. They are typically greater than 10 acres in size and have a service area of 3 miles. Table 3.11-4 identifies existing community parks.

Joint-Use Parks and Facilities

Joint-use agreements provide for shared public access to school grounds or privately-owned recreational spaces, such as sports fields, playgrounds, or community centers. The City currently has joint-use agreements with West Contra Costa Unified School District (WCCUSD) schools that permit the public use of parks and recreation facilities on school grounds. These agreements allow for the use of the swimming pool at Kennedy High School and the playing fields at Olinda and Valley View schools. Table 3.11-5 identifies the location and size of joint use parks and facilities in the City.

TABLE 3.11-4

COMMUNITY PARKS IN RICHMOND

Park Name	Location	Acres
B.T. Anderson Jr. Park	Carlson and South 47 th	22
Fairmede Park	Loyola Drive and Luke Path	12
Hilltop Park	Groom Drive	6.7
Hilltop Lake Park	Richmond Parkway and Lakeside	36
Lamoine Park	Morningside Drive	21.3
Martin Luther King Jr. Park	Harbor and Virginia	13
Nicholl Park	Macdonald and 33 rd	21
Richmond Greenway	North of Ohio Avenue	11.0
Marina Park and Green	Melville Square and Esplanade	13
Total		156

Source: City of Richmond.

TABLE 3.11-5

JOINT USE PARKS AND FACILITIES IN RICHMOND

Park Name	Location	Acres
Fairmede	End of Joanna Drive	12
Hilltop	Park Central and Parkway	6.7
Kennedy Swim Center	South 41 st and Cutting	0.3
Olinda School Field	Castro Ranch And Olinda	2.0
Valley View School Field	Maywood Drive	11
Total		32

Source: City of Richmond.

National, State, and Regional Parks

Regional, state, and national parks are large-scale open spaces that protect natural and historical resources. These parks connect residents with the surrounding geography, and preserve cultural assets and historical legacies that cross community boundaries. They provide opportunities for passive recreation, such as hiking and bird-watching.

Within the Richmond city limits, there are approximately 4,029 acres of regional and state parklands managed by the East Bay Regional Park District (EBRPD), that range in character from large-scale hillside natural areas to shoreline parks (see Table 3.11-6). These lands feature trail systems and day use areas, and are open to the public for hiking, horseback riding, mountain biking, bird watching, fishing, and picnicking. The EBRPD provides open space, wildlife habitat, and a range of passive recreational opportunities in the urban corridor of Contra Costa and Alameda counties to the people in East Bay communities. State and regional parks in the City include Wildcat Canyon State Park, Sobrante Ridge Regional Preserve, East Bay Shoreline State Park, Point Isabel Regional Shoreline, and Miller/Knox Regional Shoreline.

Park Name	Location	Acres
Point Isabel Regional Shoreline	Small promontory in southernmost Richmond	23
Wildcat Canyon Regional Park	Extends from the Tilden Nature Area in the south to historic Alvarado Park at north end of Richmond	2,430
Miller/Knox Regional Shoreline	In Point Richmond neighborhood	307
Point Pinole Regional Shoreline	Runs along San Pablo Bay shoreline	610
Brooks Island Regional Preserve	In San Francisco Bay just off the Richmond Inner Harbor	373
Sobrante Ridge Regional Preserve	Along Sobrante Ridge	277
Eastshore State Park	Runs along shoreline between Richmond's Marina Bay and the foot of the Bay Bridge	8.5
Total		4,029
Source: City of Richmond, East Bay Regional Park District		

In addition to these parks, in 2004, the City became home to the Rosie the Riveter/World War II Home Front National Historical Park, which seeks to preserve and interpret the stories and historic properties from the World War II home front era. The Rosie the Riveter/World War II Home Front National Historical Park consists of the Rosie the Riveter Memorial (located in Marina Park and Green), the Ford Assembly Plant (located in Sheridan Point Park), and Kaiser Shipyard No. 3/ SS Red Oak Victory Ship, located along the waterfront. The City of Richmond (with the Port of Richmond) owns and manages the greatest share of designated park sites, buildings, and structures. The City owns and manages the Rosie the Riveter Memorial, Fire Station 67A, and other city parks along the waterfront. The City of Richmond, through the Port of Richmond, owns the six historic buildings and the five graving basins/dry docks and surrounding acreage that make up the National Register of Historic Places, Shipyard No. 3 historic district.

Trails and Greenways

Trails and greenways dispersed throughout the City provide connections between neighborhoods, commercial centers, parks and shorelines. The San Francisco Bay Trail links many of the City and regional parks in Richmond, including the Point Isabel Regional Shoreline, six City-owned parks in Marina Bay, Point Isabel Regional Shoreline, and the Miller/Knox Regional Shoreline, as well as the Richmond Greenway and the Wildcat Creek Regional Trail. This trail also provides regional connections through a network of regional walking and cycling trails, like the Richmond Greenway. The San Francisco Bay Trail is a planned 500-mile hiking and biking trail encircling San Francisco and San Pablo Bays. Twenty-five miles of this trail have been completed in the City, and will ultimately run along the shoreline wherever feasible.

The Richmond Greenway, currently under construction in the City, will convert a 3-mile segment of the Santa Fe railroad corridor into an urban greenbelt and trail. The Richmond Greenway is bounded by Garrard Boulevard on the west and Key Boulevard on the east. Running parallel to

Ohio and Chanslor Streets, the Greenway will ultimately connect the San Francisco Bay Trail on the west with the Ohlone Greenway in the City of El Cerrito to the east.¹

Other Recreational Facilities

In addition to publicly-owned and operated parks, open spaces, and recreational facilities, several private recreational facilities are located in Richmond, including the Richmond Country Club, Marina Bay Yacht Harbor, Richmond Yacht Club Harbor, the YMCA, and Red Rock Marina.

Regulatory Setting

Federal

There are no federal regulations related to local and regional parkland or recreational facilities. The Rosie the Riveter/World War II Home Front National Historical Park General Management Plan, released in January of 2009, provides the framework for developing and managing the Rosie the Riveter/World War II Home Front National Historical Park. The vision of the General Management Plan is to provide visitors with opportunities to explore Richmond's World War II-era historic sites and structures in order to experience the scale, diversity, and complexity of the American home front story. Under the General Management Plan, the National Park Service would work with cooperating partners to provide visitors places to stop and experience historic sites and structures that are preserved and interpreted. Where possible, a portion of the interiors would be made accessible with artifacts, exhibits, and programs to connect visitors to buildings stories as well as to the larger park themes. The World War II Home Front Visitor/Education Center would interpret the national home front effort and orient the visitor to Richmond's World War II-era sites and stories.

State

Quimby Act

The *Quimby Act* was established by the California legislature in 1965 to provide parks for the growing communities in California. The Act authorizes cities to adopt ordinances addressing park land and/or fees for residential subdivisions for the purpose of providing and preserving open space and recreational facilities and improvements. The Act requires the provision of three acres of park area per 1,000 persons residing within a subdivision, unless the amount of existing neighborhood and community park area exceeds that limit, in which case the City may adopt a higher standard not to exceed five acres per 1,000 residents. The Act also specifies acceptable uses and expenditures of funds from fees. The City has adopted an ordinance that implements the Quimby Act (see Local Regulations below).

1 City of Richmond. May 2003. The Richmond Greenway Master Plan. www.ci.richmond.ca.us/DocumentView.aspx?DID=1072. Accessed September 12, 2009.

State Public Park Preservation Act

The primary instrument for protecting and preserving parkland is the State Public Park Preservation Act. Under the Public Resource Code, cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This provision essentially stipulates that there shall be no net loss of parkland and facilities.

Local

City of Richmond Municipal Code

Park and Recreation Dedication and Fees

Article XV (Zoning and Subdivisions) Chapter 15.08.400 (Park and Recreation Dedication and Fees) provides a method for the equitable and consistent collection of fees for parks and recreation to serve the developing areas of the City of Richmond. The City of Richmond mitigates impacts created from additional demands on existing park and recreation services due to the increase in new residential development in the City by imposition of development impact fees to fund parks and recreation. As a condition of approval of a final map or parcel map, the developer is either required to dedicate land or pay a fee for park or recreational purposes. The City requires three acres of property for each one thousand persons residing within the City to be devoted to local park and recreational purposes.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

This analysis focuses on whether the increase in population associated with the proposed General Plan would result in the increased use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of those facilities would occur or be accelerated. For the purposes of calculating the amount of parkland required for the project, the analysis uses projected population increases under the General Plan, assuming three acres of parkland per 1,000 new residents, to determine the amount of new parkland that would be required. For the purposes of this analysis, a significant impact would occur if new development would result in fewer than three acres of parkland per 1,000 residents in Richmond or if the use of existing park facilities by new residents causes a substantial physical deterioration of those facilities.

Standards of Significance

For the purposes of this EIR, impacts on parks and recreation are considered significant if the proposed project would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;

- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or
- Result in substantial adverse physical impacts associated with the construction of new or physically altered park facilities.

Project-Specific Impacts and Mitigation Measures

3.11-1 Implementation of the proposed General Plan would increase the use of existing neighborhood and regional parks or other recreational facilities but would not substantially accelerate or result in substantial physical deterioration of the facilities. This is considered a *less-than-significant impact*.

An increase in population resulting from implementation of the proposed General Plan would place a greater demand on existing neighborhood and regional parks or other recreational facilities such that deterioration of these facilities could be accelerated. Chapter 15.08.400 of the City of Richmond Municipal Code establishes a standard of three acres of property for each 1,000 residents residing within the City to be devoted to local park and recreational purposes.

The City has a total local parklands inventory of 251 acres, not including joint-use facilities acreage. Regional park acreage and any other jurisdiction's facility acreage are not included in this inventory.²

The City currently maintains a local parkland to population ratio of 2.44 acres per 1,000 residents (251 acres of parkland and 102,700 residents), which is below the City's standard of 3 acres of local parkland per 1,000 residents. Implementation of the proposed General Plan would result in a direct population increase of 30,147 residents, resulting in a resident population in Richmond of 132,847 in 2030.

As stated above, the parkland ratio for City-owned parkland is below the City's standard of 3 acres of local parkland per 1,000 residents. However, this standard does not take into account the 4,029 acres of regional and state parks located in the City, which supplements local parks and recreational facilities for Richmond residents.

The proposed General Plan includes a conceptual system of parks, but does not include plans for specific park development. The General Plan would, however, allow for future development resulting in direct and indirect population growth and creating a need for parklands in the City. Assuming an additional population of 30,147, the proposed General Plan would create a demand for 90.4 acres of parkland at 3 acres per 1,000 residents. In order to mitigate impacts created by additional demands on existing park and recreation services due to the increase in new residential development in the City, the City imposes a development impact fees to fund parks and recreation, as permitted by Chapter 15.08.400 (Parks and Recreation Dedication and Fees) of the City of Richmond Municipal Code. As a condition of approval of a final map or parcel map, the developer is required to either dedicate land or pay a fee for park or recreational purposes. The amount of land to be provided is determined pursuant to Formula 15.08.400(4)(a) of the Municipal Code, or developers

2 City of Richmond. 1994. General Plan Growth Management Element. p. GM-10. August.

may pay an in-lieu of fee equal to the value of the land prescribed. Payment of an in-lieu of fee or dedication of land to be used for recreation purposes would ensure that new development in the City would provide adequate park facilities. The physical impacts of the construction of new parks within the City are assumed as part of the proposed General Plan and analyzed in the technical sections of this EIR at a program level.

The following policies included as part of the proposed General Plan would further reduce the potential for impacts on parks and recreation facilities.

Policies

PR1.3 Equitable Distribution of Park and Recreation Facilities. Expand park and recreation opportunities in all neighborhoods and ensure that they are offered within comfortable walking distance of homes, schools and businesses in order to encourage more physically and socially active lifestyles. Continue to implement the parkland development standard of three acres of community or neighborhood parkland per 1,000 population in each neighborhood planning area. This represents a minimum provision which should be exceeded whenever possible. In established neighborhoods where land availability for new large parks is limited, improve and maintain compact parks, play lots and plazas to increase access to recreation opportunities for residents.

PR1.4 Joint-Use Opportunities. Promote access to non-City operated parks and recreational facilities. Existing resources operated by the East Bay Regional Parks District, school district, community groups or others may support residents' interim needs for convenient access to parks and community centers. Joint-use opportunities serve to more efficiently utilize existing facilities and amenities, host programs in convenient neighborhood locations, better activate community areas so that they are in use during the day and in the evenings and enable the City and partners to share the cost of maintenance, upgrades and improvements for the benefit of the entire community.

Actions

PR1.A Community Access and Mobility Criteria. Develop access and mobility criteria for capital improvement projects and new development to enhance physical access to community facilities, schools, parks, shoreline open spaces, historical destinations, commercial and employment centers and transit hubs. The criteria should address access by walking, bicycling and public transit as well as vehicular access.

The community access and mobility criteria should:

Ensure safe connections to large and small open spaces, community facilities such as schools, community centers, recreational facilities, cultural and enrichment centers, historical destinations, transit hubs and commercial and employment centers;

Address travel routes, infrastructure improvement needs and barriers such as roads, railroad lines, highways, fences and natural features; and

Provide bicycle and pedestrian-friendly routes including completion of major trails and pathways like the San Francisco Bay Trail and Richmond Greenway.

PR1.B Park Performance Standards. Refine and utilize park performance standards within the Parks Master Plan including a classification system, park system guidelines and design criteria to guide development and management of parks and open spaces and ensure a high-quality, equitable range of park types and functions distributed throughout the City.

Richmond's park classification system identifies five major park types (with suggested acreages and service area radii) and a number of functions to serve a wide range of recreation and leisure activities appropriate to their surrounding context. The City's service goal specifies a minimum of three acres of community or neighborhood parkland per 1,000 residents. Parkland access standards specify a need for neighborhood or community parks within a quarter to a half-mile radius of neighborhoods, ensuring equitable and convenient access. These standards represent minimum provisions which the City should strive to exceed whenever possible. A comprehensive parks master planning process will provide an opportunity to further tailor Richmond's parkland types, and a citywide community needs assessment will pinpoint areas where facilities and services will benefit most from improvement.

Park system guidelines and design criteria should be developed to direct design decisions and ensure high-quality parks. In addition to these overarching system guidelines, more specific design criteria should be developed to ensure that each park fits its context and functions effectively in connecting community members to one another and their environment. Design criteria will specify that parks: utilize high-quality, sustainable building materials; provide a variety of landscape elements; include art and placemaking features to reflect the culture, values and history of the community; separate incompatible uses; connect open space areas where feasible; include adequate signage and information describing codes of conduct and City regulations; and incorporate facility maintenance standards and requirements as part of the design review process; among others. These design criteria are further developed as part of the parks master planning process.

PR1.C Parks Master Plan. Complete the development of the comprehensive long-range Parks Master Plan to address changing recreation interests, trends, needs and priorities. The Parks Master Plan should:

Include a community needs assessment that looks at all types of park and recreation programs offered in the community including those that relate to arts and culture, education enrichment and human services;

Identify long-term goals for the Recreation Department and the community;

Describe current and future needs, interests and community preferences for improving new parks and community facilities, and expanding or initiating new programs and services;

Present a long-range plan for physical park and community facility improvements;

Refine performance standards and further develop park design guidelines and criteria;

Develop a long-term strategy for the Richmond Greenway;

Prioritize projects; and

Outline funding mechanisms and strategies for managing the City's commitments so that new requests and initiatives are considered in light of existing commitments.

PR1.F Joint-Use Agreements. Pursue joint-use agreements with West Contra Costa Unified School District, East Bay Regional Parks District, neighboring cities, public agencies, private entities and nonprofit organizations that own and operate facilities within the City. In addition to providing more space for recreational and enrichment programming, strategic partnerships can provide the benefit of shared renovation, development, maintenance and operational costs.

PR1.G Parkland Dedication Ordinance. Update the parkland dedication ordinance that requires new development and redevelopment projects to provide adequate park and recreation opportunities to maintain the 3.0 acres per 1,000 population standard in applicable planning areas through a combination of park types as defined in the Parks and Recreation Element (to be updated and refined in the parks master plan).

Update the park impact fee ordinance that requires new development and redevelopment projects to pay a fair share to cover the cost of parkland acquisition and improvement if the development is unable to provide adequate parkland within the project. Prioritize park dedication over impact fees. Perform a nexus study periodically to update the criteria and fees.

Include provisions that prevent a net loss of parklands in the City. Require at least a 1:1 replacement if there is any loss of public open space or parkland due to redevelopment.

Policy PR1.3 (Equitable Distribution) maintains the parkland development standard of three acres of community or neighborhood parkland per 1,000 residents in each neighborhood planning area, and encourages the development of compact parks, play lots and plazas in order to increase access to recreation opportunities for residents. Policy PR1.4 promotes shared access to non-city operated parks and recreational facilities, and pursuing additional joint-use opportunities. In addition to policies, the proposed General Plan includes Implementing Actions. Action PR1.F, which supports Policy PR1.4, pursues joint-use agreements with WCCUSD, EBRPD, neighboring cities, public agencies or nonprofit organizations to maximize use of existing facilities in the community, would increase the City's parkland inventory while sharing various costs.

Actions PR1.B, and PR1.C.allow for the preparation of a Parks Master Plan, as well as several other planning documents that would identify the recreation needs of the City and facilitate the development of additional parks. Implementation of Action PR1.G calls for an update of the parkland dedication ordinance to require new development and redevelopment projects to pay a fair share to cover cost of parkland acquisition and improvement if adequate parkland within the project is not provided. This action also prioritizes park dedication over impact fees, and describes a provision to prevent a net loss of park lands in the City by requiring at 1 for 1 replacement if there is any loss of public open space and parkland due to redevelopment. Implementation of these policies and actions would ensure the continued collection of fees and dedication of land in order to develop additional parks and facilities throughout the City to serve the needs of the residents.

Because the parks that serve the City of Richmond, including regional parks, far exceed the City's per-resident parkland standard, the City would be adequately served in the future. In addition, the implementation of the goals and policies in the General Plan Update, as well as the dedication of land or payment of an in-lieu fee for future residential subdivisions, would further reduce the effect from increased demand and use resulting from an increase in citywide population. Therefore, the proposed General Plan would not significantly accelerate the deterioration of existing recreational facilities. This impact would be ***less than significant***.

Full Buildout Analysis

Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the impact under the full buildout scenario would be greater than under the City's anticipated growth scenario. Although growth of the magnitude of full buildout is unlikely, if such growth were to occur, it would generate a substantial demand for parks. However, the proposed General Plan includes policies that would require new parks or in-lieu fees associated with development within the Plan Area, would be required for all subdivision projects in the City. As discussed above, there are over 4,000 acres of parks in the city available to Richmond residents, so the City's park to resident ratio would exceed the three acres per 1,000 residents, even under full buildout conditions. At this time, however, the extent of additional growth and the exact nature of future effects associated with this additional growth are unknown. Therefore, it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to review to determine impacts on noise in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None required.

3.11-2 Implementation of the proposed General Plan would not create a demand for the construction or expansion of park facilities beyond that anticipated in the General Plan. This is considered a *less-than-significant impact*.

As discussed under Impact 3.11-1, implementation of the proposed General Plan would result in a direct population increase of 30,147 residents by 2030 over the 2005 population of 102,700, resulting in a resident population in Richmond of 132,847 in 2030. The City currently maintains a parkland-to-population ratio of 2.44 acres per 1,000 residents for local parks, which is below the City's standard, and represents a deficit of approximately 57.1 acres of parkland.

Provisions of the proposed General Plan would ensure that future residential growth in the City would provide a minimum of 3 acres of parkland per 1,000 residents, so that future park facilities would be provided commensurate with local growth in Richmond. Specifically, as explained under Impact 3.11-1, all future private developers proposing residential subdivisions within the City would be required to either dedicate land for park facilities or pay a fee in lieu of providing parkland. The current park and recreation dedication and fees are collected by the City as part of the development review process and used only for the purpose of developing new park facilities to serve the development for which the fees were paid. Policies and implementation actions contained in the proposed General Plan would also reduce impacts on recreational facilities by outlining the ways in which the City would acquire the funds and the land to increase the City's parkland inventory in order to better serve the community.

The policies set forth in the General Plan are designed to ensure that future development in the City would not create a need for recreation facilities beyond that anticipated in the General Plan. The

physical effects of providing the required park acreage, such as construction emissions and effects on biological resources, are considered in the other technical sections of this EIR. This impact is *less than significant*.

Full Buildout Analysis

Under the full buildout scenario, the city's population would increase beyond the City's anticipated growth scenario. Additional growth beyond the 2030 horizon would generate additional demand for parks and park facilities within the city. If development were allowed to happen without the provision of additional parks, the effects would be adverse. However, the proposed General Plan includes policies that would ensure that future development, even if it exceeds the population projections for the General Plan, would provide park facilities commensurate with local growth in Richmond. At this time, the extent of additional growth and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None required.

Cumulative Impacts

The geographic context for the analysis of cumulative impacts associated with parks and recreational facilities is the City of Richmond, including all cumulative growth therein, as represented by full implementation of the proposed General Plan. The previous analyses presented in Impacts 3.11.1 and 3.11.2 in essence constitute a cumulative assessment since they consider park and recreational needs for the entire City.

Development under the proposed General Plan could have an effect on existing parks and recreational facilities in the City due to increased use. However, the City requires that private developers proposing residential subdivisions within the City either dedicate land for park facilities or pay a fee in lieu of providing parkland. These fees are collected by the City as part of the development review process and used for the purpose of developing new park facilities to serve the development for which the fees were paid. The dedication of land or the payment of in-lieu fees, in combination with policies contained in the proposed General Plan, would ensure that impacts related to deterioration of existing parks and recreation facilities would not occur. Thus, adverse physical impacts related to the expansion and construction of parks and recreational facilities would not be significant. Additionally, Policies and Implementation Actions within the Park and Recreation Element of the proposed General Plan would establish use agreements and encourage coordination with the WCCUSD and other agencies that provide recreational facilities and programs. As discussed above, there are over 4,300 acres of regional parklands and open space in the City of Richmond that are available to residents in the City, supplementing local park and recreation facilities in the City. Therefore, cumulative impacts of the proposed General Plan would be *less than significant*.

REFERENCES

City of Richmond, *City of Richmond Municipal Code*, July 7.

City of Richmond, 1993. City of Richmond General Plan and Zoning Ordinance Updates Program Environmental Impact Report. August 13.

City of Richmond, 1994. *City of Richmond General Plan - Open Space and Conservation Element*. August.

3.12 PUBLIC SERVICES

3.12 PUBLIC SERVICES

INTRODUCTION

This section evaluates the effects on public services related to implementation of the City of Richmond General Plan Update (General Plan) by identifying anticipated public service demands and existing and planned public services availability. For purposes of this EIR, public services consist of (1) fire protection, (2) police protection, (3) schools, and (4) library services. Parks, while described as a public service in Appendix G to the CEQA Guidelines, are analyzed separately in section 3.11 (Recreation) of this EIR.

Data used to prepare this section were taken from the City of Richmond Municipal Code, the City of Richmond General Plan (General Plan) (1994), the City of Richmond General Plan and Zoning Ordinance Updates Program Environmental Impact Report (1993), the Draft City of Richmond 2010 General Plan, and various other sources relevant to proposed General Plan. Full bibliographic entries for all reference materials are provided in footnotes in this section.

Two comments associated with public services were received in response to the NOP circulated for the proposed General Plan Update. One comment expressing concern on impacts on fire, police, schools, and library services was received during the scoping meeting held on February 28, 2008. The Governor's Office of Emergency Services provided comments regarding wildland and urban fires. These issues are addressed in this section.

FIRE PROTECTION

ENVIRONMENTAL SETTING

The Richmond Fire Department (RFD) provides fire fighting and prevention services to the incorporated area of the City. RFD is responsible for emergency medical services, fire suppression, mitigation of disasters, and rescue activities. Firefighters inspect commercial and waterfront facilities on an annual basis. In addition to emergency work, RFD members provide a wide range of services to the Richmond community, including tours of fire stations and apparatus and fire and life safety presentations. RFD also has one Hazardous Materials Response Team at Station 64; two Rescue Units at Station 67 and Station 68; and one Breathing Support Unit at Station 61.

There are seven RFD stations in the City; the locations are identified in Table 3.12-1. Personnel are assigned to these seven stations throughout the City and respond to approximately 11,000 alarms per year. Approximately 77 percent of all emergency calls are for medical service. All personnel are trained as Emergency Medical Technicians to the level of EMT-D and HazMat First Responder Operational. The RFD goal is to respond to 85 percent of emergency calls in 6 minutes or less. The

average response time for emergency and non-emergency for the RFD is 5 minutes.¹ The average response of 5 minutes is considered acceptable according to the RFD standards.

Station Number	Street Address
Station 61	140 W. Richmond Ave, Richmond, 94801
Station 62	1065 7 th Street, Richmond, 94801
Station 63	5201 Valley View Road, Richmond, 94803
Station 64	4801 Bayview Avenue, Richmond, 94804
Station 66	4100 Clinton Avenue, Richmond, 94805
Station 67	1131 Cutting Blvd., Richmond 94804
Station 68	2904 Hilltop Drive, Richmond 94806
Source: City of Richmond.2009. Fire Station, www.ci.richmond.ca.us/index.aspx?NID=406 , accessed September 2, 2009.	

RFD has a staff of 89 sworn officers and 7 non-sworn personnel for total of 96 total current employees.² Table 3.12-2 identifies the number of personnel as well as station and equipment for the RFD. RFD is organized into three platoons that staff the eight companies. There are seven engine companies and one truck company.³ All eight companies are supervised by a Battalion Chief who is responsible for the emergency and administrative activities of all members assigned to those companies. The RFD has a personnel-to-population-ratio of one personnel to 4,200 residents.⁴ RFD's current ratio is considered acceptable.⁵ Development impact fees are collected during the planning process for new development projects to ensure that RFD has adequate equipment and infrastructure to serve the developing areas of the City.⁶

The City of Richmond also has mutual aid agreements for exchange of fire, rescue, and emergency medical services with the Contra Costa County Fire Protection District, City of Pinole Fire Department, and City of Rodeo-Hercules Fire Department. Under the agreement, these neighboring departments respond to calls outside their jurisdictional boundaries if response from the type of unit is not in the station requested or located such that it would result in an extended response time.

Regulatory Setting

Federal

There are no federal regulations related to fire protection services applicable to the proposed project.

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- 1 Selkirk, Catherine. 2009. Communication with Richmond Fire Department. September 2.
 - 2 City of Richmond. 2010. *Department Facts*, <http://www.ci.richmond.ca.us/index.aspx?nid=1483>, accessed December 21, 2010.
 - 3 City of Richmond. 2009. *Department Facts*, www.ci.richmond.ca.us/index.aspx?NID=406, accessed September 2, 2009.
 - 4 Selkirk, Catherine. 2009. Communication with Richmond Fire Department. September 2.
 - 5 Selkirk, Catherine. 2009. Communication with Richmond Fire Department. September 2.
 - 6 Selkirk, Catherine. 2009. Communication with Richmond Fire Department. September 2.

TABLE 3.12-2	
RFD PERSONNEL AND EQUIPMENT IN RICHMOND	
Personnel	
Fire Chief	1
Deputy Fire Chief	1
Battalion Chiefs	4
Fire Marshal	1
Deputy Fire Marshal	1
Inspectors	3
Captains	24
Engineers	21
Firefighters	33
Office of Emergency Services Manager	1
Project Manager	1
Administrative Staff	5
Total Personnel	96
Equipment	
Engine Companies	7
Truck Company	1
Source: City of Richmond. 2009. <i>Department Facts</i> , www.ci.richmond.ca.us/index.aspx?nid=1483 , accessed September 2, 2009.	

State

California Fire Code

The California Fire Code contains regulations relating to construction and maintenance of buildings and the use of premises. Topics covered by the code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist first responders, industrial processes, and many other general and specialized fire safety requirements for new and existing buildings and premises. The code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in sections 13000 et seq. of the California Health and Safety Code, which include regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Local

City of Richmond Municipal Code

Fire Code

The California Fire Code, discussed above under State regulations, is adopted by the City under Chapter 8.16.010 of the City's Municipal Code. In addition, the City made changes and/or modifications to the California Fire Code in order to mitigate impacts that could be caused by local climatic, geological, and topographic conditions. Article VIII (Fire) includes the following chapters to address specific fire related concerns for the City of Richmond. Chapter 8.04 addresses issues related to fire hydrants; Chapter 8.08 addresses issues related to commercial incinerators; Chapter 8.16 address issues related to fire prevention code; Chapter 8.20 addresses issues related to fire apparatus and public safety; and Chapter 8.24 addresses fire issues related to canvas tents and structures of flammable materials.

Development Fees

Article XII (Public Works) Chapter 12.64 (Public Facilities Fee) and Chapter 12.65 (Public Facilities Impact Fees) of the Municipal Code provide a method for the equitable and consistent collection of fees for public improvements and facilities needed to serve the developing areas of the City of Richmond. The City of Richmond mitigates impacts created from additional demands on existing fire protection services from new residential and commercial structures by imposing development impact fees to fund public facilities and services, including fire protection services.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

Impacts on fire protection services are considered significant if an increase in population or building area would result in inadequate staffing levels, response times, and/or increased demand for services that would require the construction or expansion of new or altered facilities that might have an adverse physical effect on the environment. The RFD maintains a response-time goal of six minutes or less. An increase in population or commercial/retail development may result in the need for additional fire protection personnel. The methodology for assessing impacts on staffing levels and equipment requirements is based on population data collected for the proposed project and correspondence with the RFD. This information was then applied to the proposed project's potential increase in response time.

Standards of Significance

For the purposes of this EIR, impacts on fire protection resources are considered significant if the proposed project would:

- Result in the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

Project-Specific Impacts and Mitigation Measures

3.12-1 Implementation of the General Plan Update would increase the demand for fire protection and emergency services and/or create a demand for additional fire stations, department personnel, and/or equipment, but would not reduce the level of protection. This is considered a *less-than-significant impact*.

As discussed in Chapter 2, Project Description, the change areas can be characterized as urban and would not substantially alter the interface between development and undeveloped areas such that the increase for wildland fire would increase. However, significant changes in land use and development character are proposed as part of the proposed General Plan within the targeted change areas. The proposed General Plan would increase the population and development intensity in the change areas. However, an increase in population, by itself, would not increase demand for fire protection services. The demand for fire stations and firefighting services vary more as a function of the geographic distribution of development than of population increases. Thus, the RFD's service goals are based on accepted service levels of distance and time, rather than firefighters or stations per capita. As stated previously, the RFD is currently operating at acceptable levels of fire protection services of five minutes.⁷ In light of this service standard, it is more relevant to examine the location of the change areas relative to existing fire stations than to consider the additional personnel needed to support the projected population increase in the City by 2030.

The proposed General Plan would increase the intensity of development in the change areas, but these areas are already currently served by fire protection services. As a result, new development under the proposed General Plan would not cause the RFD to travel farther or require additional time to reach the new development; the new development within the change areas would occur as infill. To further reduce the impact of new development on the existing RFD facilities, equipment, and personnel, the City requires that the proposed structures, access, and water supply meet the California State Fire Code and City building requirements. In addition, project developers would be required to pay development impact fees as established by City ordinance. The City of Richmond would mitigate impacts on the existing RFD facilities, equipment, and personnel by imposing development impact fees to fund public facilities, including fire facilities.

The following proposed General Plan Policies and Implementing Actions would further reduce potential impacts on fire protection services.

Action

- SN1.B Building Structure Safety Standards. Regularly review and update building standards and guidelines to ensure that all structures in private, public or quasi-public ownership including municipal buildings are designed to protect people and property from hazards.

Policies

- SN2.2 Level of Service.** Provide a high level of police and fire service in the community. Secure adequate facilities, equipment and personnel for police and fire and collaborate with

⁷ Selkirk, Catherine. Richmond Fire Department. 2009. Personal communication, September 2.

neighboring jurisdiction and partner agencies to adequately respond to emergencies and incidents in all parts of the City.

- SN2.3 Fire Safety.** Regularly update policies that will protect the community and its urban and natural areas from fire hazards. Emphasize prevention and awareness of fire safety guidelines to minimize risk and potential damage to life, property and the environment. In areas designated by the Richmond Fire Department as having a high fire hazard, ensure adequate fire equipment, personnel, firebreaks, facilities, water and access for a quick and efficient response in any area.

Actions

- SN2.C Regional Emergency Coordination Plan. Collaborate with regional agencies and neighboring jurisdictions to develop and implement a regional emergency coordination plan and agreement for police, fire and emergency medical services.
- SN2.D Fire Prone Area Designation. Designate areas in Richmond that are particularly prone to fire hazards and make this information available to the community. Consider adopting wildfire development guidelines for development adjacent to fire prone areas.
- SN2.F Fire Safety Public Awareness Program. Develop programs that inform and educate the community about potential risks, resources and roles and responsibilities for addressing fire safety. Include staffing needs in the Fire Prevention Bureau to effectively implement the program. Inform residents of homes adjacent to public lands of their responsibility to provide fire breaks behind their homes.
- SN2.G Fire Station and Fire Services Strategic Plan. Regularly review and update the Fire Station and Fire Services Strategic Plan. The plan should outline steps needed to obtain an Insurance Services Office Rating of “two” for the City of Richmond.

Policy

- SN3.1 Emergency and Disaster Preparedness.** Maintain staff and facilities that will continue to support a coordinated and effective response to emergencies and natural disasters throughout the City. Coordinate with neighboring jurisdictions, local employers and industries to make sure that emergency preparedness and disaster response programs equitably serve all parts of the City. Continue to maintain adequate police and fire staffing, facilities, equipment and maintenance in order to protect the community.

The policies contained in the proposed General Plan Update require that adequate infrastructure be provided as new development occurs. For example, compliance with Policy SN2.2 (Level of Service) would ensure that growth and development would be coordinated with the provision of adequate infrastructure. Thus, fire staffing and facilities would be expanded commensurately to serve the needs of new development to maintain the current response time. Implementing Action SN2.B (Level of Service Monitoring) would evaluate the response times for fire and emergency medical calls annually to gauge the need for additional facilities, equipment, and personnel, and identify specific geographic areas of the City that may not be adequately served.

Additionally, new development would be required to comply with state and local regulations governing the provision of fire protection services, including adequate fire access, fire flows, and number of hydrants. The City of Richmond has adopted the 2010 California Fire Code with City amendments and some exceptions. These provisions include construction standards in new

structures and remodels, road widths and configurations designed to accommodate the passage of fire trucks and engines, and requirements for minimum fire flow rates for water mains. Finally, if new facilities would need to be constructed to accommodate increased demand on fire protection services, further environmental review would be required as specific facilities are proposed. In addition, all significant new development would be subject to the City's environmental review process which includes project-specific assessment of fire protection services. Compliance with applicable regulations and policies contained in the proposed General Plan Update would ensure impacts on fire services remain ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, the City's population would increase beyond the amount of projected regional growth the City anticipates it could capture. Growth in excess of the anticipated growth would occur beyond the General Plan's 2030 planning horizon. If additional growth were to occur, it would generate additional demand for fire protection services. If that development were allowed to occur without the provision of additional facilities, the effects would be adverse. However, the proposed General Plan includes policies that require fire protection services and facilities and funding be provided to serve new development. At this time, however, the extent of additional growth and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time.

In addition, any future development would be subject to rigorous review to determine impacts on fire protection services in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

As the RFD serves the entire City and the proposed General Plan is confined to the limits of the City, the geographic context for the analysis of cumulative impacts associated with fire protection services would be the service area of the RFD. Since development under the proposed General Plan takes into account all projected future growth and development within the City, the project impact, as discussed under Impact 3.12-1, analyzes cumulative impacts with regard to the RFD. Thus, cumulative impacts to fire protection services would be the same as the less-than-significant impacts identified for the proposed General Plan.

POLICE PROTECTION

ENVIRONMENTAL SETTING

The Richmond Police Department (RPD) provides police protection services to the City of Richmond. Services provided include response to emergency and non-emergency calls for assistance, routine patrol, traffic enforcement, investigation of crimes, parking control services, community problem-solving, and code enforcement. In addition, the RPD provides a range of community service programs, including youth mentoring programs, task forces, community coalitions, Police Activities Leagues, gang intervention, high school programs, and cadet and explorer programs.

The RPD operates out of a central station in the Marina Bay area at 1701 Regatta Boulevard. The RPD is divided into three geographic districts (North, Central, and South), each with its own police captain. Each district has three smaller beats that typically include several neighborhoods. Every patrol officer is assigned to a specific beat. In addition, a group of School Resource Officers work under the direct supervision of a Richmond Police sergeant, and are posted at designated West Contra Costa Unified School District campuses in Richmond under contractual agreement with the District.

On average, RPD officers respond to over 300 calls for service each day. In 2008, the RPD responded to 110,657 calls for service.⁸ RPD has 187 authorized sworn officers,⁹ and 34 civilian personnel.¹⁰ Currently, there are 1.6 sworn officers per every 1,000 City residents,¹¹ and average response times are 6 minutes and 43 seconds for Priority 1 calls and 14 minutes and 50 seconds for Priority 2 calls.¹² Priority 1 calls are in progress emergencies such as shootings, robberies, burglaries and assaults. Priority 2 calls are immediate emergencies, but not in progress, where the suspect is no longer present.¹³

Regulatory Setting

There are no federal, state, or local regulations related to police protection services applicable to the proposed project.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

Impacts on police protection services are considered significant if an increase in population would result in inadequate staffing levels (as measured by the ability of the RPD to respond to call loads) and/or increased demand for services would require the construction or expansion of new or altered

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- 8 RPD. 2009. *2008 Annual Report*. March. www.ci.richmond.ca.us/DocumentView.aspx?DID=4541, p. 9.
- 9 RPD. 2009. *2008 Annual Report*. March. www.ci.richmond.ca.us/DocumentView.aspx?DID=4541, p. 21.
- 10 City of Richmond. 2009. *Message from the Chief*. <http://ca-richmond.civicplus.com/index.aspx?NID=963>, accessed September 2, 2009.
- 11 RPD. 2009. *2008 Annual Report*. March. www.ci.richmond.ca.us/DocumentView.aspx?DID=4541, p. 21.
- 12 Medina, Edwin. 2009. Email conversation with Richmond Police Department. September 24, 2009.
- 13 Medina, Edwin. 2009. Email conversation with Richmond Police Department. September 24, 2009.

facilities that might have an adverse physical effect on the environment. RPD prepares annual reports outlining the department's performance and personnel-to-population ratio. To estimate future staffing needs, the project's estimated population was used to calculate the number of new staff that may be required to serve the project.

Standards of Significance

For the purposes of this EIR, impacts on police protection are considered significant if the proposed project would:

- Result in the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

Project-Specific Impacts and Mitigation Measures

3.12-2 Implementation of the General Plan Update would increase the demand for police protection services and create a demand for additional police stations, department personnel, and/or equipment, but would not reduce the level of protection. This is considered a *less-than-significant impact*.

Currently, there are 1.6 sworn officers per every 1,000 City residents,¹⁴ and the RPD currently maintains an acceptable level of service. Projected growth under the proposed General Plan would result in an additional 30,147 residents by 2030. Based on current personnel-per-capita ratios, this population growth would require 48 additional sworn officers. The proposed General Plan would increase the intensity of development in the change areas, but these areas are already currently served by police protection services and thus would not result in an increase in response times for various calls for service.

The RPD's ability to support the needs of future growth is dependent upon its ability to hire and train police personnel and to redefine district and patrol beats to maintain a manageable call load. The following proposed General Plan Policies and Implementing Actions would further reduce the potential for impact on police protection services.

Policies

SN2.1 Crime Prevention and Response. Promote crime prevention strategies and provide a high level of response to incidents. Emphasize and prioritize crime prevention strategies such as pedestrian-scale lighting in targeted areas. Timely response to incidents and monitoring areas with high crime rates should be part of a comprehensive strategy to reduce crime in the community.

SN2.2 Level of Service. (see above)

Actions

SN2.A Public Safety Design Guidelines. Develop and adopt design guidelines that deter criminal activity in neighborhoods, streets and public areas. Include guidelines for the design of play areas, parks, sports facilities, streets and sidewalks, plazas

14 RPD. 2009. *2008 Annual Report*. www.ci.richmond.ca.us/DocumentView.aspx?DID=4541. March. p. 21.

and urban pocket parks, and housing and commercial sites, among others. Require the early integration of crime prevention strategies in new development and redevelopment projects including the involvement of the Police Department in the review of major projects in high-crime areas of the City.

Include guidelines for parks and recreation facilities with particular focus on the following five areas: design and orientation of buildings, restrooms and parking areas; defensible space with no hidden areas or structures that block visibility and natural surveillance; ownership and control over public space; cameras and other technologies; lighting; and signage.

SN2.B Level of Service Monitoring. Regularly review response times for police, fire and emergency medical calls. Use the results of the evaluation to gauge the need for additional facilities, equipment and personnel, and identify specific geographic areas of the City that may not be adequately served.

SN2.C Regional Emergency Coordination Plan. (see above)

Policy

SN3.1 Emergency and Disaster Preparedness. (see above)

Policies and Implementation Actions in the proposed General Plan require that adequate infrastructure be provided as new development occurs. Compliance with Policy SN2.2 (Level of Service) would ensure that growth and development would be coordinated with the provision of adequate service and equipment. Thus, police staffing and facilities would be expanded commensurately to serve the needs of new development to maintain acceptable response times. Implementing Action SN2.B (Level of Service Monitoring) would evaluate the response times for police annually to gauge the need for additional facilities, equipment and personnel, and identify specific geographic areas of the City that may not be adequately served. In addition, all significant new development would be subject to the City's environmental review process which includes project-specific assessment of police services. Compliance with applicable regulations and policies contained in the proposed General Plan Update would ensure impacts on police services remain ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario, additional officers and support staff would be required to ensure staffing ratios would be maintained. Growth in excess of the anticipated growth would occur beyond the General Plan's 2030 planning horizon. If additional growth were to occur, it would generate additional demand for law enforcement services. If that development were allowed to happen without the provision of additional facilities, the effects would be adverse. However, the proposed General Plan includes policies that require new law enforcement services and facilities be provided to serve new development. However, the extent of additional growth and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time.

In addition, any future development would be subject to rigorous review to determine impacts on law enforcement services in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

As the RPD serves the entire City and the proposed General Plan is confined to the limits of the City, the geographic context for the analysis of cumulative impacts associated with police protection services would be the City. Since development under the proposed General Plan takes into account all projected future growth and development within the City, the project impact, as discussed under Impact 3.12-2, analyzes cumulative impacts with regard to the RPD. Thus, cumulative impacts to police services would be the same as the less-than-significant impacts identified for the proposed General Plan.

SCHOOLS

ENVIRONMENTAL SETTING

The West Contra Costa Unified School District (WCCUSD) serves approximately 235,000 residents in the five cities of El Cerrito, Richmond, San Pablo, Pinole, and Hercules and the unincorporated areas of Bayview-Montalvin Manor, East Richmond Heights, El Sobrante, Kensington, North Richmond and Tara Hills.¹⁵ The district covers an area of approximately 65 square miles and provides K-8, middle, and high school, alternative school, and adult education services to the City of Richmond. WCCUSD has five Board of Education members elected at large, one Superintendent, and five divisions divided into Education Services, K-Adult Schools, Business Services, Operations, and Human Resources.¹⁶

The schools that serve the City of Richmond are identified in Table 3.12-3. School enrollment in the District has fluctuated in the past, but based upon most recent WCCUSD data,¹⁷ enrollment in the 2006-2007 school year was approximately 90 percent of the enrollment of the 1998-1999 school year (a reduction from 33,795 to 30,781) and enrollment at the schools serving Richmond have declined 14.5 percent (from 11,378 to 9,734). In the 2006-2007 school year, there were 7,243 K-12 students enrolled in the schools that serve the City of Richmond.

Name	Street Address	Type	2007-08 Enrollment¹
BayView	3001 – 16 th Street	K-6	548
Chavez	960-17 th street	K-6	612
Dover	1871- 21 st Street	K-6	581
Downer	1777 Sanford Avenue	K-6	707
Ford	2711 Maricopa Avenue	K-6	458
Grant	2400 Downer Avenue	K-5	630
Lake	2700 – 11 th Street	K-6	478
Peres	719 – 5 th Street	K-6	499
Verde	2000 Giaramita Street	K-6	310
Helms	2500 Road 20	6-8	689
Richmond	1250- 23 rd Street	9-12	1,731
		Total	7,243
Serra	6028 Ralston Avenue	Adult	---
Alvarado	5625 Sutter Avenue	Adult	---

Note:
 1. EDP. 2009. www.ed-data.k12.ca.us/welcome.asp, accessed September 3, 2009.
 Source: WCCUSD. 2009. www.wccusd.net/Department%20Documents/Purchasing/School%20Directory_0910_REV%208-20.pdf, accessed September 3, 2009.

- 15 WCCUSD. 2009. *About WCCUSD-Quick Facts*, www.wccusd.net/Documents/quickfacts.aspx, accessed September 3, 2009.
- 16 WCCUSD. 2009. *About WCCUSD-Quick Facts*, www.wccusd.net/Documents/quickfacts.aspx, accessed September 3, 2009.
- 17 WCCUSD. School – CBEDs Enrollment Information, www.wccusd.net/Documents/departments/schools/cbedsenrollment.aspx, accessed September 10, 2009.

Regulatory Setting

Federal

There are no federal regulations related to school services applicable to the proposed project.

State

California State Assembly Bill 2926 (AB 2926)—School Facilities Act of 1986

In 1986, AB 2926 was enacted by the state of California authorizing entities to levy statutory fees on new residential and commercial/industrial development in order to pay for school facilities. AB 2926, entitled the School Facilities Act of 1986, was expanded and revised in 1987 through the passage of AB 1600, which added section 66000 et seq. of the Government Code. Under this statute, payment of statutory fees by developers would serve as total CEQA mitigation to satisfy the impact of development on school facilities.

California Government Code Section 65995—School Facilities Legislation

The School Facilities Legislation was enacted to generate revenue for school districts for capital acquisitions and improvements.

California Senate Bill 50 (SB 50)

The passage of SB 50 in 1998 defined the Needs Analysis process in Government Code sections 65995.5-65998. Under the provisions of SB 50, school districts may collect fees to offset the costs associated with increasing school capacity as a result of development. The fees (referred to as Level One fees) are assessed based upon the proposed square footage of residential, commercial/industrial, and/or parking structure uses. Level Two fees require the developer to provide one-half of the costs of accommodating students in new schools, while the state would provide the other half. Level Three fees require the developer to pay the full cost of accommodating the students in new schools and would be implemented at the time the funds available from Proposition 1A (approved by the voters in 1998) are expended. School districts must demonstrate to the state their long-term facilities needs and costs based on long-term population growth in order to qualify for this source of funding. However, voter approval of Proposition 55 on March 2, 2004, precludes the imposition of the Level Three fees for the foreseeable future. Therefore, once qualified, districts may impose only Level Two fees, as calculated according to SB 50.

Local

City of Richmond Municipal Code

School Fees and Dedications

Article XV (Zoning and Subdivision) Chapter 15.10 (School Fees and Dedication) provides a method for financing school facilities necessitated by new residential developments causing conditions of

overcrowding. The City of Richmond mitigates impacts created from new residential and commercial structures in the City by imposing school fees and dedication to fund school facilities.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

Impacts on schools are determined by analyzing the projected increase in the demand for schools as a result of the proposed General Plan and comparing the projected increase with the schools' remaining capacities to determine whether new or altered facilities would be required. Impacts on schools are considered to be less than significant with payment of the City's School Fees and Dedication, which would provide for school facilities construction, improvements, and expansion.

Standards of Significance

For the purposes of this EIR, impacts on schools are considered significant if the proposed project would:

- Result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives for schools.

Project-Specific Impacts and Mitigation Measures

3.12-3 Implementation of the proposed General Plan would generate additional students, but the demand for new school facilities would be fully mitigated with required payment of school fees. As a result, this is considered a less-than-significant impact.

The proposed General Plan could add as many as 15,548 housing units in the City by 2030. Using WCCUSD student generation factors shown in Table 3.12-4, the proposed General Plan could result in a student population increase of approximately 10,448 students by 2030.

STUDENT GENERATION FACTORS - DISTRICT WIDE			
Type	K-6 (Elementary) Students	7-8 (Middle School) Students	9-12 (High School) Students
Single family detached	0.210	0.056	0.147
Single family attached	0.047	0.015	0.014
Multi-family attached	0.333	0.154	0.185
Source: WCCUSD. 2008. Fall 2007/2008 Student Population Projection Report Projections 2008/2009 - 2017/2018. November.			

Impacts due to increases in school enrollment would be reduced through the payment of school impact fees, required for all new development. These fees would be based on the use and size of a project. Additionally, the proposed General Plan contains Policies and Implementing Actions that

require adequate school infrastructure be provided as new development occurs, which would further reduce the potential for impact on school facilities.

Policy

CF1.4 Concurrent Infrastructure Development. Require new development to provide proportionate facilities and infrastructure improvements as it occurs. New developments must mitigate impacts or contribute adequate infrastructure to meet additional demand for roads, parks, schools and utilities.

Action

CF1.A Community Facilities Evaluation Continue to track and evaluate community facilities including schools, libraries, community centers, human service facilities and associated programs and services. Recommend improvements and identify funding mechanisms and partners in implementation.

Promote best practices in joint-use, universal access, sustainability, green design and safety. Standardize the use of design guidelines at all public facilities and incentivize their application at nonprofit and private facilities.

Create a property and facilities database that identifies the size, location, physical quality and other attributes of all public facilities, as well as nonprofit and private facilities. The database can provide a mechanism to analyze quality and adequacy of current facilities and can be used in conjunction with other studies to identify areas for expansion or upgrades.

Policies

EH1.1 K-12 Education. Support West Contra Costa Unified School District (WCCUSD) and other educational institutions in providing a quality K-12 learning environment for children and youth. Address facility quality, adequate staffing and supplemental educational programs. Support the efforts of nonprofit, charter and private schools to provide quality education alternatives.

EH2.3 Concurrent Enrollment. Support the West Contra Costa Unified School District's efforts to collaborate with community colleges and other educational institutions to develop concurrent enrollment programs that promote contextual learning, helping prepare youth to enter the workforce after high school or pursue a college education. Successful programs such as ASSET at Kennedy High School and the Career Academy program should be expanded upon and replicated throughout Richmond.

Compliance with Policy CF1.4 would require new development to provide school facilities and infrastructure improvements as the new development occurs. Thus, school staffing and facilities would be expanded to serve the needs of new development to maintain adequate service levels.

As school fees are collected from residential, commercial, and industrial uses, developers are required to fund necessary school service and facility improvements to accommodate anticipated population and student enrollment. If new facilities need to be constructed to accommodate increased student enrollment, further environmental review would be required as project-specific plans are developed. In addition, all significant new development would be subject to the City's environmental review process, which includes project-specific assessment of student growth and impacts on schools. This environmental review, combined with developer fees and applicable policies and implementation actions in the General Plan, would ensure impacts on schools remain **less than significant**. No additional mitigation measure is necessary.

Full Buildout Analysis

Under the full buildout scenario the city's population would increase. Additional growth beyond the General Plan's 2030 planning horizon would generate additional demand for schools within the city. If that development were allowed to occur without the provision of additional facilities, the effects would be adverse. However, the proposed General Plan includes policies that would reduce impacts on school facilities by requiring that the provision of school services and facilities keep pace with proposed development to serve existing and planned land uses. However, the extent of additional growth and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time.

In addition, any future development would be subject to rigorous review to determine impacts on school facilities in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts

As the WCCUSD serves the City of Richmond, the geographic context for the analysis of cumulative impacts associated with services would be the capacity of the WCCUSD. The jurisdictions within the WCCUSD service area will continue to experience growth through the General Plan planning horizon of 2030. This could increase demand on WCCUSD services. Development in areas adjacent to the City of Richmond could result in additional demands on the District's school services. However, development outside of Richmond would not necessarily result in increased enrollment and demand for the schools serving students in the City of Richmond. Students in other areas of the district would be distributed throughout the district instead of being focused on Richmond. In addition, General Plan policies would ensure that the City of Richmond would coordinate with the WCCUSD to provide adequate school facilities and personnel within the City boundaries. Moreover, development in other communities that are served by WCCUSD would also be subject to school impact fees, which would fully mitigate school impacts. Consequently, the cumulative impact on schools is *less than significant*.

LIBRARIES

ENVIRONMENTAL SETTING

The Richmond Public Library (RPL) is composed of one main library and two branches. The RPL also manages a Bookmobile that travels at regularly scheduled times to various schools and neighborhood centers. The locations of the libraries are identified in Table 3.12-4. In the fiscal year 2007-2008, the library checked out 172,558 items and experienced 208,962 visits.¹⁸ The library offered 513 programs with total attendance of 16,214. There were 90,846 virtual visits to the library website and 58,064 people used the public internet computers in the library.¹⁹

LIBRARY LOCATIONS IN RICHMOND	
Name	Street Address
Main Branch Library	325 Civic Center Plaza
Bayview Branch Library	5100 Hartnett Avenue
West Side Branch Library	135 Washington Avenue
Source: City of Richmond. 2009. <i>Hours and Locations</i> , http://ca-richmond.civicplus.com/index.aspx?NID=786 , accessed September 2, 2009.	

The three libraries are full-service facilities, with public access computers, story times, special events, new books, DVDs, and free Wi-Fi service offered to the library users. The libraries host a variety of programs only offered in the branches, like Relax Taiso and book clubs.²⁰ The RPL has an extensive audiovisual service with more than 400 16mm films ranging from children's cartoons to full-length features, cassette tapes, filmstrips, slides, screens, 8mm films, and 8mm and 16mm projectors.²¹ It has a book collection of some 236,000 volumes; periodical holdings exceeding 700 titles; more than 11,000 phonograph record albums; and microfilm holdings of newspapers and periodicals exceeding 4,000 reels.²² The RPL offers a program in the children's room, featuring story hours, puppet shows, handicraft activities, school visitations, dial-a-story telephone story-telling, phonograph records, and exhibits.

The RPL benefits from two non-profit support organizations. The Friends of the RPL, organized in the early 1980s, currently has 88 members who raise money through memberships, donations, and book sales. The Friends of RPL donate about \$10,000 a year, primarily to support programs and special events.²³ The Richmond Public Library Foundation, formed in 2004, contributes resources

18 Richmond Public Library. 2008. 2008 Annual report. <http://ca-richmond.civicplus.com/DocumentView.aspx?DID=4262>.

19 Richmond Public Library. 2008. 2008 Annual report. <http://ca-richmond.civicplus.com/DocumentView.aspx?DID=4262>.

20 Richmond Public Library. 2008. 2008 Annual report. <http://ca-richmond.civicplus.com/DocumentView.aspx?DID=4262>.

21 City of Richmond. 2009. *History of Richmond Public Library*. <http://ca-richmond.civicplus.com/index.aspx?nid=1128>, accessed September 2, 2009.

22 City of Richmond. 2009. *History of Richmond Public Library*. <http://ca-richmond.civicplus.com/index.aspx?nid=1128>, accessed September 2, 2009.

23 Richmond Public Library. 2008. 2008 Annual report. <http://ca-richmond.civicplus.com/DocumentView.aspx?DID=4262>.

and financial support to the RPL. A board of up to 13 members raises funds for significant capital projects, including a new Main Library as well as replacement of public access computers.²⁴

Regulatory Setting

Federal and State

There are no federal or State regulations related to library services applicable to the proposed project.

Local

City of Richmond Municipal Code

Library Impact Fees

Article XII (Public Works) Chapter 12.63 (Library Impact Fees) provides for a library impact fee levied on future residential and commercial development to provide an equitable share of the cost of mitigating library book and space needs created by such projects. The City of Richmond mitigates impacts on library services by imposing library impact fees to fund library facilities.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

The City has no quantified standards for the provision of library services. Impacts on library services are evaluated qualitatively based upon the ability of the proposed General Plan to maintain acceptable levels of service for library facilities.

Standards of Significance

For the purposes of this EIR, impacts to library resources are considered significant if the proposed project would:

- Result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for library services.

Project-Specific Impacts and Mitigation Measures

3.12-4 Implementation of the proposed General Plan would create an additional demand for library services, but would not result in a substantial adverse environmental impact associated with the provision of new or physically altered libraries or the need for new or physically altered libraries. This is considered a *less-than-significant impact*.

24 Richmond Public Library. 2008. 2008 Annual report. <http://ca-richmond.civicplus.com/DocumentView.aspx?DID=4262>.

The City of Richmond currently has no standard for library services. Increased development in the City does not necessarily equate to an increase in need for total volumes or square feet of library space. The following proposed General Plan Policies and Implementing Actions would reduce potential impacts on library services.

Policies

- CF1.1 A Range of High-Quality Community Facilities and Infrastructure.** Maintain high-quality facilities and infrastructure to serve diverse community needs. Upgrade, maintain and expand infrastructure to meet current and future needs and provide an effective and consistent level of services and utilities in all neighborhoods. Retain existing public facilities and uses in the Downtown, and actively work to attract new public facilities, especially within walking distance of the Richmond BART/Amtrak Station. Facilities and infrastructure may include community and recreation centers, parks and playgrounds, libraries and senior centers, schools, multi-use trails, pedestrian-scale lighting, and police and fire stations.
- CF4.2 Neighborhood Centers.** Promote the use of community facilities as neighborhood centers. A number of public and private entities provide a range of programs and services in Richmond's neighborhoods. Through joint use the City can transform parks, schools, libraries and community centers into safe and convenient gathering places that foster social interaction and community cohesion.

Action

- EH1.A Libraries Strategic Plan.** Regularly update the Libraries Strategic Plan to assess and improve library facilities and associated programs and services. The strategic plan may: promote partnerships with college libraries to expand available resources; recommend guidelines for providing physically accessible, safe and technologically-equipped facilities; and promote the expansion of bookmobile services.

Policy

- EH3.7 New Technologies.** Support efforts to expand access to internet technology and computer stations in community facilities such as libraries and community centers. Ensure that residents of all income levels have access to information technology.

Compliance with the above policies and implementation actions in the proposed General Plan would assure library needs would be addressed and plans to improve existing facilities would be undertaken. The City of Richmond mitigates impacts on existing library services from new residential and commercial structures in the City by imposing library impact fees to fund library facilities. As such, impacts associated with library services would be ***less than significant***.

Full Buildout Analysis

Under the full buildout scenario the city's population would increase. Additional growth beyond the General Plan's 2030 planning horizon would generate additional demand for library services and staff within the city. If that development were allowed to happen without the provision of additional facilities, the effects would be adverse. However, the proposed General Plan includes policies that would reduce potential impacts on library services and assure library needs would be addressed and plans to improve existing facilities would be undertaken. However, the extent of additional growth

and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time.

In addition, any future development would be subject to environmental review to determine impacts on library services in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

As the RPL serves the entire City and the proposed General Plan is confined to the limits of the City, the geographic context for the analysis of cumulative impacts associated with library services would be the City. Since development under the proposed General Plan takes into account all projected future growth and development within the City, the project impact, as discussed under Impact 3.12-4, analyzes cumulative impacts with regard to the RPL. Therefore, the cumulative impact would be ***less than significant***.

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3.13 PUBLIC UTILITIES

3.13 PUBLIC UTILITIES

INTRODUCTION

This section of the EIR analyzes impacts on City utility and service systems that may result from the implementation of the City of Richmond General Plan. The section identifies anticipated demand and existing and planned infrastructure availability. The utilities addressed in this section include water supply, storage, and distribution; wastewater collection, transmission, and treatment; solid waste collection and disposal; and energy and natural gas supply. Storm drainage utilities are addressed in section 3.9, Hydrology and Water Quality. City of Richmond Municipal Code, the City of Richmond General Plan (General Plan) (1994), the City of Richmond General Plan and Zoning Ordinance Updates Program Environmental Impact Report (1993) and various other sources relevant to proposed General Plan. Full bibliographic entries for all reference materials are provided in the footnotes of this section.

Three comments associated with public utilities were received in response to the NOP circulated for the EIR. The East Bay Municipal Utilities District (EBMUD) commented on the capacity of the City's wastewater facilities to accommodate future development and pointed out that new development should pay their fair share of new water supply facilities. In addition, the EBMUD provided comments addressing water recycling, water supply, and water conservation. Stuart M. Flashman (on behalf of the Sierra Club) expressed concerns about the adequacy of the water supply and the impacts on EBMUD's overall water service. These issues are addressed in this section. The Environmental Justice Coalition for Water (EJCW) expressed concern over new development's impact on water quality, which is addressed in section 3.9 Hydrology.

WATER SUPPLY

ENVIRONMENTAL SETTING

The EBMUD provides water service in the City of Richmond. The EBMUD's water system serves approximately 1.3 million people in a 331-square-mile area extending from Crockett to the north, south to Hayward (encompassing the major cities of Oakland and Berkeley), east from San Francisco Bay to Walnut Creek and through the San Ramon Valley.

Based on a historical average, more than 90 percent of the water delivered to EBMUD's customers originates from the Mokelumne River watershed, and approximately 10 percent originates as runoff from the protected watershed lands in the East Bay Area.¹ The Mokelumne River watershed is relatively narrow and steep and is located northeast of the Sacramento-San Joaquin Delta on the western slopes of the Sierra Nevada. The watershed, upstream from the Camanche Dam, covers an

1 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 1-2.

area of 627 square miles and extends from Highland Peak near the crest of the Sierra Mountains to Camanche Reservoir located in the lower western foothills near Clements.²

EBMUD's water supply system begins at the Mokelumne River watershed and extends 90 miles to the East Bay. Groundwater is only utilized for some irrigation purposes. EBMUD has water rights that allow for delivery of up to a maximum of 325 million gallons per day (mgd) from the Mokelumne River, subject to the availability of Mokelumne River runoff and senior water rights of other users.³ Potable water is supplied via the San Pablo Dam from the Mokelumne River and from local rain-fed reservoirs. The water supply system consists of a network of reservoirs, aqueducts, water treatments plants, pumping plants, and distribution facilities.⁴ EBMUD has six water treatment plants that can filter and process more than 375 mgd:⁵ Upper San Leandro in Oakland, San Pablo in Kensington, Sobrante in El Sobrante, and three plants located in and named for Orinda, Lafayette, and Walnut Creek. The water treatment plant in Orinda has the largest water output of the six plants, with a capacity of 200 mgd, and serves the cities of Alameda, Albany, Berkeley, El Cerrito, Emeryville, Moraga, and other parts of Oakland, Orinda, Piedmont, Richmond, and San Leandro.

Water Demand

EBMUD's Water Supply Management Program 2020 (WSMP 2020) was adopted in 1993 to serve as the basis for water conservation and recycling programs and for development of supplemental water supply initiatives. In 2000, EBMUD completed the Update of Water Demand Projections, which calculates future potable water demands up to the year 2030, at which time projected demand would be about 267 mgd, after adjustments to account for conservation and recycled water use. The Water Supply Management Plan 2040 (WSMP 2040) is an update to the WSMP 2020. The WSMP 2040 estimates water supply needs for the EBMUD to the year 2040, and proposes a program of policy and project initiatives to meet dry-year water needs through 2040. Under the WSMP 2040, customer consumption is projected to be reduced by 35 percent through conservation measures to ensure adequate water supply for the EBMUD's service area.⁶ The 2040 Demand Study, an element of the WSMP 2040, describes the updated demand projections and its methodologies.⁷ The 2040 Demand Study relies on a land use based method to forecast water demand, which is disaggregated among 11 service regions. The overall EBMUD service area is projected to increase from 214 mgd in 2005 to 230 mgd in 2040, a seven percent increase in water demand.

In developing the land use projections for future water demand, EBMUD met with staff at local jurisdictions to determine future growth trends. The 2040 Demand Study acknowledges the ongoing

2 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 1-2.

3 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 2-1.

4 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 2-1.

5 EBMUD. 2009. *Water Treatment Plants*. www.ebmud.com/water_&_environment/water_quality/water_treatment_plants/default.htm, accessed Sept 8, 2009.

6 EBMUD. 2009 Draft PEIR Public Meeting 2009 presentation Slide. www.ebmud.com/water_&_environment/water_supply/water_supply_management_program/CEQA/WSMP%202040%20DRAFT%20PEIR/March_2009_public_meetings.pdf, accessed September 23, 2009.

7 EBMUD. 2009. *2040 Demand Study*. February. p. 1-1; Table 6.2.

General Plan process in the City of Richmond and takes into consideration increased growth that would occur under the proposed General Plan.

Portions of the City of Richmond occur in four of the 11 service regions, as described below.⁸

- Region AN encompasses the hilltop area of Richmond (population 23,430), the communities of Crockett, Rodeo, Hercules, El Sobrante, the City of Pinole, as well as a sliver of San Pablo and El Cerrito. This region would see no change in water demand between 2005 and 2040.
- Region AS includes parts of the cities of Richmond (population 413), Berkeley, El Cerrito, San Pablo, and Oakland, and parts of the communities of Kensington and El Sobrante. This region would see no change in water demand between 2005 and 2040.
- Region GC consists of portions of Richmond (population 13,713) and Piedmont, the City of Alameda, the majority of the City of Oakland, southern Emeryville, central portions of Berkeley (including downtown west of Shattuck), El Cerrito, and San Pablo. This region would experience the greatest increase in water demand (27 percent increase), from 48 mgd in 2005 to 61 mgd in 2040.
- Region GN is located in the cities of Richmond (population 65,079), San Pablo, Albany, western Berkeley and northern Emeryville. This region would experience a 10 percent increase in water demand, from 29 mgd in 2005 to 32 mgd in 2040.

Water demands tend to nearly level off after 2030, because planning agency staff anticipate that most of the planned land uses will be developed by 2030 and all planned land uses would be developed by 2040.⁹ As part of the process of updating the water demand forecasts, EBMUD also prepared a Programmatic EIR for the WSMP 2040. The Programmatic EIR evaluated the impacts association with implementation of WSMP 2040; individual projects identified in the WSMP could be subject to project-specific environmental review.

Water Supply

The WSMP 2040 takes into account demand increases and identifies and recommends solutions to meet dry-year water needs through 2040 for the EBMUD service area. EBMUD's primary source of water has been the Mokelumne River from which EBMUD has water rights that allow for delivery of up to a maximum of 325 mgd.¹⁰

A secondary source of water is runoff from local watersheds at EBMUD terminal reservoirs in the East Bay area; much of this runoff is stored in these terminal reservoirs for system use. EBMUD operates five terminal reservoirs within its service area. Table 3.13-1 identifies the terminal reservoirs and their capacity. Average local water supply put to beneficial use from these reservoirs is 15-25 mgd during normal hydrological years and zero during drought conditions. Briones, San

8 CBRE Consulting, Technical Report: Economic and Demographic Data Analysis in Support of Land Use Water Demand Forecast Adjustments, prepared for EBMUD, October 2007, Appendix B, Percent of City in Each Pressure Zone Region.

9 EBMUD. 2009. *2040 Demand Study*. February. p. 6-2.

10 EBMUD. 2005. *Urban Water Management Plan 2005*. November. p. 2-1.

Pablo, and Upper San Leandro supply water to EBMUD customers throughout the year; whereas, the Chabot and Lafayette reservoirs serve as emergency supply sources.

EBMUD TERMINAL RESERVOIR CAPACITY	
Reservoir	Capacity
Briones	19.7 billion gallons
Chabot	3.4 billion gallons
Lafayette	1.4 billion gallons
San Pablo	12.6 billion gallons
Upper San Leandro	12.4 billion gallons

Source: EBMUD. 2005. Urban Water Management Plan 2005. November. p. 2-4.

The WSMP 2040 and the Programmatic EIR indicate that, during severe droughts, EBMUD would be unable to meet water demands with Mokelumne River supplies, without imposing extreme rationing measures. EBMUD's planning objective is to not impose greater than 25 percent rationing on customers during a critical drought; however, under the current situation, EBMUD would experience a supply shortfall. The WSMP recommended two principal options for EBMUD's supplemental water supply: 1) additional surface or underground storage with conjunctive use and acquiring new surface water supplies; and 2) add surface water supply by either enlarging the existing Pardee Reservoir and/or by using EBMUD's American River contract entitlement. EBMUD's current projects are geared towards relieving future water demand shortfalls and meeting projected demand. Three main projects either currently under construction or in the planning, testing, or feasibility phases include:

- The Freeport Regional Water Project (FRWP) would divert water from the Sacramento River and construct a regional water treatment plant in Sacramento County in order to guarantee water for East Bay customers in dry years. EBMUD contract amount in single dry years is 112,000 AF and 165,000 AF over a three-year drought condition.^{11,12} EBMUD contract amount is 100 mgd during drought years.¹³ Construction of the FRWP facilities began in 2007 and is substantially completed.¹⁴
- The Bayside Groundwater Project, which is a supplemental water supply project that would store water in a deep underground aquifer during wet years and extract some of that supply during times of drought. Phase 1 of the Bayside Groundwater Project, which went through final testing in September 2009, would store an annual average of 1 mgd of water within a deep aquifer that extends beneath the City of San Lorenzo. After successfully operating Phase 1 for a period of time, EBMUD will consider a larger Phase 2 Bayside project that

11 Freeport Regional Water Authority www.freeportproject.org/index.php accessed March 11, 2008.

12 EBMUD, "Freeport Regional Water Project", www.ebmud.com/water_&_environment/water_supply/current_projects/freeport/default.htm, accessed August 25, 2008.

13 EBMUD, "Freeport Regional Water Project", www.ebmud.com/water_&_environment/water_supply/current_projects/freeport/default.htm#Major_Project_Elements, accessed July 30, 2009.

14 Freeport Regional Water Authority, www.freeportproject.org/nodes/explore/, accessed December 21, 2010.

would have a capacity of between 2 and 10 mgd, allowing for even greater drought protection.¹⁵

- The proposed Bay Area Regional Desalination Project, which is a joint venture between the Contra Costa Water District, the East Bay Municipal Utility District, the San Francisco Public Utilities Commission, and the Santa Clara Valley Water District. The regional desalination project would: provide an additional source of water during emergencies; provide a supplemental water supply source during extended droughts; allow other major water facilities to be taken out of service for maintenance or repairs; and increase supply reliability by providing water supply from a regional facility. The Bay Area Regional Desalination Project would have an ultimate total capacity of up to 71 mgd.¹⁶

In terms of reliability, these projects along with increasing conservation efforts would serve to bolster EBMUD's supply portfolio now and over a long-term planning horizon. In 2010, full use of FRWP supplies along with conservation would limit rationing to 25 percent and all customer demands would be met. Between 2010 and 2015, FRWP water supplies, along with aggressive conservation, would hold rationing near EBMUD's goal of 25 percent. After 2015, rationing would increase to EBMUD's 25 percent goal and FRWP supplies would be needed to limit customer deficiencies to 25 percent. In the third year of a multiple dry year, EBMUD can also achieve its 25 percent rationing goal and meeting system-wide demands with supplemental water supplies from FRWP.

Recycled Water

EBMUD is using water recycling as one way to help reduce the need for additional potable water supplies and the severity of water rationing during droughts. While recycled water is not available as drinking water, there are many appropriate uses for recycled water. Recycled water use delays or eliminates the need for more potable water facilities, reduces the amount of treated wastewater discharged into the San Francisco Bay, and increases water supply reliability during a drought. EBMUD's customers currently use almost 6.5 mgd of recycled and non-potable water.¹⁷ EBMUD's 2020 goal is to recycle a total of 14 mgd of water, bringing the total recycled water use to nearly 5.1 billion gallons annually, enough water to supply the indoor and outdoor water needs of almost 90,000 people for a year.¹⁸

The North Richmond Water Reclamation Plant is EBMUD's first major project to produce recycled water for an industrial application. Today, with a design capacity of 5.4 mgd, it is one of the largest industrial cooling water reuse projects in the nation. Completed in 1995, the facility receives water from nearby West County Wastewater District, provides tertiary treatment, and sends the recycled water to three cooling towers located at Chevron's Richmond refinery. Using recycled water in

15 EBMUD, "Bayside Groundwater Project", www.ebmud.com/water_&_environment/water_supply/current_projects/bayside_groundwater/default.htm, accessed July 30, 2009.

16 EBMUD, "Desalination Project", www.ebmud.com/water_&_environment/water_supply/current_projects/desalination_project/default.htm, accessed July 30, 2009.

17 EBMUD. 2009. *About Recycled Water*. www.ebmud.com/conserving_&_recycling/recycling/recycled_water/default.htm accessed Sept 8, 2009.

18 EBMUD. 2009. *About Recycled Water*. www.ebmud.com/conserving_&_recycling/recycling/recycled_water/default.htm accessed Sept 8, 2009.

Chevron's cooling towers saves enough water to serve the indoor and outdoor needs of more than 18,000 people.

Regulatory Setting

Federal

Federal Safe Drinking Water Act

Enacted in 1974 and implemented by the EPA, the federal *Safe Drinking Water Act* imposes water quality and infrastructure standards for potable water delivery systems nation-wide. The primary standards are health-based thresholds established for numerous toxic substances. Secondary standards are recommended thresholds for taste and mineral content.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (USEPA) established primary drinking water standards in the *Clean Water Act* section 304. States are required to ensure that potable water retailed to the public meets these standards. Standards for a total of 81 individual constituents have been established under the *Safe Drinking Water Act* as amended in 1986. The USEPA may add additional constituents in the future. State primary and secondary drinking water standards are promulgated in CCR Title 22 sections 64431–64501. Secondary drinking water standards incorporate non-health risk factors including taste, odor, and appearance.

State

Urban Water Management Planning Act (California Water Code, Division 6, Part 2.6, Section 10610 et seq.)

The *Urban Water Management Planning Act* (Act) was developed due to concerns over potential water supply shortages throughout California. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers are required, as part of the Act, to develop and implement Urban Water Management Plans (UWMP) to describe their efforts to promote efficient use and management of water resources. The 2005 UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the EBMUD's water supply trends, and conservation and water use efficiency policies.

Water Conservation Projects Act

California's requirements for water conservation are codified in the *Water Conservation Projects Act of 1985* (Water Code sections 11950–11954).

Senate Bill (SB) 221 (Kuehl Bill) and SB 610 (Costa Bill)

Signed into law on October 2001 and effective beginning in January 2002, SB 221 and SB 610 serve to ensure that certain land developments in California must be accompanied by an available and adequate supply of water to serve those developments. Serving as companion measures, SB 610

and SB 221 seek to promote more collaborative planning between local water suppliers and cities and counties.

SB 221 requires the legislative body of a city, county, or local agency to include, as a condition in any tentative map that includes a subdivision, a requirement that a sufficient water supply shall be available to serve the subdivision. A "subdivision" is defined as a proposed residential development of more than 500 dwelling units or one that would increase, by at least 10 percent, the number of service connections of a public water system having less than 5,000 connections. "Sufficient water supply" is defined as the total water supplies available during normal, single-dry, and multiple-dry years within a twenty-year projection that will meet the projected demand of a proposed subdivision. SB 221 ensures that collaboration on finding the needed water supplies to serve a new large subdivision occurs before construction begins.

SB 610 requires additional factors to be considered in the preparation of urban water management plans and water supply assessments. SB 610 requires all urban water suppliers to prepare, adopt, and update an urban water management plan that, essentially, forecasts water demands and supplies within a certain service territory. In addition, water assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in Water Code 10912(a)) subject to CEQA.

Regional

2005 Urban Water Management Plan

The East Bay Municipal Utility District 2005 UWMP provides information on water supply and usage, wastewater; recycle water and conservation programs at East Bay Municipal Utilities District. It also establishes regional targets for developing water supply.

Water Supply Management Plan

EBMUD's Water Supply Management Program 2020 (WSMP 2020) was adopted in 1993, to serve as the basis for water conservation and recycling programs and for development of supplemental supply initiatives. The Water Supply Management Plan 2040 (WSMP 2040) is an update to the WSMP 2020, which estimates water supply needs for the EBMUD to the year 2040, and proposes a program of policy and project initiatives to meet those needs. The primary purpose of the WSMP 2040 is to identify and recommend solutions to meet dry-year water needs through 2040. The 2040 Demand Study is an element of the WSMP 2040 that describes the updated demand projections and its methodologies. EBMUD compared the proposed General Plan with the 2040 Demand Study's land use database and determined the projected General Plan land use matched very closely and that the EBMUD 2040 Demand Study is a good predictor of water demands in the City of Richmond.¹⁹

19 Kirkpatrick, William, Engineering Manager, Water Distribution Planning Division, EBMUD, written communication to Lori Reese-Brown, City of Richmond, September 14, 2009.

Local

East Bay Municipal Utilities District

For subsequent projects proposed in the City of Richmond that meet the definition of “Project” under Water Code section 10912, EBMUD would provide written verification of adequate water as defined by SB 610 and SB 221.

Method of Analysis

This analysis relies on EBMUD’s WSMP and 2040 Demand Study to determine impacts on water supply resulting from implementation of the proposed General Plan. The 2040 Demand Study projects future water demand for the EBMUD’s service area taking into account of future developments within each different jurisdiction, including demands generated by the proposed project.

Standards of Significance

For the purposes of this EIR, impacts on water supply are considered significant if the proposed project would:

- Require or result in the construction and/or expansion of water supply facilities, the construction of which could cause significant environmental impacts; or
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

Project-Specific Impacts and Mitigation Measures

3.13-1 Implementation of the proposed General Plan would not require or result in the construction and/or expansion of water supply facilities, the construction of which could cause significant environmental impacts, or require water supplies in excess of existing entitlements. This is considered a *less-than-significant impact*.

As discussed in the Environmental Setting section, the City of Richmond’s water supply is provided by EBMUD. More than 90 percent of the water delivered to EBMUD’s customers originates from the Mokelumne River watershed, and approximately 10 percent originates as runoff from the protected watershed lands in the East Bay Area.²⁰ EBMUD has six water treatment plants that can filter and process more than 375 million gallons of water daily.²¹

Additional development accommodated under the proposed General Plan Update would increase water use within the City, thus increasing the need for water treatment services. The 2040 Demand Study takes into account the growth in water demand in the City of Richmond as well as the other areas served by EBMUD. Existing water supply, combined with the three projects currently under

20 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 1-2.

21 EBMUD. 2009. *Water Treatment Plants*. www.ebmud.com/water_&_environment/water_quality/water_treatment_plants/default.htm, accessed September 8, 2009.

construction or in the feasibility phase, would be substantially augmented, as the FRWP would increase EBMUD supplies during drought years by 100 mgd; the Bayside Groundwater project would store an annual average of 1 mgd during its initial phase; and the Bay Area Regional Desalination Project would provide a total capacity of 71 mgd.

As noted above, EBMUD compared the proposed General Plan with the 2040 Demand Study's land use database and the projected General Plan land use matched very closely, and determined that the EBMUD 2040 Demand Study is a good predictor of water demands in the City of Richmond. Therefore, from a cumulative perspective, the WSMP 2040 would meet citywide demand in Richmond. Specific project assessments pursuant to SB 221 and SB 610 would provide further review of the long-term adequacy of the water supply to meet the needs of individual projects as they are submitted for consideration by the City.

The following proposed General Plan Policies and Implementing Actions would further reduce the potential for impacts on water supply.

Policies

CF1.4 Concurrent Infrastructure Development. Require new development to provide proportionate facilities and infrastructure improvements as it occurs. New developments must mitigate impacts or contribute adequate infrastructure to meet additional demand for roads, parks, schools and utilities.

CN3.4 Water Conservation. Promote water conservation. Encourage residents, public facilities, businesses and industry to conserve water especially during drought years. Work with East Bay Municipal Utility District to advance water recycling programs including using treated wastewater to irrigate parks, golf courses and roadway landscaping and by encouraging rainwater catchment and graywater usage techniques in buildings.

Actions

CN3.B Water Recycling. Support efforts by the regional water provider to increase water recycling by residents, businesses and developers. Require water recycling and rainwater catchment in new development as appropriate to recycle water. Evaluate the use of recycled water in new and existing buildings and landscapes.

CN3.H Water Conservation. Implement water conservation efforts for households, businesses, industries and public infrastructure. Include measures such as the following:

Require low-flow appliances and fixtures in all new development;

Work with water providers and water conservation agencies to create an incentives program that encourages retrofitting existing development with low-flow water fixtures;

Require new development and landscaped public areas to utilize state-of-the-art irrigation systems that reduce water consumption including graywater systems and rainwater catchment;

Encourage use of drought-tolerant and native vegetation;

Require new plantings be grouped by hydrozones of water needs listed in the WUCOL III developed by the Department of Water Resources and the University of California Cooperative Extension (or successor document); and

Require development project approvals to include a finding that all feasible and cost-effective options for conservation and water reuse are incorporated into project design including graywater systems.

PR3.D Water Conservation Program. Continue to plan for and install state-of-the-art master irrigation controller systems in all new and existing parks and landscapes. Provide for other irrigation components that further enhance water conservation. Plan for and replace plant materials for better water conservation consistent with the Water Use Classification of Landscape Species (WUCOL) project plant lists developed by the State of California Department of Water Resources and University of California.

Policy

EC3.4 Water Conservation and Reuse. Promote water conservation and recycled water use. Reduce energy consumed for treatment and transportation of water and discharge of wastewater by: encouraging installation of low-flow fixtures; using native planting for landscaping in all City-owned and operated facilities; promoting best practices and technologies for water conservation; considering water use in evaluating and approving development projects; supporting the use of graywater systems in residential, commercial and industrial uses; and encouraging new development and redevelopment projects to meet a portion of their water needs through the use of recycled water.

The proposed General Plan Update policies and implementing actions direct the City to implement water conservation measures to assist in water conservation efforts to meet the current and projected future daily and peak water demands. For example, Policy CN3.4 promotes and encourages residents, businesses, and industry to conserve water, especially during drought years. The proposed General Plan Update Policy CF1.4 requires new development to provide proportionate facilities and infrastructure improvements as the new development occurs, including water treatment and conveyance facilities. In addition, EBMUD's WSMP 2040 policies and programs are designed to provide sufficient water supplies to serve future development out to 2040, including development associated with the proposed General Plan, so the proposed General Plan would not require new or expanded water entitlements. Lastly, EBMUD would provide verification of adequate water supply for subsequent projects as they are proposed. As such, adequate water supply and infrastructure would be provided for all development under the proposed General Plan Update. These impacts would be ***less than significant***.

Full Buildout Analysis

EBMUD determined that the EBMUD 2040 Demand Study is a good predictor of water demands in the City of Richmond based on EBMUD's land use database. The analysis above, therefore, would incorporate a full buildout scenario, and the same effects would occur as discussed above. Any future development would be subject to review to determine potential impacts on water infrastructure and the availability of water in accordance with CEQA, including preparation of a water supply assessment pursuant to SB610, if required, and/or preparation of a SB221 analysis. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative impacts associated with water systems would be the service area of the City's water provider, EBMUD. Based upon the 2040 Demand Study, with implementation of the policies and initiatives identified by EBMUD, there would be sufficient water to serve the cumulative demand from the EBMUD service area. This would be a less-than-significant cumulative impact.

In addition, the implementation of conservation measures through the proposed General Plan polices and implementation actions, as well as conservation, rationing, and use of recycled water by other customers within the EBMUD's service area would further reduce water demand. Finally, future development is required to adhere to section 10912 of the California Water Code, which requires water supplier to provide verification of available water for development that meets the definition of a "project." Therefore, the cumulative impact to water supply would be less than significant.

WASTEWATER

ENVIRONMENTAL SETTING

This section describes the City of Richmond's existing wastewater system. The City of Richmond has three sanitary sewer districts: Richmond Municipal Sewer District, managed by the City of Richmond; West County Wastewater District (WCWD); and Stege Sanitary District (SSD). Richmond maintains about half of the sewer lines within the City's boundaries. Many of the residents living in the northern half of Richmond are served by West County Sanitation District. Residents in the southern section of the Richmond Annex are serviced by Stege Sanitation District.²²

West County Wastewater District

The WCWD plant is located at 2377 Garden Tract Road in Richmond and serves part of the incorporated City of Richmond, all of the City of San Pablo, and the unincorporated communities of Tara Hills, El Sobrante, and an area north of El Cerrito. The plant's service area has a present population of about 120,243.²³ The WCWD plant has a dry weather design capacity of 12.5 mgd.²⁴ The WCWD has 242.2 miles of gravity sewer and 11 miles of force main with 18 pump stations.²⁵ The WCWD has performed extensive preventative maintenance of its sewer system over the years.

The WCWD plant has three flow equalization basins for management of wet weather flows. During periods when wet weather flows exceed the plant's secondary treatment capacity, influent wastewater is diverted to and stored in these basins. After peak flows have sufficiently subsided, stored wastewater is returned to the plant headworks to receive full secondary treatment. The wastewater treatment processes at WCWD plant consists of the headworks with coarse and fine bar screens, aerated grit tanks, primary settling basins, roughing trickling filter, fine bubble secondary aeration tanks, secondary sedimentation tanks, and chlorine contact chambers. The treated wastewater from WCWD plant is transported to the Richmond plant for dechlorination and discharge.

Richmond Municipal Sewer District

The Richmond Municipal Sewer District (RMSD), via an operations contract with Veolia Water North, operates a wastewater treatment plant (WWTP) on the Point Richmond Peninsula. The WWTP has a dry-weather treatment capacity of 24 mgd and wet weather capacities for primary/secondary treatment and primary treatment of 24 mgd and 40 mgd, respectively. Dry weather influent flows received at the WWTP average approximately 7 mgd, with wet weather flows peaking at 56 mgd due

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- 22 City of Richmond. 2009. *Sanitary Districts*. Retrieved from www.ci.richmond.ca.us/index.aspx?NID=174 on September 4, 2009.
- 23 West County Wastewater District (WCWD) 2009. *General Information*. www.wc wd.org/index.htm accessed September 4, 2009.
- 24 West County Wastewater District (WCWD) 2009. *General Information*. www.wc wd.org/index.htm accessed September 4, 2009.
- 25 West County Wastewater District (WCWD) 2009. *General Information*. www.wc wd.org/index.htm accessed September 4, 2009.

to infiltration and inflow, approximately 16 mgd above the capacity of the WWTP.²⁶ The Richmond plant serves most of the incorporated City of Richmond. The plant's service area has a present population of about 64,000 and has about 300 miles of sewer lines with 12 pump stations.²⁷ The City of Richmond's sewer system has adequate capacity to carry its wastewater flows from its existing customers during the normal rainfall event. The Richmond plant has a dry weather design capacity of 16 mgd.²⁸

The Richmond plant consists of the headworks with coarse and fine bar screens, comminutors, pre-aeration and primary sedimentation tanks, coarse bubble aeration tanks, secondary sedimentation tanks and chlorine contact basins. The Richmond plant completed a wet weather facilities improvement program in 1988. These improvements included modifications to existing facilities to provide primary treatment and disinfection for wet weather flows in excess of the plant's secondary treatment capacity. The plant currently can store up to 3.6 million gallons of primary treated effluent during peak flows with subsequent return of stored wastewater to the headworks for full secondary treatment.²⁹

After the storage capacity is depleted, wastewater flows in excess of the capacity of the activated sludge and secondary clarification basins are diverted from the primary clarification tanks or equalization tanks to the disinfection system. Primary treatment removes floating materials, oils and grease, sand and silt and organic solids heavy enough to settle in water.³⁰ Secondary treatment uses pure oxygen to encourage growth of microorganisms that consume organic material and improve the purity of the wastewater.³¹ A blend of primary and secondary treated wastewater is then disinfected and dechlorinated for discharge. Treated effluent flows by gravity through a 72-inch diameter outfall pipe. The flow then discharges through an effluent diffuser located 4,700 feet offshore of Point Richmond.³²

Stege Sanitary District

The East Bay Municipal Utilities District's wastewater service district (known as Special District No. 1 [SD-1]) was established as a separate wastewater district within EBMUD's water service district. SD-1 treats domestic, commercial, and industrial wastewater. It is governed by EBMUD's Board of Directors and is administered by EBMUD's Wastewater Department. SSD is part of the SD-1 which

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26. City of Richmond and U.S. Department of Interior, *Draft Environmental Impact Statement/Environmental Impact Report Point Molate Mixed-use Tribal Destination Resort and Casino Project*, July 2009, p. 3.10-10.
27. San Francisco Bay Region Water Quality Control Board. 2001. Order Numb 01-441. *Waste Discharge Requirements for West County Agency WCWD and RMSD*. November 28. p. 1-3.
28. San Francisco Bay Region Water Quality Control Board. 2001. Order Numb 01-441. *Waste Discharge Requirements for West County Agency WCWD and RMSD*. November 28. p. 1-3.
29. San Francisco Bay Region Water Quality Control Board. 2001. Order Numb 01-441. *Waste Discharge Requirements for West County Agency WCWD and RMSD*. November 28. p. 1-3.
30. EBMUD. 2005. Urban Water Management Plan 2005. November. p. 5-2.
31. San Francisco Public Utilities Commission (SFPUC) *Making Dirty Water, Clean Again*. www.sfgov.org/site/frame.asp?u=http://www.sfwater.org. accessed August 17, 2009.
32. San Francisco Bay Region Water Quality Control Board. 2001. Order Number 01-441. *Waste Discharge Requirements for West County Agency WCWD and RMSD*. November 28. p. 1-3.
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includes El Cerrito, Kensington, and parts of Richmond. The District's collection facilities consist of the interceptor system and collection system pumping stations.³³

Wastewater collected by the interceptors flow to EBMUD's Wastewater Treatment Plant, which is located in Oakland near the entrance of San Francisco Oakland Bay Bridge. The plant provides secondary treatment for a maximum flow of 168 mgd.³⁴ The average annual daily flow is approximately 80 mgd.³⁵ The treatment steps are pre-chlorination (for odor control), screening (to remove large objects), grit removal, primary sedimentation, secondary treatment using high purity oxygen-activated sludge, final clarification, sludge digestion, and dewatering. The treated effluent is then disinfected, dechlorinated, and discharged through a deep-water outfall one mile off the East Bay shore into the San Francisco Bay.³⁶

Regulatory Context

Federal and State

National Pollution Discharge Elimination System (NPDES) Permits

The NPDES permit system was established in the *Clean Water Act* (CWA) to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point source discharges, such as sewer outfalls, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge.

Disposal of Biosolids

Title 40 of the Code of Federal Regulations (CFR) Part 503, Title 23 California Code of Regulations, and standards established by the CVRWQCB regulate the disposal of biosolids. In July 2004, the State Water Resources Control Board adopted Water Quality Order No. 2004-12-DWQ (General Order), and certified a supporting statewide Programmatic Environmental Impact Report (PEIR). The PEIR found that with compliance with the general Order would ensure that impacts related to disposal of biosolids would reduce impacts to less than significant.

Regional

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)

Under the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) National Pollutant Discharge Elimination System (NPDES) permit system, all existing and future municipal and industrial discharges to surface waters within the City would be subject to regulation. The City NPDES permit requires that all development within the City is subject to the provisions of the NPDES Stormwater Permit. The program requires that any discharge of wastewaters to surface

33 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 5-2.

34 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 5-2.

35 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 5-2.

36 EBMUD. 2005. Urban Water Management Plan 2005. November. p. 5-2.

water needs a permit. The permits set limits on the quality of the wastewater and requires monitoring. All permits are adopted in public hearings and are designed to protect the beneficial uses of the receiving waters. The NPDES stormwater permit was issued by SFBRWQCB for municipal stormwater and urban runoff discharges within City, and incorporated cities therein.

Local

City of Richmond Municipal Code

Discharges to Wastewater (Article XII, Chapter 12.18)

Article XII (Public Works) Chapter 12.18 (Discharges to Wastewater) regulates indirect discharges into the City's wastewater collection and treatment system by establishing standards of discharge; and complies with all applicable state and federal laws required by the Clean Water Act of 1977 and any amendments thereto and the General Pretreatment Regulations.

Article XII (Public Works) Chapter 12.18.060 (General discharge prohibitions) restricts directly or indirectly any pollutant or wastewater that will pass through the publicly owned treatment works (POTW) or interfere with the operation or performance of the POTW.

Article XII (Public Works) Chapter 12.18.90 (Specific Pollutant Limitations) regulates the amount of discharge wastewater of various substances.

Sewer System Fees (Article XII, Chapter 12.20)

Article XII (Public Works) Chapter 12.20.20 (Sanitary Sewer Connection Fees) imposes a connection fee to the sewer system at the time of issuance of a permit by the City.

Article XII (Public Works) Chapter 12.20.050 (Sewer Service Charge) imposes an annual sewer service charge to pay the costs of administering, monitoring, operating, maintaining, improving and retiring the capital debts of the Richmond Municipal Sewer District No. 1 Sanitary Sewer System. A portion of service charge also pays for the costs of administering, monitoring, operating, maintaining and improving the storm sewer system throughout the City of Richmond.

Article XII (Public Works) Chapter 12.20.055 (Administrative Fines) is imposed on any person who intentionally or negligently violates any provisions of Chapter 12.20 or any conditions set forth in permits duly issued; or, who discharges wastewater which causes pollution or violates any cease and desist order, prohibition, effluent limitation, national standard or performance, pretreatment or toxicity standard.

Method of Analysis

In general, wastewater generation is approximately 70 to 90 percent of water consumption, the variance being largely attributed to the amount of landscaping on site. In order to provide a conservative analysis, the analysis assumed that 90 percent of the water demand would become wastewater. According to the 2040 Demand Study, the EBMUD service area would require 229 mgd

of water by 2030 and 230 mgd of water by 2040.³⁷ Water demands tend to nearly level off after 2030, which is due primarily to the planning agency staff anticipating that most of the planned land uses will be developed by 2030 and all planned land uses developed by 2040.³⁸

Water demand for the City of Richmond is projected in the Demand Study by EBMUD service regions. Regions AN, AS, GC, and GN encompass the City of Richmond and would demand 120 mgd by 2040.³⁹ Region AN, AS, GC and GN serves the communities and cities of Crockett, Rodeo, Hercules, El Sobrante, Pinole, San Pablo, El Cerrito, Berkeley, Oakland, Kensington and El Sobrante, Piedmont, Alameda, Emeryville, Albany, as well as Richmond. Assuming wastewater generation is 90 percent of water demand would yield an estimated wastewater generation of 108 mgd for the Regions AN, AS, GC, and GN. The estimate of 108 mgd of wastewater includes other cities that have other wastewater service providers. The City of Richmond would represent a small percentage of this projected wastewater generation volume which would be served by RMSD, WCWD, and SSD.

Standards of Significance

For the purposes of this EIR, impacts to wastewater are considered significant if the proposed project would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's project demand in addition to the provider's existing commitments.

Project-Specific Impacts and Mitigation Measures

3.13-2 Implementation of the proposed General Plan would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. This is considered a *less-than-significant impact*.

The City of Richmond requires NPDES permits, as administered by the SFBRWQCB, according to Federal regulations for both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point source discharges, such as sewer outfalls, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. The wastewater Districts that serve the City of Richmond would be

37 EBMUD. 2009. *2040 Demand Study*. February. p. 6-2. Table 6.1 (District Wide Demand Projections).

38 EBMUD. 2009. *2040 Demand Study*. February., p. 6-2.

39 EBMUD. 2009. *2040 Demand Study*. February., Table 6.2 (Water Demand by Region).

required to comply with all requirements in the NPDES permit to ensure that any discharges would not exceed wastewater treatment requirements of the Regional Water Quality Control Board.

In addition, the following proposed Implementing Action would further reduce the potential for impact related to wastewater discharges.

Action

CN3.A NPDES Compliance and Permit Continue to comply with the City's National Pollutant Discharge Elimination System (NPDES) Permit and continue to implement the following action steps:

Maintain municipal infrastructure (sewer systems, roads, corporation yards, buildings) to reduce pollutants that flow into water courses;

Require development to comply with the Contra Costa Clean Water Program Stormwater Guidebook;

Work with developers to ensure compliance with the City's minimum standards and NPDES requirements;

Encourage all projects to use pervious pavements, cluster structures, disconnect downspouts, minimize land disturbance and utilize micro-detention such as low impact development (LID);

Require adequate source control measures to limit pollution generation in businesses including draining non-stormwater discharges such as swimming pools, trash and food compactor racks, vehicle outdoor storage, fire sprinkler test water and equipment washing;

Require businesses that may be susceptible to polluting stormwater to implement best management practices (BMPs) including covering drains and storage precautions for outdoor material storage, loading docks, repair and maintenance bays and fueling areas;

Inspect contamination sites to prevent illicit discharges;

Inspect municipal storm drains to eliminate illicit discharges and prevent illegal dumping;

Educate the public about stormwater pollution prevention methods and provide incentives for public participation;

Adopt an integrated pest management (IPM) policy or ordinance and advocate IPM through public education;

Manage waste generated from the cleaning and treating of copper architectural features including copper roofs; and

Adopt a local ordinance for installing a sanitary sewer connection and prohibiting discharges of copper-based chemicals or other fungicides from pools, spas and fountains.

Wastewater from new development under the proposed General Plan would be directed to existing facilities, which would continue to comply with all provisions of the NPDES program, as enforced by the SFBRWQCB. Therefore, the proposed General Plan would not result in an exceedance of wastewater treatment requirements. All future projects under the proposed General Plan would be required to comply with all applicable wastewater discharge requirements issued by the State Water Resources Control Board (SWRCB) and SFBRWQCB. Therefore, implementation of the proposed

General Plan would not exceed applicable wastewater treatment requirements of the SFBRWQCB with respect to discharges to the sewer system or stormwater system within the City. Consequently, because future development under the proposed General Plan would be required to adhere to existing regulations, the impact would be *less than significant*.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the city's projected buildout scenario. New development would be required to comply with all provisions of the NPEDES program, as enforced by the SFBRWQCB, so implementation of the proposed General Plan would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. Any future development would be required to comply with all applicable wastewater discharge requirements issued by the State Water Resources Control Board and SFBRWQCB. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.13-3 Implementation of the General Plan Update could require the construction or expansion of wastewater treatment facilities or collection systems that could cause significant environmental impacts, absent project-specific mitigation measures. Because it is not certain that project-specific mitigation would reduce all impacts to a less-than-significant level, this is considered a *significant impact*.

Wastewater service within City of Richmond is provided by three sanitary sewer districts. RMSD is managed by the City of Richmond. As previously described, WCWD plant has a dry weather design capacity of 12.5 MGD;⁴⁰ RMSD WWTP has a dry weather design capacity of 24 mgd; and EBMUD's Wastewater Treatment Plant, which provides treatment for the SSD collection facility, has a maximum flow of 168 mgd.

According to the 2040 Demand study, the EBMUD service area would require 229 mgd of water by 2030 and 230 mgd of water by 2040.⁴¹ Regions AN, AS, GC, and GN encompass the City of Richmond and would generate 120 mgd by 2040.⁴² This would yield an estimated wastewater generation of 108 mgd for the regions AN, AS, GC, and GN, which also includes demand from other cities that have other wastewater service providers and the City of Richmond would yield only a small percentage of this estimate. The RMSD, WCWD, and EBMUD's combined wastewater flow capacity is over 200 mgd.

40 West County Wastewater District (WCWD) 2009. *General Information*. www.wc wd.org/index.htm, accessed September 4, 2009.

41 EBMUD. 2009. *2040 Demand Study*. February. p. 6-2. Table 6.1 (District Wide Demand Projections).

42 EBMUD. 2009. *2040 Demand Study*. February., Table 6.2 (Water Demand By Region).

The following proposed General Plan Policies and Implementing Actions would reduce the potential for impact on wastewater.

Policies

CF1.4 Concurrent Infrastructure Development. (see above)

CF2.4 Adequate Maintenance. Maintain infrastructure and facilities. Ongoing maintenance and upgrades protect the City's long-term investment in these facilities.

Actions

CF2.B Inter-Agency Collaboration. Support collaboration between the City and local, regional and national public, nonprofit and private service providers for the delivery and provision of high-quality services, utilities and facilities to meet current and future resident needs.

CN3.A NPDES Compliance and Permit. (see above)

The General Plan policies and implementation actions such as Policy CF1.4 (Concurrent Infrastructure Development) would require new development to provide proportionate facilities and infrastructure improvements as the new development occurs. In addition, the City of Richmond mitigates impacts created from additional demands on services due to the increase in new residential and commercial structures in the City by imposition of sewer service fees to provide sewer services.

As noted above, RMSD, WCWD, and EBMUD's combined wastewater flow capacity is over 200 mgd, compared to an estimated 229 mgd wastewater generation in the service area. In addition, as discussed above, the RMSD WWTP currently experiences wet weather flows that exceed the plant's treatment capacity. With implementation of the proposed General Plan policies and the City's development fee imposed by the City's municipal code, wastewater facilities would be funded as development occurs. However, because some improvements would be required in order to accommodate growth in the City absent project-specific mitigation measures, there is potential for physical effects associated with the construction of new or expansion of existing facilities. This is therefore, considered a *significant impact*. The extent to which environmental impacts associated with any new infrastructure would be ascertained at a later time, prior to implementation of any improvements. However, because the precise plans for any improvements are currently not known, potential impacts and mitigation measures cannot be determined at this time. Therefore, this would remain a ***significant and unavoidable impact***.

Full Buildout Analysis

Under the full buildout scenario, there would be the potential for negative physical effects associated with the construction of new, or expansion of existing wastewater treatment facilities in order to accommodate growth in the city. Additional growth beyond the 2030 horizon would generate additional demand for water treatment facilities and there is insufficient capacity to accommodate this additional demand. The impact would be a significant impact and would be more severe than the impact identified above. The extent to which environmental impacts associated with any new infrastructure would be ascertained at a later time, prior to implementation of any improvements.

Any future development would be subject to review to determine impacts wastewater facilities in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

3.13-3 *Future projects shall incorporate project-specific mitigation measures to reduce impacts from the construction of new wastewater collection and treatment facilities.*

3.13-4 Implementation of the proposed General Plan would not result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the project's demand in addition to the provider's existing commitments. This is considered a *less-than-significant impact*.

Implementation of the proposed General Plan would generate additional demand on the existing sewer system from increased sewage flows. The proposed General Plan could result in a net increase of residential and non-residential developments by the proposed General Plan horizon year (2030). The City contribution to the daily wastewater received by the treatment facilities resulting from the implementation of the proposed General Plan would increase from the current City's daily wastewater flow. Any request for service resulting from new development would be subject to a site-specific evaluation of the existing wastewater system's capacity to service the development. If improvements to the existing wastewater system are required or additional facilities are needed, the property developer would be required to pay its fair share of the cost of the needed improvements.

In addition, the following proposed General Plan Policies and Implementing Actions would further reduce the potential for impact on wastewater facilities.

Policies

CF1.4 Concurrent Infrastructure Development. (see above)

CF2.4 Adequate Maintenance. (see above)

Actions

CF2.B Inter-Agency Collaboration. (see above)

CN3.A NPDES Compliance and Permit. (see above)

As discussed above, because treatment capacity is limited, expansion of treatment facilities would be required to accommodate the proposed General Plan. The General Plan policies and implementation actions, such as Policy CF1.4 (Concurrent Infrastructure Development) would require new development to provide proportionate facilities and infrastructure improvements as the new development occurs. With implementation of the proposed General Plan policies and the City's development fee imposed by the City's municipal code, projects would be required to fund any required improvements to wastewater treatment facilities associated with increased growth in the City. Because policies and implementing measures contained in the proposed General Plan would

ensure that adequate treatment facilities would be provided for growth in the City, this impact is considered ***less than significant***. The physical effects of constructing wastewater treatment facilities are addressed in Impact 3.13-3.

Full Buildout Analysis

Because policies and implementing measures contained in the proposed General Plan require new development to provide proportionate facilities and infrastructure improvements as development occurs, adequate treatment facilities would be provided under a full buildout scenario. Additional growth beyond the 2030 horizon would generate additional demand for wastewater treatment facilities. The extent to which environmental impacts associated with any new infrastructure would be ascertained at a later time, prior to implementation of those improvements.

Any future development would be subject to review to determine impacts on wastewater treatment facilities in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative impacts associated with sewage treatment systems would be the service area of the RMSD, WCWD, and EBMUD. The project impact discussions in Impacts 3.13-3 and 3.13-4 assume other development in the service areas of the districts. Because other development that would occur in the service areas within the timeframe of the proposed General Plan is already considered in the project-level impact discussions, the cumulative analysis for the project would not differ from the project-level discussion. In the cumulative scenario, compliance with existing regulations would ensure that wastewater treatment plants serving the area would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. However, because the existing RMSD WWTP currently experiences flows that exceed capacity, this would be a significant cumulative impact. Because the growth associated with the proposed General Plan would be the major contributor to future flows to the WWTP, the proposed General Plan's contribution would be deemed considerable.

SOLID WASTE

ENVIRONMENTAL SETTING

This section describes existing solid waste management and recycling conditions for the City of Richmond. The City of Richmond is part of the West Contra Costa Integrated Waste Management Authority (WCCIWMA). In 1991, the West Contra Costa cities of El Cerrito, Hercules, Pinole, Richmond, and San Pablo formed the WCCIWMA as a regional agency responsible for developing programs and strategies to enable member cities to meet AB 939 goals. The City of Richmond is responsible for providing the appropriate collection services and collaborating with WCCIWMA to develop and implement waste diversion programs.

Richmond Sanitary Services, an affiliate of Republic Services, Inc., provides residential and commercial refuse, recycling, and green waste collection services in the City of Richmond. Republic Services owns and operates a 21-acre site in Richmond including the former West County Sanitary Landfill (WCSL), the Golden Bear Transfer Station, a household hazardous waste (HHW) facility and the Integrated Resource Recovery Facility (IRRF), which is operated by another affiliate, West County Resource Recovery, Inc. The HHW facility accepts a variety of hazardous and universal wastes from residents and small businesses for appropriate disposal or recycling. The on-site IRRF processes the City's recycling prior to sale and shipment to remanufacturers.

The WCSL was established in 1952 and, due to capacity constraints, was closed to the public in 2006. A portion of the site is planned to be used for additional material sorting and recovery operations, including green waste and food waste composting and construction and demolition debris sorting and recycling. The remaining portion of the site will be converted to recreation and open space lands. Republic Services has installed and maintains a landfill gas recovery system that operates a one-megawatt power plant on site.

The Golden Bear Transfer Station is a transfer point for the City's garbage before it is disposed in the Potrero Hills Landfill in Solano County. Potrero Hills Landfill is located at 3675 Potrero Hills Lane Suisun City with permitted capacity of 4,330 tons/day and a total permitted capacity of 21.5 million cubic yards. In 2006, the landfill received 520,828 tons of waste, with a peak daily tonnage of 2,342 tons and an average daily tonnage of 1,535 tons. The estimated life of the landfill is ten years; however, to address the projected shortfall in landfill capacity, the landfill has submitted a permit application to expand the original capacity by approximately 61.6 million cubic yards for a total capacity of 83.1 million cubic yards, which would extend the capacity by approximately 35 years.⁴³ The expansion project was approved in October 2010.

According to the California Integrated Waste Management Board, the WCCIWMA has utilized other landfills besides Potrero Hills Landfill in 2008. Table 3.13-2 (Disposal Facilities Used by WCCIWMA in 2008) shows the landfills used by WCCIWMA in 2008 and their available capacity.

43 City of Richmond and U.S. Department of Interior, *Draft Environmental Impact Statement/Environmental Impact Report Point Molate Mixed-use tribal Destination Resort and Casino Project*, July 2009, p. 3.10-10.

TABLE 3.13-2				
DISPOSAL FACILITIES USED BY WCCIWMA IN 2008				
Facility	Address	Expected Closure Date	Permitted Maximum Disposal (Tons/day)	Remaining Estimated Capacity (cubic yards)
Acme Landfill	950 Waterbird Way, Martinez CA, 94553	6/01/2021	1,500	175,000 (65.1%)
Altamont Landfill & Resource Recovery	10840 Altamont Pass Road, Livermore, CA 94550	01/01/2029	11,500	45,720,000 (73.7%)
Bakersfield Metropolitan (Bena) SLF	2951 Neumarkel Road, Caliente CA, 93518	12/31/2038	4,500	44,818,958 (84.6%)
Forward Landfill, Inc.	9999 S. Austin Road Manteca CA, 95336	1/1/2020	8,668	23,700,000 (46.4%)
Guadalupe Sanitary Landfill	15999 Guadalupe Mines Road, San Jose, CA 95120	01/01/2010	3,650	12,662,789 (76.7%)
Hay Road Landfill, Inc. (B + J Landfill)	6426 Hay Road; 1/4 Mi W Hwy 113 Vacaville CA, 95687	1/1/2077	2,400	21,814,578 (77.2%)
John Smith Road Class III Landfill	2650 John Smith Road, Hollister CA, 95023	1/1/2024	500	3,594,899 (77.7%)
Keller Canyon Landfill	901 Bailey Road, Pittsburg CA, 94565	12/31/2030	3,500	63,408,410 (84.5%)
Newby Island Sanitary Landfill	1601 Dixon Landing Road, Milpitas(SJ) CA, 95035	6/1/2025	4,000	18,274,953 (36%)
Ox Mountain Sanitary Landfill	2 Mi N-E Half Moon Bay Off Hwy 92, Half Moon Bay CA, 94019	1/1/2018	3,598	44,646,148 (117.8%)*
Pacheco Pass Landfill Recology (Norcal)	5900 Ostrom Road Wheatland CA, 95692	12/31/2066	3,000	40,600,000 (97.1%)
Redwood Sanitary Landfill	4 Mi NE Novato Btwn Santonio & RR Novato CA, 94945	1/1/2039	2,300	12,900,000 (67.5%)
Vasco Road Sanitary Landfill	4001 North Vasco Road Livermore, CA 94550	01/01/2015	2,250	9,870,704 (30.9%)
Zanker Material Processing Facility	675 Los Esteros Road San Jose, CA 95134	12/31/2018	350	540,100 (100%)
Source: California Integrated Waste Management Board, 2009, www.ciwm.ca.gov, accessed September 7, 2009. * Calrecycle website shows -6,746,148 cubic yards used, which results in a remaining capacity greater than 100%. http://www.calrecycle.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=1&FACID=41-AA-0002 , accessed February 8, 2011.				

Given the number of available landfills used by WCCIWMA and their available capacities, it is anticipated that sufficient landfill capacity exists to accommodate the landfill disposal needs of the City throughout the timeframe of the proposed General Plan (2030).

Solid Waste Diversion Program

Solid waste diversion is the process of diverting waste from landfills through reuse, recycling and composting. The State of California requires that all jurisdictions meet a 50 percent waste reduction mandate as established by Assembly Bill 939. Richmond is a member agency of the WCCIWMA, a local Joint Powers Authority responsible for helping its member agencies meet the State waste diversion mandate. West County met the 50 percent waste diversion goal in 2006, and RecycleMore

continues to work to maintain this level of diversion.⁴⁴ The California Integrated Waste Management Board (CIWMB) estimates an average per capita solid waste disposal rate for the City of Richmond to be 0.36 tons per resident per year; business waste disposal rates estimated by the CIWMB range from 0.3 ton per year for general merchandise stores to 3.1 tons per year for restaurants. To meet and maintain the 50 percent diversion rate, Richmond Sanitary Services has established residential and commercial co-mingled recycling collection and green waste collection services within its service area.

Regulatory Context

Federal

Volume 40 of the Code of Federal Regulations, Part 258 (*Resource Conservation and Recovery Act* [RCRA, Subtitle D]) contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills.

State

AB 939—California Integrated Waste Management Act

In 1989, the Legislature adopted the Integrated Waste Management Act of 1989, which established an integrated waste management hierarchy that consists of the following in order of importance: source reduction, recycling, composting, and land disposal of solid waste. The law also required that each county prepare a new Integrated Waste Management Plan. The Act further required each City to prepare a Source Reduction and Recycling Element (SRRE) by July 1, 1991. Each source reduction element includes a plan for achieving a solid waste goal of 25 percent by January 1, 1995, and 50 percent by January 1, 2000. Recently, a number of changes to the municipal solid waste diversion requirements under the Integrated Waste Management Act were adopted, including a revision to the statutory requirement for 50 percent diversion of solid waste. Under these provisions, local governments shall continue to divert 50 percent of all solid waste on and after January 1, 2000.

Local

City of Richmond Municipal Code

Solid Waste Regulations

Article IX (Health) Chapter 9.20 (Solid Waste) regulates solid wastes within the City of Richmond.

44 WCCIWMA. 2009. What do we do? www.recyclemore.com/article_subpage.asp?subpagekey=50.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

To determine the amount of solid waste generated by the proposed General Plan, per capita disposal rate of 0.42 tons per resident per year (tons/res/yr),⁴⁵ identified by the CIWMB are applied to the future population of the proposed project. To determine solid waste impacts associated with future development under the proposed project, estimated future solid waste generation amounts are compared to the total anticipated remaining capacity at landfills that could serve the City. As discussed in section 3.2 (Demographics), population in the City of Richmond was 102,700 residents in 2005 and with implementation of the proposed General Plan is projected to be 132,847 in 2030 for a population increase of 30,147. The proposed General Plan would produce 55,796 tons⁴⁶ of solid waste in 2030, or an increase of 12,662 tons⁴⁷ from 2005.

Standards of Significance

For the purposes of this EIR, impacts to Solid Wastes are considered significant if the proposed project would:

- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Fail to comply with applicable federal, State, and local statutes and regulations related to solid waste

Project-Specific Impacts and Mitigation Measures

3.13-5 Implementation of the proposed General Plan could result in the generation of additional solid waste, but there is sufficient landfill capacity to accommodate the increased demand for solid waste service. This is considered a *less-than-significant impact*.

Implementation of the proposed General Plan would produce 55,796 tons of solid waste in 2030 (or 152.9 tons per day) which would be an increase of 12,662 tons (or 34.7 tons per day) from 2005. As discussed above, the Potrero Hills Landfill has approved the project to expand the original capacity by approximately 61.6 million cubic yards for a total capacity of 83.1 million cubic yards, which would extend the capacity by approximately 35 years. In addition, the WCCIWMA has utilized other landfills besides Potrero Hills Landfill in 2008 and Table 3.13-2 (Disposal Facilities Used by WCCIWMA in 2008) above, shows four landfills with closure dates past the proposed General Plan horizon year of 2030, each of which with substantial remaining capacity. Bakersfield Metropolitan (Bena) SLF is scheduled to close on December 31, 2038 with a permitted daily capacity of 4,500 tons with remaining capacity of 44,818,958 (84.6 percent). Keller Canyon Landfill is scheduled to

45 CIWMB. 2009. Per capita disposal rate. www.ciwmb.ca.gov/WASTECHAR/ResDisp.htm, accessed September 25, 2009.

46 $132,847$ (2030 population) \times 0.42 = 55,796 of tons/year

47 $30,147$ residents (additional population) \times 0.42 tons/res/yr] =12,662 tons/per year

close on December 31, 2030 with a permitted daily capacity of 3,500 tons with remaining capacity of 63,408,410 (84.5 percent). Pacheco Pass Landfill is scheduled to close on December 31, 2066 with a permitted daily capacity of 3,000 tons with remaining capacity of 40,600,000 (97.1 percent). Redwood Sanitary Landfill is scheduled to close on January 1, 2039 with a permitted daily capacity of 2,300 tons with remaining capacity of 12,900,000 (67.5 percent)

With the approval of the expansion of the Potrero Hills Landfill, there would be sufficient landfill capacity to serve the proposed General Plan. Even without the additional capacity at the Potrero Hills Landfill, there are other landfills that could accommodate the proposed General Plan: the additional 34.7 tons per day anticipated to be generated by the proposed General Plan would comprise only a small percent of the daily permitted landfill capacity at Bakersfield Metropolitan, Keller Canyon Landfill, Pacheco Pass Landfill, or Redwood Sanitary Landfill. Existing landfill facilities are adequate to serve the City through the General Plan horizon year 2030. Because adequate landfill capacity exists to accommodate solid waste generated by proposed General Plan growth, this impact would be *less than significant*.

Full Buildout Analysis

Under the full buildout scenario, solid waste generation would be substantially increased compared to the City's projected growth. Because there is substantial remaining capacity at landfills that could serve the City, the full buildout scenario would not require or result in the construction and/or expansion of additional landfills. Waste anticipated to be generated by the proposed General Plan could be distributed among existing facilities in order to accommodate the increased population growth.

Additional growth beyond the General Plan's 2030 planning horizon would generate additional demand for solid waste services within the city. Any future development would be subject to review to determine impacts on solid waste services and landfill capacity in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.13-6 Implementation of the proposed General Plan would comply with all applicable federal, state, and local statutes and regulations related to solid waste. This is considered a *less-than-significant impact*.

State law requires a 50 percent diversion of solid waste from landfills. The City of Richmond, as part of the WCCIWMA, has met the 50 percent waste diversion goal in 2006.⁴⁸ RecycleMore program

48 WCCIWMA. 2009. What do we do? www.recyclemore.com/article_subpage.asp?subpagekey=50.

continues to work to maintain this level of diversion.⁴⁹ WCCIWMA diverted at least 50 percent in 2006.⁵⁰ Therefore, the City, as part of WCCIWMA, is in compliance with state law. In addition, the City remains committed to continuing its existing waste reduction programs and minimization efforts with the General Plan policies and implementation actions. The following proposed General Plan policies and implementing actions would reduce the potential for impacts related to solid waste.

Action

CF1.E Waste Management Master Plan. Regularly review and update the Waste Management Master Plan to enhance existing waste management services, systems and associated programs. Assess the system's capacity to serve current and future residents, recommend improvements and identify funding mechanisms and implementation partners. Update the plan regularly to address changing needs and priorities. Ensure compliance with the relevant components of the California Waste Management Act of 1989 by continuing to work with the West Contra Costa Integrated Waste Management Authority and Republic Services to enhance West County's integrated solid waste management services and programs. Work with relevant agencies to address impending shortage of landfill space and ensure that proposals adequately address health, safety and environmental concerns.

Policy

CN5.3 Waste Reduction and Recycling. Promote waste reduction and recycling to minimize materials that are processed in landfills. Encourage residents and businesses to reduce waste and minimize consumption of goods that require higher energy use for shipping and packaging. Encourage composting to reduce food and yard waste and provide mulch for gardening. Reducing waste and selecting minimum-impact products will conserve land and energy resources.

Actions

CN5.D Waste Reduction and Recycling. Work with joint power authority or solid waste facility holder to expand recycling programs and reduce the generation of solid wastes. Potential measures could include: providing recycling containers in parks and public spaces; establishing computer reuse and recycling programs; expanding or enhancing recycling and green waste services for all residents and businesses; and providing locations for household hazardous wastes to be recycled. The City shall also encourage reuse depots and timber harvesting of removed urban trees.

CN5.F Construction and Demolition Ordinance. Develop an ordinance covering all construction and demolition activities that meets and exceeds minimal state building code diversion for beneficial reuse standards. Encourage preservation and readaptation of existing structures over replacement and deconstruction and reuse of building materials over demolition.

Policy CN5.3 and Implementation Action CN5.D and CN5.F would ensure that waste reduction and recycling programs would be enhanced and practiced within the City of Richmond. Thus, implementation of the proposed General Plan would have no conflict with federal, State, or local statutes or regulations related to solid waste disposal. Therefore, the impact would be ***less than significant***.

49 WCCIWMA. 2009. What do we do? www.recyclemore.com/article_subpage.asp?subpagekey=50.

50 WCCIWMA. 2009. What do we do? www.recyclemore.com/article_subpage.asp?subpagekey=50.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the city's projected buildout scenario. Any future development would be subject to compliance with applicable federal, state, and local statutes and regulations related to solid waste in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

Cumulative Impacts and Mitigation Measures

Any existing capacity that currently exists within a landfill's service boundary is finite. Thus, it is considered that, without approved plans for substantial expansion of the landfill facilities that serve the City, solid waste generation from future development in the area would continue to affect regional landfill capacity in the future. Although there are several landfills in the state that have remaining capacity, any additional solid waste incrementally added to existing facilities will decrease the amount of time until they are completely full. The implementation of source reduction measures would be required on a project-specific basis and plans, such as those for recycling, would partially address landfill capacity issues by diverting additional solid waste at the source of generation. However, because future development will contribute to the finite capacity of area landfills, which could require new or expanded landfills, development associated with cumulative projects within and around the City would be significant. Impacts associated with cumulative development would be significant and the project's contribution would be deemed considerable.

ENERGY

ENVIRONMENTAL SETTING

Energy resources consist of electricity and natural gas. Pacific Gas and Electric (PG&E) is the primary electricity and natural gas supplier in Contra Costa County and provides electricity and natural gas to approximately 15 million people throughout a 70,000-square-mile service area in northern and central California. PG&E's service area covers the area between Eureka and Bakersfield (north to south) and from the Sierra Nevada to the Pacific Ocean (east to west). Electricity and natural gas are delivered through high voltage transmission lines and through gas pipelines. PG&E has provided a "will serve" letter for the proposed General Plan that natural gas and electric service is available and extension of any facilities will be made in accordance with PG&E's natural gas and electric rules and regulations on file with the State of California Public Utilities Commission at the time gas and electric service is requested.⁵¹

PG&E is required to obtain 20 percent of its energy supply from renewable sources by 2017. Current sources of electricity include natural gas-fired, coal-fired, and hydroelectric plants. PG&E has 123,054 circuit miles of electric distribution lines and 18,610 circuit miles of interconnected transmission lines, with 5.1 million electric customer accounts. Approximately 51 percent of the electrical generating sources that delivers power to the PG&E grid use fossil fuels.

PG&E has 40,123 miles of natural gas distribution pipelines and 6,136 miles of transportation pipelines. PG&E has 4.2 million natural gas customer accounts. Natural gas is obtained from gas fields in northern California and other sources outside its service area. Table 3.13-3 (Richmond 2005 Energy Consumption) shows that in 2005 the City of Richmond consumed 507,862,829 kWh of electricity and 299,861,577 Therms of natural gas.

TABLE 3.13-3	
RICHMOND 2005 ENERGY CONSUMPTION	
Electricity Consumption	
Residential	168,579,363 kWh
Commercial/Industrial	339,283,466 kWh
Total	507,862,829 kWh
Natural Gas Consumption	
Residential	16,205,099 Therms
Commercial/Industrial	283,656,478 Therms
Total	299,861,577 Therms
Source: Oorbeck, Jenny and Ly, Jennifer. 2009. <i>City of Richmond 2005 Greenhouse Gas Emissions Inventory</i> . February. Appendix B and C. www.ci.richmond.ca.us/DocumentView.aspx?DID=4279 .	

PG&E has entered into a contract with El Dorado Energy, LLC, a subsidiary of Sempra Generation, to purchase 48 megawatts (MW) of photovoltaic solar power produced at the Copper Mountain Solar facility, which will produce an average of 100 gigawatt-hours of electricity each year, equal to the

51 Dowell, Rae. Letter Re: City of Richmond EIR (will serve letter). September 25, 2009.

annual consumption of more than 14,000 average homes. Construction of the new solar project was completed in 2010.

Regulatory Context

Federal

There are no federal policies related to energy that would apply to the proposed project.

State

California Code of Regulations Title 24

New buildings in California are required to conform to energy conservation standards specified in Title 24 of the CCR. The standards establish “energy budgets” for different types of residential and non-residential buildings, with which all new buildings must comply. The energy budget has a space-conditioning component and a water-heating component, both expressed in terms of energy (British thermal units, BTU) consumed per year. The regulations allow for trade-offs within and between the components to meet the overall budget. Energy consumption of new buildings in California is regulated by the State Building Energy Efficiency Standards, embodied in Title 24 of the CCR. The efficiency standards apply to new construction of both residential and nonresidential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building or individual agency permit and approval processes. The City requires all new buildings to meet Title 24 standards.

Local

There are no local policies related to energy that would apply to the proposed project.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

As discussed in section 3.2 (Demographics), population in the City of Richmond for 2005 was 102,700 residents and, with the proposed General Plan, is projected to grow to 132,847 residents in 2030. According to Table 3.12-3 (Richmond 2005 Energy Consumption), in 2005 the City of Richmond consumed 507,862,829 kWh of electricity and 299,861,577 Therms of natural gas. To determine whether implementation of the proposed project would result in impacts on electricity and natural gas supplies, the projected increase in energy demand for each utility was analyzed and calculated using a per capita consumption rate of 4,945 kWh⁵² of electricity and 2,919.78 Therms⁵³ of natural gas per person.

Using the 2005 energy consumption per resident in 2005, the proposed General Plan would require approximately 656,943,000 kWh of electricity per year, which would be an increase of 149,080,000

52 507,862,829 kWh divided by 102,700 residents =4,945 kWh per resident.

53 299,861,577 Therms divided by 102,700 residents =2919.78 Therms per resident.

kWh of electricity from 2005. In addition, the proposed General Plan would require approximately 389,212,000 Therms of natural gas per year which would be an increase of 88,324,000 Therms of natural gas from 2005.

Standards of Significance

For the purposes of this EIR, impacts on energy resources are considered significant if the proposed project would:

- Require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Encourage the wasteful or inefficient use of energy.

Project-Specific Impacts and Mitigation Measures

3.13-7 Implementation of the General Plan would increase the demand for electricity and natural gas, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. This is considered a *less-than-significant impact*.

Electricity

The implementation of the General Plan would result in new development and would increase the use of electricity in the City of Richmond to light, heat, ventilate, and air condition the new buildings. The total annual electricity consumption by the proposed project is estimated to be approximately 656,943,000 kWh of electricity per year which would be an increase of 149,080,000 kWh of electricity from 2005. The state has experienced constraints related to energy supply and delivery. These constraints have generally been limited to peak demand days during the summer months, such that for the majority of the days during the year adequate energy supplies are reliably provided to consumers. Implementation of the General Plan would increase use of electricity in the City of Richmond, in particular, the demand for electricity to light, heat, ventilate, and air condition new buildings.

There are many sources of electrical energy, and it is likely that various sources would be used by the City. For example, PG&E has entered into a contract with El Dorado Energy, LLC, a subsidiary of Semptra Generation, to purchase 48 megawatts (MW) of photovoltaic solar power produced at the Copper Mountain Solar facility, which will produce an average of 100 gigawatt-hours of electricity each year, equal to the annual consumption of more than 14,000 average homes. PG&E also obtains energy from hydroelectric, nuclear, and fossil facilities. It is beyond the scope of this EIR to speculate regarding impacts of using any particular source of energy; however, for informational purposes common potential environmental impacts from various energy sources are listed below.

- Hydroelectric: Alteration of aquatic ecosystems and hydrologic processes, soil erosion, disruption of natural fish movement.

- Nuclear: Significant water use, discharge of warmed and polluted water into natural water bodies, generation of radioactive waste, soil contamination.
- Coal: Emission of nitrogen oxides, carbon dioxide, sulfur dioxide, mercury and methane into the air; significant water use; discharge of warmed and polluted water into natural water bodies; generation of solid waste; soil contamination; alteration of wildlife habitat during surface mining.
- Natural Gas: Emission of methane, nitrogen oxides, and carbon dioxide; alteration of habitat during extraction.

Development under the proposed General Plan would be required to comply with the energy conservation measures contained in Title 24 of the California Code of Regulations, and General Plan polices would implement energy saving practices. The following proposed General Plan Policies and Implementing Actions would further reduce the potential for impact on energy.

Policy

CF1.4 Concurrent Infrastructure Development. (see above)

Action

CF1.F Public Utilities Revitalization. Maintain and upgrade existing water, gas, electricity, telecommunications and cable infrastructure and associated programs and services. Assess the system's ability to serve current and future residents, recommend improvements and identify funding mechanisms and partners for implementation.

Work with Pacific Gas & Electric and the pipeline franchise holders to update gas and fuel line maps. Follow guidelines for safety to ensure that future improvements do not compromise services and those services do not conflict with future development. Continue coordination efforts with Pacific Gas & Electric to update and support compliance with the Electric Undergrounding Program.

Continue to work with the East Bay Municipal Utility District to update and support compliance with the Water Supply Management Program, the Stormwater Pollution Prevention Plan and the Dam Safety Program for San Pablo Dam. Continue to work with railroad companies on locating utilities along railroad rights-of-way.

Policies

CN5.1 Energy Efficiency and Conservation. Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment. Collaborate with partner agencies, utilities and businesses to support a range of energy efficiency, conservation and waste reduction measures, including development and retrofitting of green buildings and infrastructure; installation of energy-efficient appliances and equipment in homes and offices; and heightened awareness of energy and conservation issues.

CN5.2 Sustainable Development Standards and Practices. Promote environmentally sustainable development principles for buildings, neighborhoods and infrastructure. Encourage construction and building development practices that reduce resource expenditures throughout the life-cycle of a structure.

Actions

CN5.A Renewable Energy. Encourage and support the generation, transmission and use of renewable energy. Advocate at the regional and state level for upgrades

to the existing power grid so that it can support renewable energy production and transmission.

- CN5.C Green Building Ordinances. Require that newly constructed or renovated City-owned and private buildings and structures comply with the City's adopted Green Building Ordinances. Periodically upgrade requirements as mainline construction practices develop and new materials and building products become available with the intent of meeting or exceeding the State's zero net energy goals by the year 2020.

Policies

EC3.1 Renewable Energy (also identified as Policy HW10.4). Promote the generation, transmission and use of renewable energy to meet current and future demand. The City should partner with public agencies, utilities, businesses and residents to expand the generation and availability of clean technologies and renewable energy. Support a range of renewable energy sources such as solar, wind power, waste and others. The City should encourage new development and redevelopment projects to generate a portion of their energy needs through renewable sources.

EC3.2 Energy Efficiency and Conservation. Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment. Collaborate with partner agencies, utilities and businesses to support a range of energy efficiency, conservation and waste reduction measures including: development and retrofitting of green buildings and infrastructure; installation of energy-efficient appliances and equipment in homes and offices; and heightened awareness of energy and conservation issues.

Actions

- EC3.A Community Choice Aggregation. Partner in community choice aggregation. Collaborate with neighboring jurisdictions to support local efforts to expand the generation and use of energy from renewable sources while increasing revenue for the City. Encourage large warehouse and retail operators to add solar panels to the roofs of their buildings and maximize generation of renewable energy.
- EC3.C Energy Demand Reduction Work with energy providers to develop strategies that will reduce energy demand and promote energy conservation. Collaborate with neighboring jurisdictions to share best practices and implement regional programs to help residents and businesses meet regional demand reduction targets.

The construction of new electric facilities could be required to serve new development within the City. The physical impacts from the construction of these facilities are assumed as part of the General Plan development and are analyzed in this EIR. The above policies require energy efficiency and conservation and require the City to collaborate with utility and partner agencies to develop a program to reduce energy demand and promote energy conservation. Implementation of the above policies and implementing actions would further reduce demands for electricity and would ensure that impacts related to electricity supply would be ***less than significant***.

Natural Gas

Under the proposed General Plan, the City of Richmond would require approximately 389,212,000 Therms of natural gas per year, which would be an increase of 88,324,000 Therms of natural gas from 2005. The proposed project would be served by natural gas lines approved by PG&E. As

PG&E declares itself a “reactive” utility that provides natural gas as customers request its services, PG&E does not envision any problems with adequate supply of natural gas available to serve the City of Richmond.⁵⁴ Any expansion of service necessitated by implementation of the proposed General Plan Update would be in accordance with PG&E’s policies and extension rules on file with the California Public Utilities Commission at the time contractual agreements are made.

For the reasons discussed above, the General Plan would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. In addition, PG&E has provided a “will serve” letter for the proposed General Plan that natural gas and electric service is available and extension of any facilities will be made in accordance with PG&E’s gas and electric rules and regulations on file with the State of California Public Utilities Commission at the time natural gas and electric service is requested.⁵⁵ This impact is considered *less than significant*.

Full Buildout Analysis

Under the full buildout scenario, the city’s population would increase. Additional growth beyond the General Plan’s 2030 planning horizon would generate additional demand for electricity and natural gas within the city. If that development were allowed to occur without the provision of additional electricity and natural gas facilities, the effects could be adverse. The proposed General Plan includes policies that would reduce the potential for impacts related to energy demand.

In addition, any future development would be required to comply with the energy conservation measures contained in Title 24 of the California Code of Regulations, and General Plan polices that would implement energy saving practices. Future development would also be subject to review to determine impacts on the demand for electricity and natural gas in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan’s 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan’s planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.13-8 Implementation of the proposed General Plan would not result in the wasteful or inefficient use of energy. This is considered a *less-than-significant impact*.

As discussed under the Regulatory Framework section above, all new buildings are required to comply with the energy conservation standards specified in CCR Title 24. In order to conform to CCR Title 24, efficient energy use would be enforced. In addition, the following proposed General Plan Policies and Implementing Actions would further reduce the potential for impact on energy.

54 Dowell, Rae. 2009. Email communication with PG&E. September 26.

55 Dowell, Rae. 2009. Letter Re: City of Richmond EIR (will serve letter). September 25.

Policy

CF1.4 Concurrent Infrastructure Development. (see above)

Action

CF1.F Public Utilities Revitalization Program. (see above)

Policies

CN5.1 Energy Efficiency and Conservation. (see above)

CN5.2 Sustainable Development Standards and Practices. (see above)

Actions

CN5.A Renewable Energy Program. (see above)

CN5.C Green Building Ordinances. (see above)

Policies

EC3.1 Renewable Energy. (see above)

EC3.2 Energy Efficiency and Conservation. (see above)

Actions

EC3.A Community Choice Aggregation. (see above)

EC3.C Energy Demand Reduction. (see above)

Proposed General Plan Policy CN5.1 (Energy Efficiency and Conservation) would require energy efficiency and conservation and Policy CN5.2 (Sustainable Development Standards and Practices) would encourage construction and building development practices that reduce resource expenditures throughout the life-cycle of a structure. Adherence to existing regulations and the General Plan's goals, policies and implementation action would ensure that there would be a **less-than-significant impact** with respect to the wasteful or unnecessary use of energy under the General Plan.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the city's projected buildout scenario. Any future development would be required to comply with the energy conservation standards specified in CCR Title 24, which enforces efficient energy use. In addition, the proposed General Plan Policies and Implementing Actions would further reduce the potential for impacts related to energy usage. Any future development would be subject to review to determine wasteful or inefficient use of energy in accordance with CEQA.

Mitigation Measures

None required.

Cumulative Impacts

Development under the proposed General Plan Update, in combination with other development within the PG&E's service boundaries, would result in the permanent and continued use of electricity

and natural gas resources. However, as PG&E is a reactive provider, which supplies electricity and natural gas services to customers at their request, it is assumed that they would serve future developments under the proposed General Plan buildout in combination with projected future developments in their service boundaries. However, existing facilities would not be adequate to meet this demand. Development in undeveloped areas of PG&E's service area could require the extension of existing lines, new transmission facilities, and substations. Natural gas regulators and transmission lines would be required to serve residences and businesses. Expansion of these types of facilities would be required to serve the growing population of PG&E's service area, and would be required to be constructed by the service provider as demand from new development warrants. Because it is not known where new development would occur, the City cannot determine the extent to which new facilities would be required to serve cumulative development or where any such facilities would be developed. However, the potential impacts of constructing any new facilities would be addressed concurrent with the proposed development. The construction and operation of additional natural gas or electrical facilities in areas where such facilities currently do not exist could result in potentially significant environmental effects, in part, related to construction activities. However, it would be speculative to identify the level of significance of potential environmental impacts absent a plan that identifies a specific energy facility and/or its location. Further, any energy facilities would be subject to environmental review by PG&E on a project basis. Although service providers would construct facilities as demand occurs, and would be subject to environmental review as part of the proposed development project or analyzed independently by the service provider, this cumulative impact is considered significant. Because the proposed General Plan contains policies for energy-efficient buildings that would reduce the increase in demand for energy, the proposed General Plan's cumulative contribution would not be considerable and would *be less than significant*.

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3.14 TRANSPORTATION AND CIRCULATION

3.14 TRANSPORTATION AND CIRCULATION

INTRODUCTION

This section of the EIR evaluates potential transportation impacts resulting from implementation of the proposed Richmond General Plan 2030 (proposed General Plan). Impacts are evaluated based upon a comparison between existing conditions and future conditions (year 2030) with the proposed General Plan. The General Plan scenario is also compared against a No Project scenario in 2030, representing development under the current General Plan.

The transportation setting and impact assessment relies on data and analysis techniques provided by many sources, specifically referenced where applicable. The baseline condition for the traffic analysis is based upon information available at the time the Notice of Preparation was published (February 2008) consistent with CEQA Guidelines section 15125(a). (Roadway traffic counts from 2007 were obtained for this analysis, along with freeway traffic volume data from Caltrans. AC Transit and Bay Area Rapid Transit (BART) ridership information was also obtained from those agencies. The multi-modal impact assessment of the land use and circulation changes contained in the proposed General Plan, including the proposed goals, policies, and actions, is performed with a combination of tools including the Contra Costa Countywide Travel Demand Model, policy analysis, and comparison to other responsible transportation agencies' requirements and concerns.

Of the comments and requests received in response to the Notice of Preparation, two key transportation-related areas of concern were raised. The first, from the California Department of Transportation (Caltrans) District 4, requested that the Caltrans *Guide for the Preparation of Traffic Impact Studies* be utilized, and that the standard traffic impact information be included, such as project trip generation, distribution and assignment; assessment of impacts on the State Highway system; and full discussion of mitigation measures, including measures that don't require new highway construction, and financing, implementation responsibilities, and monitoring of these measures. (See Appendix A for the full comment letter). The other area of concern, raised by the California Public Utilities Commission (CPUC), relates to vehicle, pedestrian, and bicycle circulation and safety near all roadway/rail crossings. The letter requests that safety measures, including grade separations and protections for at-grade crossings, be described and that new development pay a fair share for such improvements.

ENVIRONMENTAL SETTING

Regulatory Setting

Several regional agencies govern transportation planning in the Richmond area. The following gives a brief overview of the agencies.

Contra Costa Transportation Authority (CCTA)

The CCTA is the County agency established to implement Measure C passed by voters in 1998 and its extension, Measure J, passed in 2004. These measures increased sales tax by one-half percent to fund a list of specific transportation improvement projects in Contra Costa County. Measure C also required the development of a Growth Management Program (GMP) to help control the spread of congestion. The CCTA board includes elected officials from the 18 cities within the County and the County itself. CCTA is responsible for preparing and updating the *Countywide Comprehensive Transportation Plan (CCTP)*, which lays out the transportation vision and specific improvement projects for the county. The CCTA includes several Regional Transportation Planning Committees that cover specific sub-areas of the County. Richmond and West Contra Costa County are within the West Contra Costa County Transportation Advisory Committee's (WCCTAC) purview. The WCCTAC prepares a regional Action Plan (see below) that was last updated in 2008.

West Contra Costa Transportation Advisory Committee (WCCTAC)

The WCCTAC, under a joint powers agreement, is composed of elected officials from six member jurisdictions: El Cerrito, Hercules, Pinole, Richmond (three members), San Pablo, and Contra Costa County. The WCCTAC also includes members from three of the area's transit providers: Alameda-Contra Costa Transit District (AC Transit), Western Contra Costa County Transit Authority (WestCAT), and Bay Area Rapid Transit (BART). The WCCTAC prepared the *West Contra Costa Action Plan 2008 Update*, a revision to the *West County Action Plan* that was adopted in 1994 and previously updated in 2000. The 2009 *West County Action Plan* was adopted in July 2009. These Plans assess transportation issues within West Contra Costa County and outline a recommended package of goals, objectives and actions for addressing those issues. The *Action Plan* feeds into the *Countywide Comprehensive Transportation Plan (Congestion Management Plan)*. The latest *CMP* update was adopted by the CCTA in 2007.

In addition to laying out planned future transportation improvement projects, the *Action Plan* designates Routes of Regional Significance and sets Traffic Service Objectives (TSOs). The *Action Plan* sets TSOs for the Routes of Regional Significance based on travel speeds and delay indices, and the Traffic Service Objective Monitoring Report monitors the operating conditions on a four to five year basis. Travel speeds are taken directly from field measurements, and delay indices are computed as the ratio between point-to-point travel time under free-flow conditions versus congested (i.e., peak period) conditions. The *TSO Monitoring Report* provides the most up-to-date results for the TSOs outlined in the *Action Plan*.

Metropolitan Transportation Commission (MTC)

The MTC is the Bay Area's regional transportation planning agency and is responsible for the *Regional Transportation Plan (RTP)*, a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The *RTP* is a 20-year plan and is updated every two years. The MTC also screens requests from local agencies for state and federal grants for transportation projects to determine compatibility with the *RTP*.

MTC is the federally-designated Metropolitan Planning Organization (MPO) for the Bay Area. In recent years, state and federal laws have given MTC an increasingly important role in financing Bay Area transportation improvements. Most significant was the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), which increased the powers of MPOs like MTC to determine the mix of transportation projects best suited to meet their region's needs. MTC also administers state monies, including those provided by the Transportation Development Act. Legislation passed in 1997 gives MTC increased decision-making authority over the selection of projects and allocation of funds for the *State Transportation Improvement Program (STIP)*.

California Department of Transportation (Caltrans)

Caltrans owns and operates California's highway system. In Richmond, Caltrans facilities include Interstate 580 and Interstate 80. The City plans to turn over control of the Richmond Parkway to Caltrans, but first must identify and remedy certain deficiencies in order for Caltrans to accept control of this facility.

Physical Setting

Richmond is served by a variety of transportation systems including: a freeway and roadway network serving vehicular traffic for passenger and goods movement; BART; AC Transit and supplemental local bus services; Amtrak, the Union Pacific, BNSF and Richmond Pacific Railroads; a water port; a growing network of trails and greenways; a network of bicycle lanes and routes; and planned ferry service for the south shoreline. The following discussion summarizes the physical and operational characteristics of these transportation systems.

Overview of Travel in Richmond

Journey to work data gathered by the U.S. Census Bureau provides a means of estimating the prevalence of particular transportation modes, or mode split, in a given community. While the journey to work is only one aspect of travel patterns, it is important to understand, because commute trips make up the bulk of the traffic during the busiest time of day, the PM peak hour, which largely determines the types of transportation changes that are typically proposed.

Table 3.14-1 summarizes the journey to work data from the U.S. Census. Based on the 2000 U.S. Census, about 59 percent of Richmond residents drive alone to work, compared to the Bay Area average of 68 percent. About 79 percent of the in-commuters to the City drive alone.

City residents who commute to work use transit at a rate of more than triple the rate of workers commuting into Richmond (14 percent for Richmond residents, versus 4 percent for workers commuting into Richmond). This is influenced by the substantial proportion of residents who are employed in San Francisco, Berkeley, or Oakland, which can be easily accessed by public transportation from Richmond via BART and AC Transit. On the other hand, workers commuting to Richmond tend to drive to work at higher rates. This difference in mode choice may reflect the range of transit access and connectivity available to Richmond residents as compared to those available to

Mode of Travel	Richmond Residents	Richmond Nonresident Employees	Bay Area Average
Drive Alone	59 %	79 %	68 %
Carpool	19 %	77 %	13 %
Transit	14 %	4 %	10 %
Walk	2 %	0 %	3 %
Bicycle	1 %	0 %	1 %
Other	4 %	0 %	1 %

Source: U.S. Census, 2000.

employees coming from other parts of the Bay Area. More Richmond residents are likely able to access the many bus routes and the Downtown BART station.

Walking and biking to work was slightly lower for Richmond residents than the Bay Area average (2.5 percent for Richmond, versus 4 percent in the Bay Area). This is likely influenced by Richmond's large size, a smaller number of residents who live close to their workplace, and the presence of many areas in the City that face significant challenges for pedestrians and bicyclists. The City has a fairly typical rate of workers who work at home or telecommute: 3 percent in Richmond compared with 4 percent in the region as a whole.

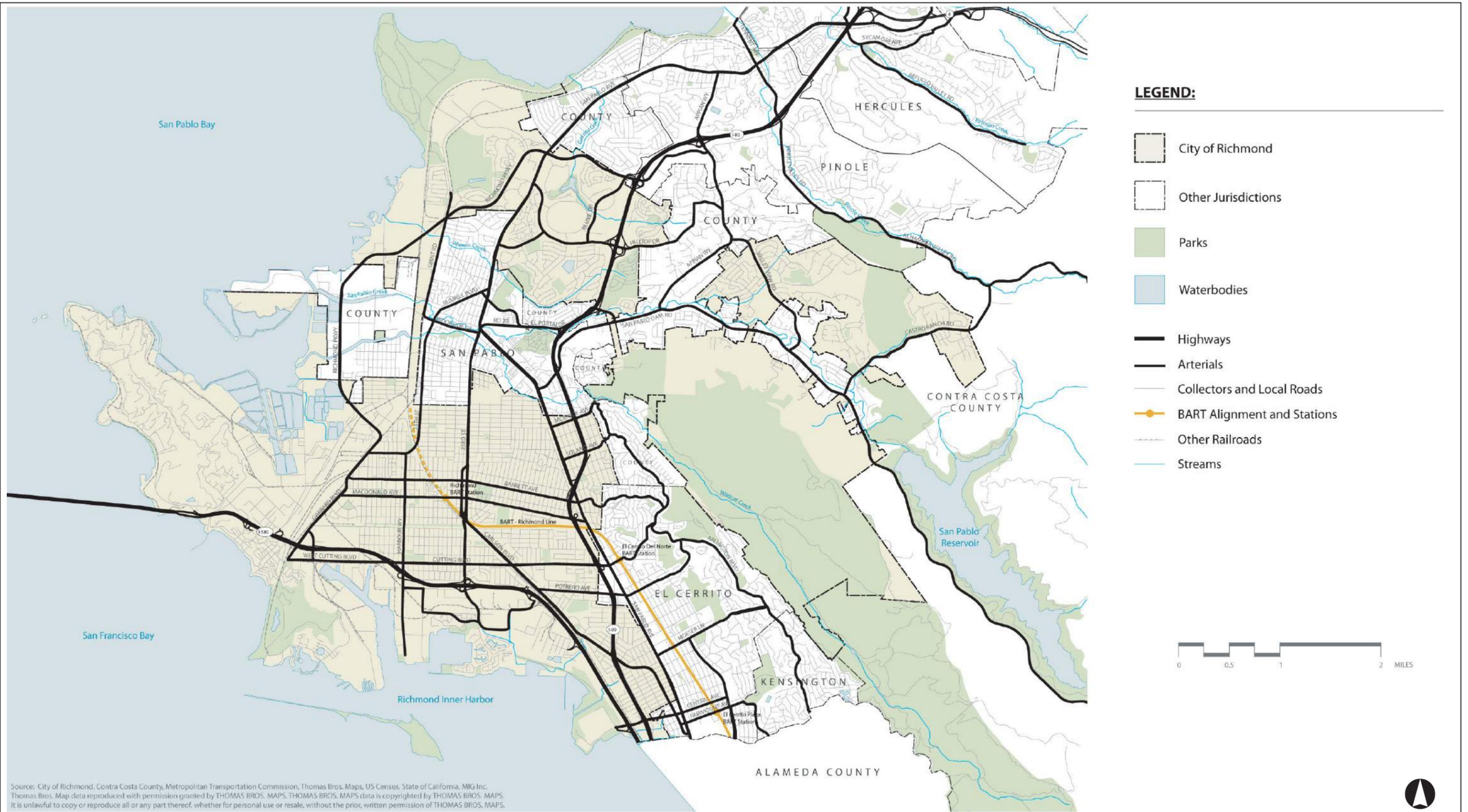
Motor Vehicle Circulation

Overview

The City of Richmond is served by two interstate freeways, I-80 and I-580, an expressway (the Richmond Parkway), and a system of arterials, collectors, and local roadways that distributes traffic to the various neighborhoods, business districts, employment centers and shopping centers in the City. Figure 3.14-1 illustrates the roadway system.

Caltrans maintains the two interstate freeways in Richmond, I-80 and I-580. The CCTA and the Richmond area Regional Transportation Planning Committee (RTPC) sub-committee, and WCCTAC maintain plans and standards of operation for Routes of Regional Significance in Richmond and throughout the county. Routes of Regional Significance are defined as roadways that connect two or more regions of Contra Costa County, cross Contra Costa County boundaries, carry a significant amount of traffic, or provide access to a regional highway or transit facility. These routes connect Richmond residents and businesses to regional destinations and resources. Designated Routes of Regional Significance in Richmond are listed below and shown in Figure 3.14-2:

- Interstate 80
- Interstate 580
- Richmond Parkway
- 23rd Street



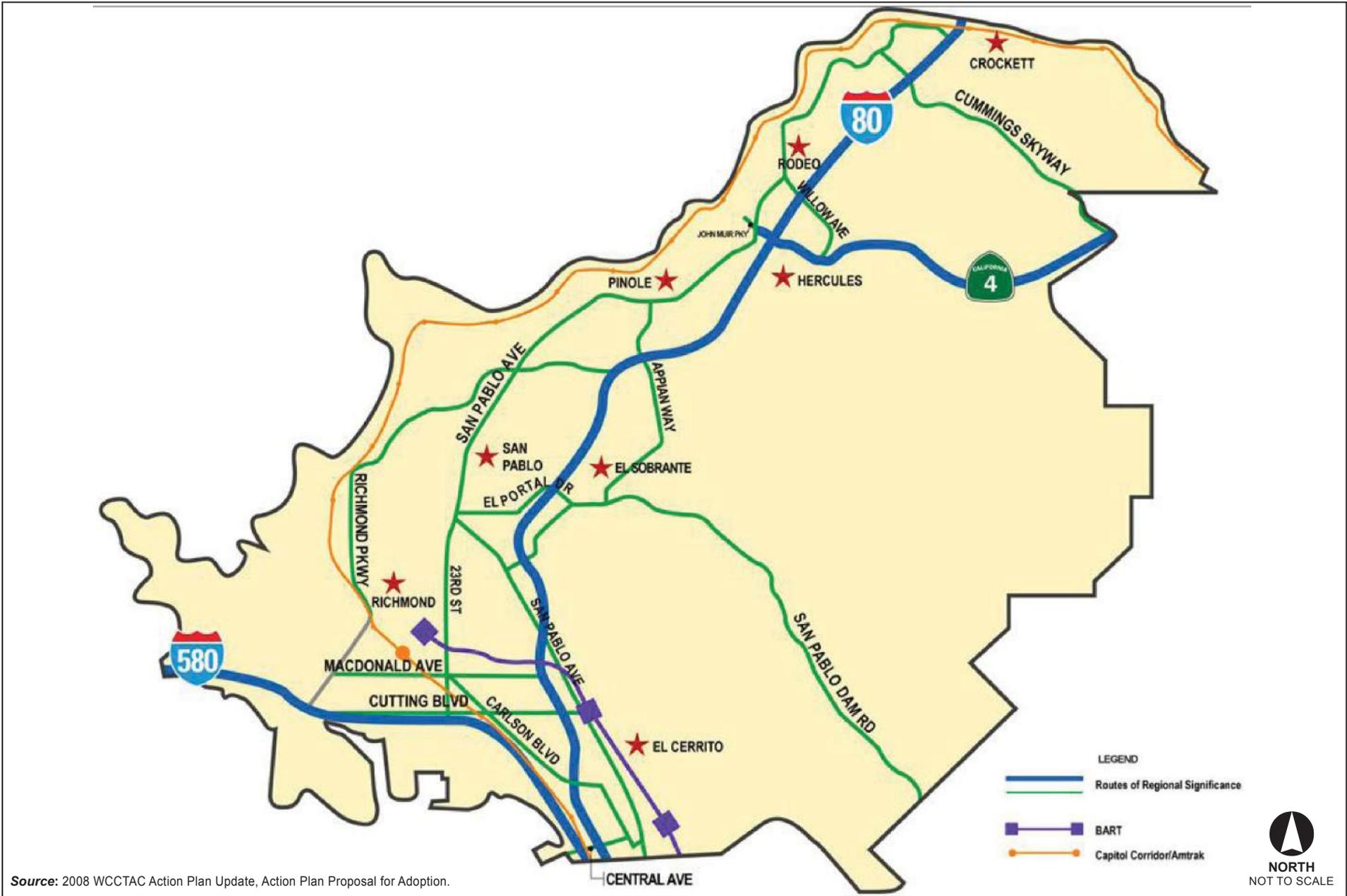
Source: City of Richmond, Contra Costa County, Metropolitan Transportation Commission, Thomas Bros. Maps, US Census, State of California, MIG Inc. Thomas Bros. Map data reproduced with permission granted by THOMAS BROS. MAPS. THOMAS BROS. MAPS data is copyrighted by THOMAS BROS. MAPS. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of THOMAS BROS. MAPS.

Fehr & Peers, December 2009.



FIGURE 3.14-1
Existing Roadway Network

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Source: 2008 WCCTAC Action Plan Update, Action Plan Proposal for Adoption.

FIGURE 3.14-2
Routes of Regional Significance



- Carlson Boulevard
- Castro Street
- Cutting Boulevard
- El Portal Drive
- San Pablo Avenue
- San Pablo Dam Road

Roadway Operating Conditions and Level of Service

Level of Service (LOS) is a qualitative assessment of perceived traffic conditions by motorists. LOS generally reflects driving conditions such as travel time and speed, freedom to maneuver, and traffic interruptions. LOS can be calculated for intersections or roadway segments; for this EIR, roadway segment LOS based on existing and projected future daily traffic volumes. LOS is designated by a range of letters – “A” represents the most favorable conditions (free flow) and “F” represents the least favorable conditions (jammed with excessive delays). Table 3.14-2 describes the characteristics of each LOS designation for motor vehicle traffic. For this EIR, roadway and freeway segment LOS was analyzed per the procedures in the *2000 Highway Capacity Manual (Transportation Research Board Special Report 209)*. Specifically, the daily volumes are compared to capacities using freeway/roadway characteristics including number of lanes, design speed, and intersection frequency. The resulting volume-to-capacity (v/c) ratio corresponds to a LOS A through F, with LOS A being v/c below 0.60, LOS B being v/c between 0.60 and 0.69, etc., and LOS F being v/c 1.0 or greater.

TABLE 3.14-2	
QUALITATIVE DESCRIPTION OF LEVEL OF SERVICE	
Level of Service	Driver's Perception
A/B	LOS A/B are characterized by light congestion. Motorists are generally able to maintain desired speeds on two and four lane roads and make lane changes on four lane roads. Motorists are still able to pass through traffic-controlled intersections in one green phase. Stop-controlled approach motorists begin to notice absence of available gaps.
C	LOS C represents moderate traffic congestion. Average vehicle speeds continue to be near the motorist's desired speed for two and four lane roads. Lane change maneuvers on four lane roads increase to maintain desired speed. Turning traffic and slow vehicles begin to have an adverse impact on traffic flows. Occasionally, motorists do not clear the intersection on the first green phase.
D	LOS D is characterized by congestion with average vehicle speeds decreasing below the motorist's desired level for two and four lane roads. Lane change maneuvers on four lane roads are difficult to make and adversely affect traffic flow like turning traffic and slow vehicles. Multiple cars must wait through more than one green phase at a traffic signal. Stop-controlled approach motorists experience queuing due to a reduction in available gaps.
E	LOS E is the lowest grade possible without stop-and-go operations. Driving speeds are substantially reduced and brief periods of stop-and-go conditions can occur on two and four lane roads and lane changes are minimal. At signalized intersections, long vehicle queues can form waiting to be served by the signal's green phase. Insufficient gaps on the major streets cause extensive queuing on the stop-controlled approaches.
F	LOS F represents stop-and-go conditions for two and four lane roads. Traffic flow is constrained and lane changes minimal. Drivers at signalized intersections may wait several green phases prior to being served. Motorists on stop-controlled approaches experience insufficient gaps of suitable size to cross safely through a major traffic stream.
Source: Fehr & Peers and 2000 Highway Capacity Manual.	

Caltrans Standards for State Facilities

Caltrans endeavors to maintain a LOS standard of the C/D threshold for State highways. However, as noted in its *Guide for the Preparation of Traffic Impact Studies*, Caltrans acknowledges that this may not always be feasible, and therefore recommends that the lead agency consult with Caltrans to determine the appropriate target LOS; and, if a State highway facility is operating at less than the appropriate target LOS, the existing LOS or MOE (measure of effectiveness) should be maintained. Within Contra Costa County, the CCTA and WCCTAC provide the applicable LOS and MOE for State highways (see discussion below).

Contra Cost Transportation Authority/West Contra Costa Transportation Advisory Committee Operating Standards for Routes of Regional Significance

The CCTA prepares the state-mandated Congestion Management Plan (CMP). The most current CMP was adopted in November 2007. The CMP establishes two types of LOS standards: standards for freeway segments and standards for CMP-monitored roadways, as measured by the LOS at key intersections on those roadways.

Freeway segments are set at an LOS E standard unless they were already operating at LOS F when the CMP was originally prepared in 1991. In the City of Richmond, the standards are LOS E for Interstate 580, and LOS F for Interstate 80. CMP-monitored roadways in the City of Richmond and their LOS standards include:

- San Pablo Avenue (LOS E)
- San Pablo Dam Road (LOS E)
- El Portal Drive (LOS E)
- Cutting Boulevard (LOS E)

According to the *2007 CMP Monitoring Report (September 24, 2008)*, all the above freeways and arterials were operating at or above the LOS standard.

In addition to the CMP LOS standards, the WCCTAC adopts and maintains an Action Plan for West Contra Costa transportation systems, and the 2009 *WCCTAC Action Plan Update* defines the following Multi-Modal Transportation Service Objectives (MTSOs) for Routes of Regional Significance in west Contra Costa:

- I-580 – LOS E or better, using 1994 Highway Capacity Manual v/c methodology
- I-80 – Increase high-occupancy vehicle (HOV) lane usage by 10 percent between 2007 and 2012; maintain a Delay Index of 3.0 or less on I-80 during weekday morning and evening peak hours.¹

1 Delay Index is the ratio of the congested (peak hour) travel time between two points and the free-flow travel time between those points.

- San Pablo Avenue and San Pablo Dam Road – LOS E or better, measured at key signalized intersections using the CCTALOS software, which employs the Transportation Research Board *Circular 212 v/c* methodology.
- 23rd Street, Carlson Boulevard, Central Avenue, Cutting Boulevard, El Portal Drive, MacDonald Avenue, Richmond Parkway – LOS D or better, measured at key signalized intersections as described above

The *2007 Traffic Service Objective Monitoring Report (September 24, 2008)*, reports the following conditions relative to the above criteria (some of the criteria are not applicable to the 2007 report because they were newly-defined in the 2008 Action Plan):

- I-580 – data not available
- I-80 – 2008 criteria not monitored; but LOS F for several segments (peak hour/peak direction) was reported, which in 2007 was below the TSO standard
- Arterial roadways – all monitored intersections met the standards for the AM and PM peak hours

Existing Richmond LOS Standard

Level of service has traditionally been measured for vehicles, with minimal regard to bicycle, pedestrian, and transit needs and conditions on the roadway system. This bias inherently ignores overall mobility and conditions for non-auto road users and perpetuates a system that focuses on expanding auto capacity. A key goal of the proposed General Plan is to ensure the accommodation of multiple travel modes on the existing street network, through careful management of the evolving roadway system (both physical and operational). Therefore, while a LOS D standard has typically been applied by the City of Richmond in reviewing traffic impacts and determining necessary roadway/intersection improvements, the proposed General Plan does not set forth a vehicle LOS standard that would be applied to future projects.

The proposed General Plan introduces a “Place-Based Classification System” standard to make planners aware of the streets’ intended functions and design characteristics when evaluating street performance and deciding where improvements are needed. The General Plan also proposes place-based evaluation criteria for street and multi-use trail performance, which would ultimately replace traditional auto-based LOS. Since these criteria have not yet been developed, this EIR presents auto-based levels of service as a tool for confirming where mitigation measures are needed and where streets are or would be operating beyond their vehicular capacity. LOS findings should point to a need to consider a range of possible mitigations in resolving unfavorable conditions. Potential mitigations might include: development of infill sites served by transit, pedestrian and/or bicycle improvements, traffic calming, public transit service enhancements, and transportation demand management, among others.

Existing Traffic Volumes and Service Levels

The traffic analysis is conducted on a roadway segment basis, using daily traffic counts. 24-hour traffic counts were conducted in September 2007 on 38 key roadway segments throughout the City.

Additional traffic data on 19 freeway segments was obtained from Caltrans. Table 3.14-3 shows the capacity thresholds for the various roadway types, developed using the Transportation Research Board's Highway Capacity Manual (HCM) methods. The daily volume thresholds for LOS A (denoting free-flow conditions and minimal congestion) through F (jammed conditions and long delays) are based on HCS software calculations, which depend on many roadway operational factors, including number of lanes, percentage of trucks in the traffic stream, signal spacing, speed limit, and others.

TABLE 3.14-3

RICHMOND ROADWAY SEGMENT LEVEL OF SERVICE THRESHOLDS (BI-DIRECTIONAL)

Facility Class	Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	27,600	45,200	63,600	77,400	86,400
	6	41,400	67,800	95,400	116,100	129,600
	6.5	44,850	73,450	103,350	125,775	140,400
	7	48,300	79,100	111,300	135,450	151,200
	8	55,200	90,400	127,200	154,800	172,800
Arterial	2	8,400	9,300	11,800	14,700	17,300
	3	13,500	14,950	18,900	23,600	27,750
	4	18,600	20,600	26,000	32,500	38,200
	6	28,800	32,000	40,300	50,400	59,300
Expressway	4	21,400	35,000	49,300	60,000	67,000
	6	32,100	52,600	74,000	90,000	100,500

Note: The 3 lane arterial and 6.5 and 7 lane freeway thresholds were obtained by interpolation.
Source: Fehr & Peers, HCS Software, 2009.

Table 3.14-4 lists the 2007 counts, capacities, and corresponding LOS for each roadway segment studied. As of 2007, the only LOS E/F segments were on I-80 and I-580. This does not mean that certain intersections on City roadways are not congested during the peak hours; rather, on a daily basis, the primary City arterial roadways have adequate capacity to serve the vehicle travel demand.

TABLE 3.14-4

EXISTING TRAFFIC COUNTS, CAPACITIES, AND LEVELS OF SERVICE

Segment #	Roadway	2007 Count	Capacity	2007 LOS
1	Richmond Parkway from Blume to San Pablo	41,100	100,500	B
2	Blume from Richmond Parkway to Hilltop	7,100	38,200	A
3	Hilltop from I-580 to San Pablo	12,600	38,200	A
4	Robert Miller from San Pablo to Hilltop	14,500	38,200	A
5	San Pablo from Richmond Parkway to Robert Miller	16,400	38,200	A
6	Richmond Parkway from San Pablo to Giant	29,300	100,500	A
7	Richmond Parkway from Giant to Castro	29,900	67,000	B
8	Richmond Parkway from Castro to Barrett	11,500	67,000	A
9	13th/Pennsylvania from Sanford to Harbour	17,900	38,200	A
10	23rd from Sanford to Grant	24,300	38,200	C
11	Barrett from Richmond Parkway to Harbour	8,500	38,200	A
12	Barrett from Harbour to 22nd	15,000	59,300	A
13	Barrett from 22nd to San Pablo	15,600	38,200	A
14	MacDonald from Richmond Parkway to Harbour	5,700	38,200	A
15	MacDonald from Harbour to 22nd	9,900	38,200	A

TABLE 3.14-4

EXISTING TRAFFIC COUNTS, CAPACITIES, AND LEVELS OF SERVICE

Segment #	Roadway	2007 Count	Capacity	2007 LOS
16	MacDonald from 22nd to San Pablo	12,600	38,200	A
17	Richmond Parkway from Barrett to MacDonald	14,300	67,000	A
18	Harbour from Barrett to MacDonald	14,600	38,200	A
19	22nd from Grant to Bissell	12,000	17,300	D
20	23rd from Grant to Bissell	13,300	27,750	A
21	Castro from Richmond Parkway to I-580	23,600	67,000	B
22	Richmond Parkway from MacDonald to Cutting	14,800	67,000	A
23	Harbour from MacDonald to Cutting	15,000	38,200	A
24	23rd from Bissell to Cutting	17,400	38,200	A
25	Carlson from 23rd to Cutting	9,100	38,200	A
26	Cutting from S Garrard to Harbour	5,800	38,200	A
27	Cutting from Harbour to 23rd	11,500	38,200	A
28	Cutting from 23rd to Carlson	15,900	38,200	A
29	Cutting from Carlson to I-80	17,200	38,200	A
30	Canal from Cutting to Marina	6,900	38,200	A
31	Harbour from Wright to Marina	2,900	38,200	A
32	Marina Bay Pkwy from Meeker to Marina	11,400	38,200	A
33	Carlson from Cutting to I-80	7,900	38,200	A
34	Central from I-580 to I-80	16,700	38,200	A
35	San Pablo Dam from Barranca to El Portal	22,900	38,200	C
36	San Pablo Dam from Castro Ranch to City Limits	14,900	38,200	A
37	Castro Ranch from Hillside to City Limits	6,700	27,750	A
38	Valley View from Sobrante to Amend	16,100	38,200	A
39	I-80 from City Limits to Richmond Pkwy	193,000	172,800	F
40	I-80 from Richmond Pkwy to Hilltop Dr	184,000	129,600	F
41	I-80 from Hilltop Dr to El Portal Dr	200,000	172,800	F
42	I-80 from El Portal Dr to San Pablo Dam Rd	201,000	151,200	F
43	I-80 from San Pablo Dam Rd to Solano Ave	205,000	140,400	F
44	I-80 from Solano Ave to San Pablo Ave	214,000	151,200	F
45	I-80 from San Pablo Ave to Cutting Blvd	205,000	172,800	F
46	I-80 from Cutting Blvd to Potrero Ave	182,000	129,600	F
47	I-80 from Potrero Ave to Carlson Blvd	196,000	129,600	F
48	I-80 from Carlson Blvd to Central Ave	186,000	129,600	F
49	I-80 from Central Ave to City Limits	182,000	129,600	F
50	I-580 from I-80 to Central Ave	90,000	129,600	C
51	I-580 from Central Ave to Bayview Ave	90,000	129,600	C
52	I-580 from Bayview Ave to Regatta Blvd/Erlandson St	92,000	151,200	C
53	I-580 from Regatta Blvd/Erlandson St to 23rd St/Marina Bay Pkwy	90,000	151,200	C
54	I-580 from 23rd St/Marina Bay Pkwy to Harbour Way/Cutting Blvd	78,000	151,200	B
55	I-580 from Harbour Way/Cutting Blvd to Canal Blvd	68,000	151,200	B
56	I-580 from Castro St to Western Dr	79,000	140,400	C
57	I-580 from Western Dr to Richmond Bridge	78,000	86,400	E

Source: Fehr & Peers, counts conducted in 2007; capacities developed using HCM Methodology/HCS+ Software.

Existing Daily Vehicle Miles Traveled

The proposed General Plan includes an Energy and Climate Change element that contains goals, policies, and actions to reduce the impacts of climate change in Richmond. Transportation is the

second-largest source of greenhouse gas emissions in Richmond. One of the key policies in the Climate Change Element is the development of a Climate Action Plan that includes a comprehensive greenhouse gas inventory and forecast, to provide the basis for the action plan's goals, strategies, and effectiveness measurements. Vehicle-miles traveled (VMT) is a key factor in calculating the transportation-related greenhouse gas emissions.

To provide a baseline by which to evaluate the impact of the proposed General Plan on VMT, the existing VMT was estimated, both in total and per trip. The CCTA Travel Demand Model was used to determine the VMT for Richmond's external trips, internal trips, and total trips. External trips are defined as those that either begin or end outside the City limits. Internal trips are those with both an origin and destination within the City limits. The entire trip length was counted for internal trips, but only 50 percent of the trip length was counted for external trips, because only one end of those trips are generated by a Richmond land use. The model estimates that about 13 percent of the daily VMT generated by Richmond land uses remains internal to Richmond. This measurement illustrates the changes likely to occur as Richmond evolves into a community that provides more work, living, and recreational opportunities; thus, minimizing the need for travel to/from other areas of the Bay Area.

Existing Daily VMT is presented in Table 3.14-5. Daily VMT for internal and external trips were estimated using the CCTA Travel Demand Model for the Year 2005. The Bay Area average VMT per trip was calculated based on total daily VMT and total daily vehicle trips reported by the Metropolitan Transportation Commission (MTC) for the San Francisco Bay Area.

Location	Total VMT	VMT per Trip
Richmond – internal trips	209,000	2.6
Richmond – external trips	1,460,000	12.0
Richmond – overall	1,668,000	8.2
Bay Area	154,172,000	8.4

Sources: CCTA Travel Demand Model, 2005; Metropolitan Transportation Commission for the San Francisco Bay Area, 2006; and Fehr & Peers, 2009.

Public Transit

About 13 percent of Richmond households do not have access to a car and are entirely dependent on public transit for medical and other needs. Most Richmond residents and businesses are well served by local and regional public transit including Bay Area Rapid Transit (BART), Amtrak, AC Transit and West Contra Costa Transit Authority (WCCTA). Richmond also has an extensive paratransit system with service provided by AC Transit, BART, and the City of Richmond.

While more than 95 percent of Richmond residents live within a quarter mile of a local public transit stop, the El Sobrante Valley is not adequately served. Night and weekend bus service may not adequately serve the needs of residents, especially low-income households. Only one of Richmond's four middle and high schools are directly served by public transit.

The following is a more detailed description of Richmond's public transit system including bus transit, Bay Area Rapid Transit (BART) and Amtrak train services.

Bus Transit

The AC Transit bus routes in Richmond are shown in Figure 3.14-3. AC Transit operates nine local routes in Richmond. These include the following lines: 7, 70, 71, 72, 72M, 72R, 74, 76, 376, and trans-bay routes LA, L, H, and 800. The buses typically operate with 30 to 60-minute headways and connect to key destinations within and near Richmond including the Richmond Parkway Transit Center at Richmond Parkway and Blume Drive, the Richmond BART Station, the El Cerrito Del Norte BART Station, Downtown Richmond, Marina Bay, Contra Costa College, and Hilltop Mall. In addition to local routes, three AC Transit Transbay routes operate from Richmond to the San Francisco Bay Terminal in the a.m. peak hours and from the San Francisco Bay Terminal to Richmond in the p.m. peak hours. Table 3.14-6 shows the typical headways on the Richmond routes.

Route	Weekday Peak	Midday	Evening	Saturday	Sunday
7	40	40	40	45	45
70	30	30	30	60	60
71	30	30		60	60
72	30	30	36	30-36	30-36
72M	30	30	30-60	30-60	30-60
72R	12	12			
74	30	30	30-60	30/60	30/60
76	30	30	30	60	60
LA	10-30				
L	15/20				
H	20-30				
376			30		
800			60		

Source: AC Transit website, 2009.

Route 72, which passes through San Pablo, was identified in the 2003 Short Range Transportation Plan as one of the five busiest AC Transit Routes within the system. The daily ridership in 1998 for the line was 13,000.

Other transit providers serving Richmond include Golden Gate Transit, which operates two routes (40/42) to the San Rafael Transit Center from Richmond, and WestCAT, which provides a commute express bus route from the Richmond Parkway Transit Center to the El Cerrito Del Norte BART Station. WestCAT also provides express bus service between the El Cerrito Del Norte BART Station and Hercules Transit Center with stops alternating between Richmond Parkway Transit Center and Hilltop Shopping Center. The recently completed Richmond Intermodal Transit Station, located near the Richmond BART station, provides links between BART, Amtrak, AC Transit, and WestCAT.



Line designation
 65-72 Line designation
 73-79 Line terminal
 Local service
 Express portion of route, with stops
 Rapid Bus service, with stops
 Route variations
 Bus turnaround
 BART or Light Rail line and station
 Other transit services

Men-Fri, 7-day only service
 6A Commute-hours service (no midday or night service)
 6B Daytime
 6C Day and evening (last weekday bus after 8 p.m.)
 6D Day and late evening (last weekday bus after 10 p.m.)
 6E All Nighter (approx. 1 a.m. to 5 a.m.)
 6F Other operating hours such as special late-night, weekend or midday only (see timetable for details)
 6G Shopper Shuttle (midday some weekdays)
 6H Transbay Service indicated by lettered route symbols
 6I Rapid Bus

Hours of operation are for weekdays; weekend service is often different. Times indicated are for service in both directions. Buses are generally available after these hours. (See Frequency Guide on reverse and public timetables for more details.)

Points of Interest:
 Park & Ride lot
 Library
 Public school
 Private school
 Point of interest
 Hospital
 Shopping center

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Source: AC Transit, 2008.



FIGURE 3.14-3 Existing Bus Routes

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Paratransit Service

The Richmond Paratransit Program provides low-cost transportation services to elderly persons and persons with disabilities. It serves residents from Richmond, North Richmond, Kensington, and El Sobrante. Among the programs offered by the Paratransit Division are: demand-response and fixed-route transportation services, individual trips, group trips, special purpose group tours, shuttle services, nutrition site transportation, and a subsidized taxi program.

Bay Area Rapid Transit

The Downtown Richmond BART station is the northwestern terminus of this regional rail system. BART also operates a servicing facility near the Downtown station. As reported by BART, on an average weekday, 3,680 riders enter the Richmond Station. Of these riders, 2,686 are home-origin riders. Table 3.14-7 shows the reported mode of access for these trips, as compared to the BART system as a whole. Bus use and drop-offs are substantially higher at the Richmond station than BART system-wide.

Mode of Access	Richmond	Systemwide ¹
Walk Only	24%	31%
Bus/Transit	21%	15%
Bicycle	2%	4%
Drive	53%	49%
Drive Alone	35%	34%
Carpool	3%	5%
Dropped Off	15%	10%
Total	100%	100%

Note:
1. Overall system-wide totals do not include San Francisco International Airport.
Source: 2008 BART Station Profile Study.

Amtrak

Amtrak's Capitol Corridor and San Joaquin routes stop at the Richmond Intermodal Transit Station. The westbound route connects with Berkeley, Emeryville, San Francisco and Oakland. Eastbound, the Capitol Corridor extends to Davis, Sacramento, and Auburn in California, and Reno and Sparks via bus in Nevada. In each direction, 16 trains stop at the Richmond Amtrak Station on the Capitol Corridor route. In total, 40 passenger trains per weekday make stops at the Richmond Station.

Water Transportation

Richmond's location on the San Francisco and San Pablo Bays makes the water a valuable resource for recreation and public transportation. There are several marinas for recreational boats

including Richmond Marina, Richmond Yacht Club located in the Richmond Inner Harbor, and Point San Pablo Yacht Harbor located on San Pablo Bay.

Richmond is a candidate for a new East Bay ferry terminal. The San Francisco Bay Area Water Emergency Transportation Authority (WETA) included Richmond as a potential terminal location site in its 2005 Terminal Site Analysis. WETA prepared the Richmond Waterfront Transit-Oriented Development (TOD) Plan to present a preferred alternative and a Development Concept Plan for the potential terminal. The recommended site for the ferry terminal is in Marina Bay Yacht Harbor at the existing G Dock.

Proposed land uses within the Waterfront TOD Plan Area include: high-density mixed-use development close to the terminal; new roads in a grid pattern to reduce block lengths and provide for greater walkability; and a transitional area from the new development to existing office and industrial developments (without residential units). Overall, the TOD Plan aims to achieve a pedestrian, transit and waterfront-oriented neighborhood, good intermodal access to the ferry terminal, the continued coexistence of diverse uses on the Ford Peninsula in Marina Bay, the right amount of parking in strategic locations, and a strong sense of place.

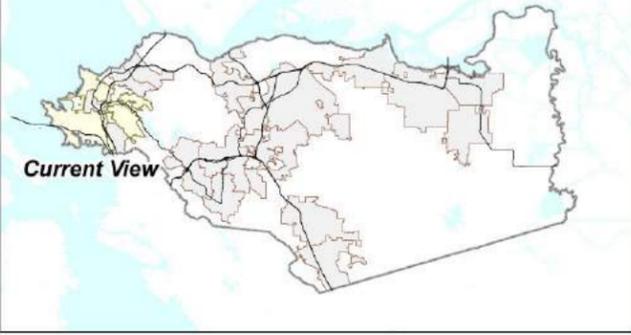
Potential funding sources for the ferry portion of the TOD Plan include the federal SAFETEA-LU Act (2007), the State of California's Proposition 1B Bond (November 2006), Regional Measure 2 (March 2004), and Contra Costa County's Measure J (November 2004).

Pedestrian and Bicycle Circulation

Figure 3.14-4 shows the existing bicycle network in Richmond, along with planned routes as indicated in the Contra Costa Countywide Bicycle and Pedestrian Plan.

Richmond has an extensive network of streets, sidewalks, and trails that link various neighborhoods to commercial districts and corridors, and to neighboring jurisdictions. The grid-based network of streets in the central core areas of the City provide an excellent opportunity to promote walking and bicycling as alternatives to driving. The historic parts of the City, such as Point Richmond, enjoy a high-quality pedestrian environment that can serve as a model for other parts of Richmond. Still, there are many areas that face significant challenges for pedestrians and bicyclists. In addition, only 25 percent of Richmond's 22 schools are directly served by a designated bike path. Richmond experiences a higher rate of pedestrian and bicycle injuries than other cities of comparable size. Historically, Richmond's Iron Triangle neighborhood in particular has been subject to high rates of accidents involving pedestrians. There have been disproportionate numbers of collisions involving bicyclists and pedestrians at the intersection of Harbour Way and Pennsylvania as compared to other intersections in the area. In the North and East neighborhood, speeding on local streets remains a critical concern with the following intersections identified as dangerous hotspots for pedestrians: 23rd Street and Pine Avenue, 23rd Street and California Avenue, 23rd Street and Clinton Avenue, and 23rd Street and Maricopa Avenue. Especially problematic intersections for bicycle safety include: Lowell Avenue and San Pablo Avenue, 36th Street and Clinton Avenue, 26th Street and Downer Avenue, and Macdonald Avenue and San Pablo Avenue.

Contra Costa County Overview



Current View

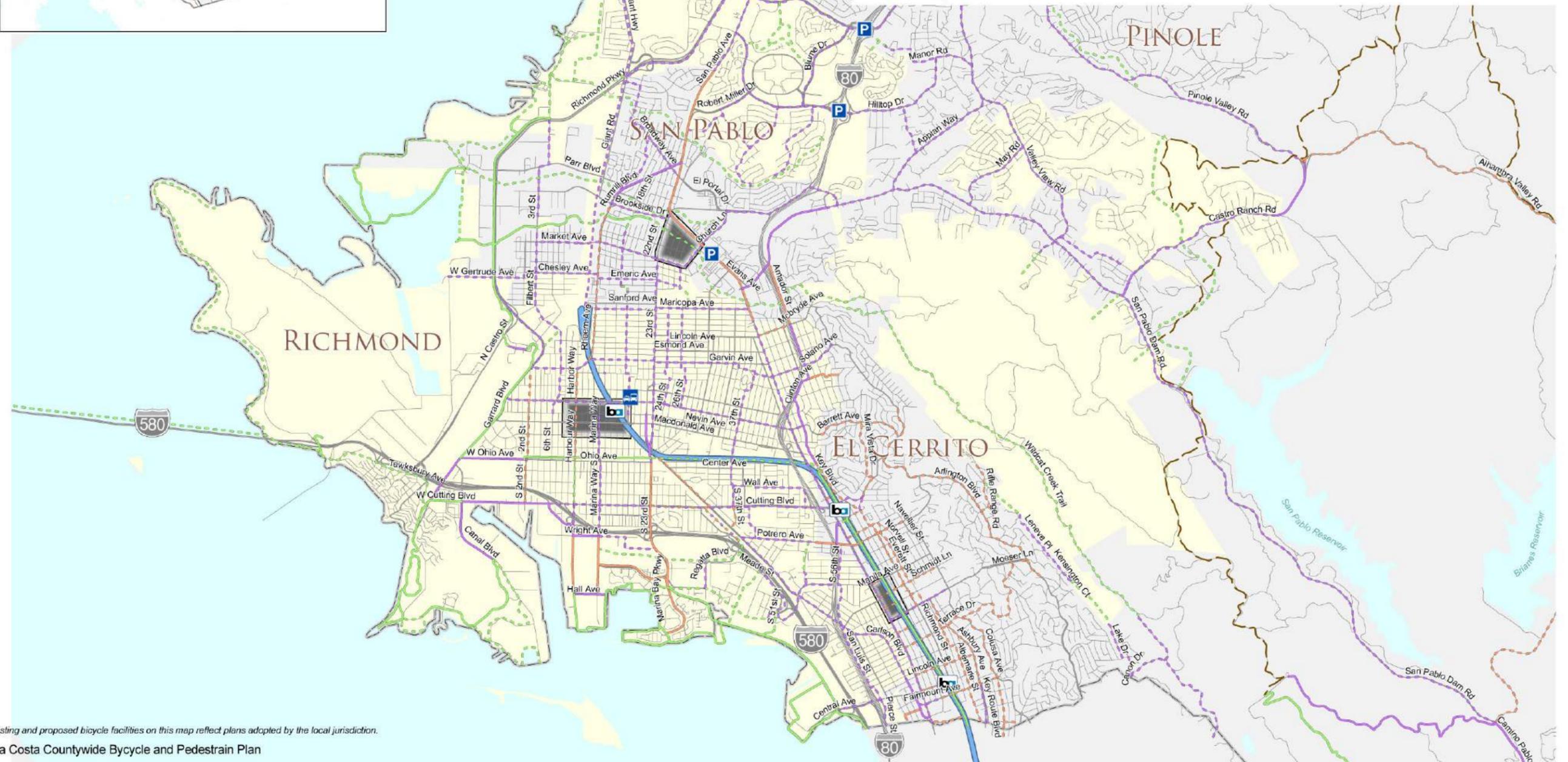
LEGEND

Bicycle Facilities

- Existing Class I
- Proposed Class I
- Existing Class II
- Proposed Class II
- Existing Class III
- Proposed Class III

- Bay Area Ridge Trail
- BART Station
- BART Route
- Future BART Station
- Future eBART Route

- Park-and-Ride
- Rail Station
- Transit Center
- Downtown/Town Center
- City Limit
- County Boundary



The existing and proposed bicycle facilities on this map reflect plans adopted by the local jurisdiction.

Source: Contra Costa Countywide Bicycle and Pedestrian Plan

Fehr & Peers, 2009.



NORTH
NOT TO SCALE



FIGURE 3.14-4
Existing Bike Routes

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The following is a review of the components that make up the circulatory environment for pedestrians and bicycles in Richmond — sidewalks, multi-use trails, and bike paths, lanes, and routes.

Sidewalks

Sidewalks are a primary component of the pedestrian circulation network. Most of Richmond's arterial and collector roadways include sidewalks. However, there are segments that are discontinuous or deteriorating, and areas where walkways are too narrow, creating connectivity problems.

Following World War II, street and sidewalk standards were changed to reflect increased use of automobiles — streets were widened and sidewalks were narrowed. The El Sobrante area along San Pablo Dam Road in particular could benefit from sidewalk or hard-surface trail installation and upgrades. Some sidewalks need upgrades to meet compliance with the Americans with Disabilities Act (ADA).

Multi-Use Trails

Richmond's trails and greenways provide important bicycle and pedestrian connections between some neighborhoods, commercial centers, parks, and the Richmond shoreline. Figure 3.14-5 shows the completed and planned segments of the Richmond portion of the San Francisco Bay Trail. When completed, the San Francisco Bay Trail will provide a 400-mile separated right-of-way for bicycles and pedestrians around San Francisco and San Pablo bays, connecting through Richmond. Ultimately, the Richmond segment of the Bay Trail will provide for recreational as well as utilitarian trips. As of 2010, more than 28 miles of the trail within Richmond had been completed, with approximately 13 additional miles planned. Segments of the Bay Trail are currently located on portions of the Richmond Parkway, Cutting Boulevard, Marina Way, Regatta Boulevard, and in southern Richmond near the Miller-Knox Regional Shoreline and Central Avenue.

The Bay Trail links many of the City and regional parks in Richmond as well as the Richmond Greenway and the Wildcat Creek Regional Trail. Although gaps remain, the Bay Trail is largely completed on Richmond's southern shoreline between Point Isabel Regional Shoreline and Point Richmond. The next phase of improvements will link Point Richmond with Point Molate, complete the Bay Trail on the San Pablo Peninsula, and link Wildcat Creek Regional Trail with Point Pinole Regional Shoreline.

The Richmond Greenway is being developed in phases on an old railroad right-of-way that passes through core neighborhoods of the City. When completed, it will connect the Bay Trail at Richmond Parkway and Ohio Avenue to the Ohlone Greenway Trail along the BART tracks in El Cerrito.

The Wildcat Creek Trail will extend east from the Wildcat Creek Viewpoint through San Pablo, connecting to Wildcat Canyon Regional Park.



FIGURE 3.14-5
Richmond Bay Trail



For planning purposes, bicycle facilities are categorized into three different classes based on their degree of separation from traffic. In general, *Class I bike paths* provide exclusive use by bicycles and pedestrians, *Class II bike lanes* provide shared use of vehicular roadways via a striped lane solely for bicycles, and *Class III bike routes* provide a signed, designated route along a shared right-of-way with motor vehicles and pedestrians. Although Richmond's planned trails and greenways will provide valuable connections, the bikeway system remains incomplete, with gaps that make it difficult to travel across the City or between key destinations within the City.

Freight Rail

There are 28 designated truck routes in the City of Richmond, many of which are located south of I-580 where they access port terminals on the Richmond Harbor. Truck routes also extend to northern Richmond near Hilltop Mall and on I-580, I-80, and the Richmond Parkway.

Freight movement is also accomplished by rail in Richmond. Burlington Northern Santa Fe (BNSF), Union Pacific (UP), and Richmond Pacific (RP) operate the various tracks in the City. Figure 3.14-6 shows the tracks and the operating companies. BNSF operates an average of 20 trains per day, with train lengths varying from 10 to 100 cars. On the tracks north of Garrard Boulevard, trains travel up to 55 mph, and on tracks west and south of Garrard Boulevard, trains travel 10 mph.

UP owns the Capitol Corridor tracks that passenger and freight trains use on a daily basis. The passenger train headways are described in the transit section. There are about 24 passenger trains and 43 freight trains using these tracks on a typical weekday. The Capitol Corridor tracks run parallel to Carlson Boulevard, stop at the Richmond BART/Amtrak Station, then continue parallel to Rumrill Boulevard toward Point Pinole. Amtrak passenger trains travel up to 70 mph and the UP freight trains travel up to 55 mph.

RP operates on tracks south of I-580, between South 4th Street and Regatta Boulevard in the Richmond Harbor area and a section of track between the Richmond Parkway and Rumrill Boulevard. RP runs two trains with 10 to 20 cars on the northern tracks, and as many as 32 trains per day, with 2 to 20 cars per train on the southern tracks.

There are many locations in Richmond with at-grade railroad crossings of local streets. These crossings present train/vehicle and train/pedestrian conflict issues, due to inherent difficulties with vehicle traffic flow, train movements, and sensitive near-by land uses.

Water Transportation

Richmond's location on the San Francisco and San Pablo Bays makes the water a valuable resource for recreation and freight transportation. There are several marinas for recreational boats including Richmond Marina, Richmond Yacht Club located in the Richmond Inner Harbor, and Point San Pablo Yacht Harbor located on San Pablo Bay.

Three freight port terminals are located on the Richmond Inner Harbor, and Chevron operates its own pier north of Point Richmond. These are all located south of I-580 where there is interaction

between the port terminals, freight trains, and truck traffic. Port Terminal 1 is located on the west side of Harbor Channel. Many vehicles are moved through this site, driving on/off ships. On the east side of Harbor Channel, Terminals 2 and 3 are primarily used for the import and export freight containers.

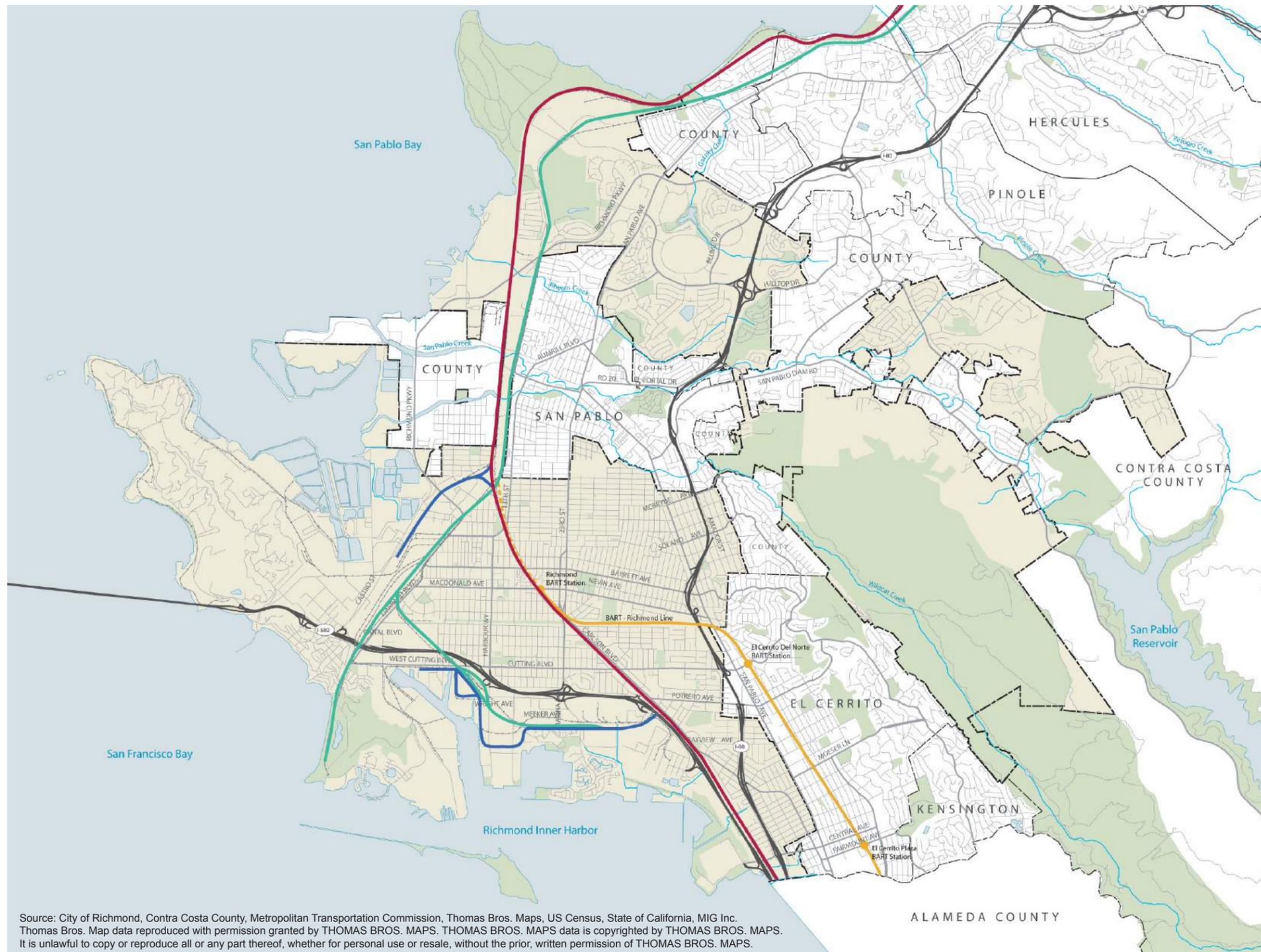
Richmond is a candidate for a new East Bay ferry terminal. The Bay Area Water Transit Authority (WTA) included Richmond as a potential terminal location site in its 2005 Terminal Site Analysis. Based on the study's criteria, the report deemed Harbour Way South on Ford Peninsula in Marina Bay as the best location for a proposed terminal in Richmond. A subsequent study of the existing conditions near three potential transit-oriented development (TOD) sites on the Peninsula was completed by the WTA in June 2006. The study concluded that the Marina Bay side of the Ford Peninsula is an excellent location for ferry-related transit oriented development, and that Site #3 on the Inner Harbor was the best site from a TOD perspective. The strengths of Site 3 include:

- More existing residential and commercial development, and developable land, than the other two sites;
- Excellent connections to existing pedestrian and bicycle paths;
- Ability to accommodate additional ferry-induced traffic flow;
- A wealth of opportunity sites nearby;
- Greater ability than the other sites to foster a synergy of uses with existing development;
- A greater ability to police itself with "eyes on the street" than at the other sites;
- Inner cove location providing protection from harsh Bay winds;
- Less potential for encroachment of future terminal-related development onto Port and industry lands; and
- Favorable response from local stakeholders.

The study also identified the challenges that would need to be addressed to ensure the success of a TOD project for the Richmond Waterfront. They include:

- The large number of railroad crossings within the project area;
- Interstate 580, which creates a barrier between the project area and the residential neighborhoods to the north;
- A dearth of east-west roadway connections;
- Large industrial parcels; and
- Pedestrian-unfriendly built form in the area.

The next steps in the WTA's study are creation of alternative development scenarios, evaluation of alternatives, selection of a preferred design alternative, and preparation of a Final Richmond Waterfront TOD Plan.



LEGEND:

-  City of Richmond
-  Other Jurisdictions
-  Parks
-  Waterbodies
-  Streams
-  Highways
-  Major Arterials
-  Local Roads
-  BART Alignment and Stations
-  Union Pacific and Amtrak Lines
-  Burlington Northern Santa Fe Railway
-  Richmond Pacific Railroad



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Fehr & Peers, 2009.



FIGURE 3.14-6
Existing Rail Lines

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IMPACTS AND MITIGATION MEASURES

Significance Criteria

The *CEQA Guidelines* provide the following guidance on significance criteria for impact assessments. The following guidelines reflect proposed amendments made by the Natural Resources Agency to the Office of Planning and Research on April 13, 2009. Impacts of the proposed General Plan would be significant if they:

- Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.) taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roadway or highways;
- Substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation.

For the purposes of this EIR, the above general significance criteria are interpreted as follows in evaluating the proposed General Plan:

Roadway Impact Criteria

Based on existing Caltrans, CCTA, WCCTAC, and City of Richmond standards, the proposed General Plan would have a significant impact on traffic if one of the following conditions occurs due to growth in traffic.

- The addition of traffic degrades freeways and Routes of Regional Significance currently operating at or above the CCTA/WCCTAC LOS standard to below the standard;
- The addition of traffic degrades other key City arterials (that are not Routes of Regional Significance) currently operating at or above LOS D to below LOS D (i.e. LOS E or F);
- The addition of traffic degrades highways or roadways currently operating worse than their LOS standard by one or more letter grades, and increases the volume-to-capacity ratio by at least 0.05.
- The addition of traffic degrades highways or roadways projected to operate worse than their LOS standard in the No Project case, by one or more letter grades, and increases the volume-to-capacity ratio by at least 0.05.

Maintaining consistency with the CCTA Congestion Management Plan and the WCCTAC 2008 Action Plan Update, the following LOS standards are used in this document:

- LOS F on Interstate 80

- LOS E on Interstate 580
- LOS E on the CCTA-monitored Routes of Regional Significance, including San Pablo Avenue and San Pablo Dam Road
- LOS D on the WCCTAC-monitored Routes of Regional Significance, including those with higher standards than imposed by the CCTA, including Richmond Parkway, 23rd Street, Carlson Boulevard, Castro Street, Cutting Boulevard, and El Portal Drive
- LOS D on all other City arterials included in the impact analysis that are not Routes of Regional Significance

Emergency Access Impact Criteria

An emergency vehicle access impact is considered to be significant if it would:

- Provide inadequate design features to accommodate emergency vehicle access and circulation; or
- Cause a substantial decrease in travel speeds on primary emergency response routes such that emergency vehicles would be significantly delayed.

Pedestrian Impact Criteria

A pedestrian impact is considered significant if it would:

- Disrupt existing pedestrian facilities;
- Interfere with planned pedestrian facilities; or
- Create inconsistencies with adopted pedestrian system plans, guidelines, policies or standards.

Bicycle Impact Criteria

A bicycle impact is considered significant if it would:

- Disrupt existing bicycle facilities;
- Interfere with planned bicycle facilities; or
- Conflict or create inconsistencies with adopted bicycle system plans, guidelines, policies or standards.

Transit Impact Criteria

A transit impact is considered significant if it would:

- Result in development that is inaccessible to transit riders; or
- Create a demand for transit service that cannot be served by transit agencies.

Traffic Analysis Methodology

The transportation impact evaluation assesses the effect of: (1) the reasonably foreseeable 2030 development of the proposed General Plan land use plan; (2) the circulation infrastructure changes shown in the Circulation Element maps (see Figures 3.14-7, 3.14-8, and 3.14-9); and (3) the goals, policies, and actions contained in the proposed General Plan Circulation Element.

Three scenarios are evaluated for purposes of this EIR:

- Existing (2007) Conditions, which represents transportation conditions in 2007;
- 2030 No Project – Cumulative (2030) Conditions, representing the estimated transportation effects of development through 2030 under the current General Plan and zoning; and
- 2030 With proposed General Plan – Cumulative (2030) Conditions, representing the estimated transportation effects of development through 2030 under the proposed General Plan.

Impacts are assessed based upon comparison between Existing (2007) conditions and the 2030 proposed General Plan case, as well as between the 2030 No Project and 2030 proposed General Plan cases.

Travel Demand Forecasting

The Contra Costa Transportation Authority Travel Demand Model (CCTA Model) was used to forecast city-wide vehicle demand on the key roadways throughout the City. The model uses the traditional 4-step method to forecast vehicle trips. The process begins with the trip generation step, which involves estimating the number of person trips that would occur with the proposed General Plan. The trip distribution step determines where those trips start and end. The mode choice step is the tool for converting person trips to vehicle trips, and reducing vehicle trips to account for carpooling and alternate travel modes. The fourth step assigns the vehicle trips to the roadway network.

Model Development

Baseline (2007) Model Development and Validation

The CCTA model has a base year of 2000. To provide a reasonable comparison between the model and traffic counts collected in 2007, the base year model was modified to better reflect conditions at the time of the NOP in the study area and to establish a new base year for future forecasts. Details on the changes made to the 2000 CCTA roadway network and land use assumptions to develop a 2007 CCTA model are provided in the May 2007 memo *Traffic Forecasting Approach for Richmond General Plan*, included in the Technical Appendix.

2030 Model Development – Roadway Network

For the 2030 No Project model, the 2030 CCTA model was used as a starting point. The changes made to the base year model to more accurately reflect roadway lanes and speeds were carried

through to the 2030 model. In addition, assumptions were made regarding the following planned roadway projects in the City of Richmond:

- Interstate 580 will have an additional HOV lane in both directions throughout the City
- 23rd Street was narrowed to a two lane bi-directional facility between Carlson Avenue and San Pablo Avenue, consistent with the current 23rd Street planning effort
- Barrett Avenue was narrowed to a four lane facility between 23rd Street and Harbour Way, to provide for the construction of bicycle lanes

For the 2030 With Draft Plan model, the additional connection between the Marina Bay area and the Bayview/Carlson interchange was added, as proposed in the Plan (see Figure 3.14-7.)

2030 Model Development -- Land Use

Land uses within Richmond were modified from the CCTA 2030 model to reflect the scenarios studied in the General Plan, as described below.

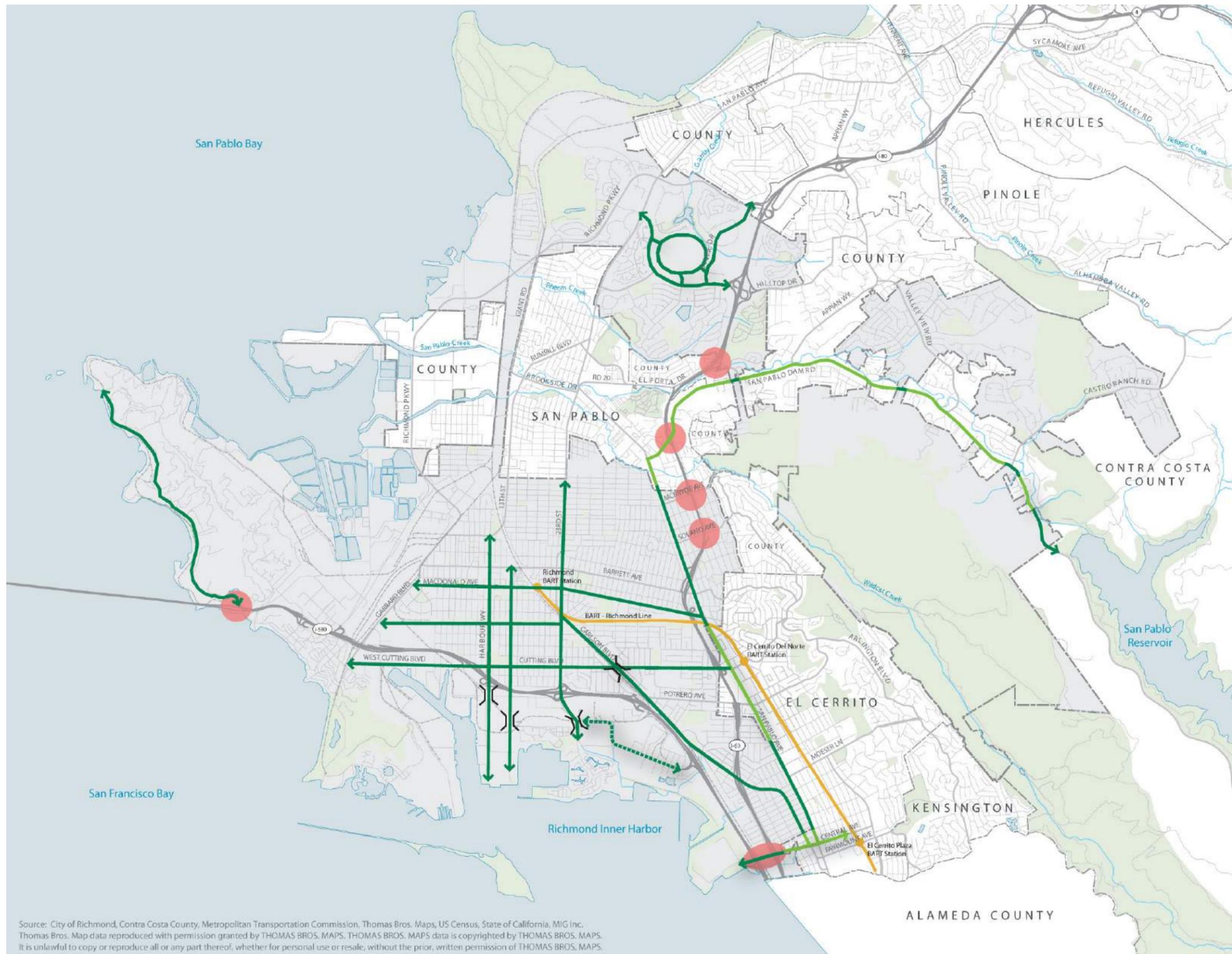
- For the 2030 proposed General Plan case, the land uses were developed by MIG assuming that Richmond's population would grow at a share of 13 percent of the population growth within Contra Costa County assumed in the Association of Bay Area Governments *Projections 2007*. This land use growth was developed by MIG on a parcel by parcel basis, and translated into a form usable by the CCTA Model, using geographical correspondences between parcels and model travel analysis zones (TAZs), and using realistic assumptions for dwelling units per acre, floor to area ratio, square feet per employee, and residential and employment type distributions agreed on by both MIG and Fehr & Peers.
- For the 2030 No Project case, Richmond's historic proportional capture of the regional growth, 8.39 percent, was projected forward and distributed to underutilized parcels in the areas most likely to develop (the change areas). This approach is almost identical to how the proposed General Plan land uses were developed, just with different population/employee assumptions.

In both the No Project and proposed General Plan cases, the ABAG *Projections 2007* projection of 0.48 jobs per person for the City of Richmond in 2030 was assumed, and applied to the population to obtain total jobs.

The resulting city-wide population and jobs assumed in the model are shown in Table 3.14-8.

RICHMOND GENERAL PLAN LAND USES			
Measure	Base Year (2007)	2030 No Project	2030 Preferred Alternative
Population	107,000	126,400	137,100
Population Growth	n/a	19,400	30,100
Jobs	46,800	64,100	73,100
Job Growth	n/a	17,300	26,300

Source: Fehr & Peers, 2009.



LEGEND:

- Streetscape *
- New Roadway Alignment
- Streetscape (Surrounding Jurisdictions)
- Grade Separation
- Freeway Interchange



*Streetscape improvements may include pedestrian and bicycle amenities such as sidewalks, street lights, street furniture, signage, crosswalks and trees.



NORTH
SCALE IN MILES

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FIGURE 3.14-7
Proposed General Plan Circulation Element Map 4.3: Planned Roadway Improvements

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Richmond GPU EIR



LEGEND:

- BART Alignment and Stations
- Shuttle System
- Richmond Cultural Heritage Water Trail
- Regional Ferry Service
- Transit Priority Street
- Intermodal Transit Station
- Future Intermodal Transit Station

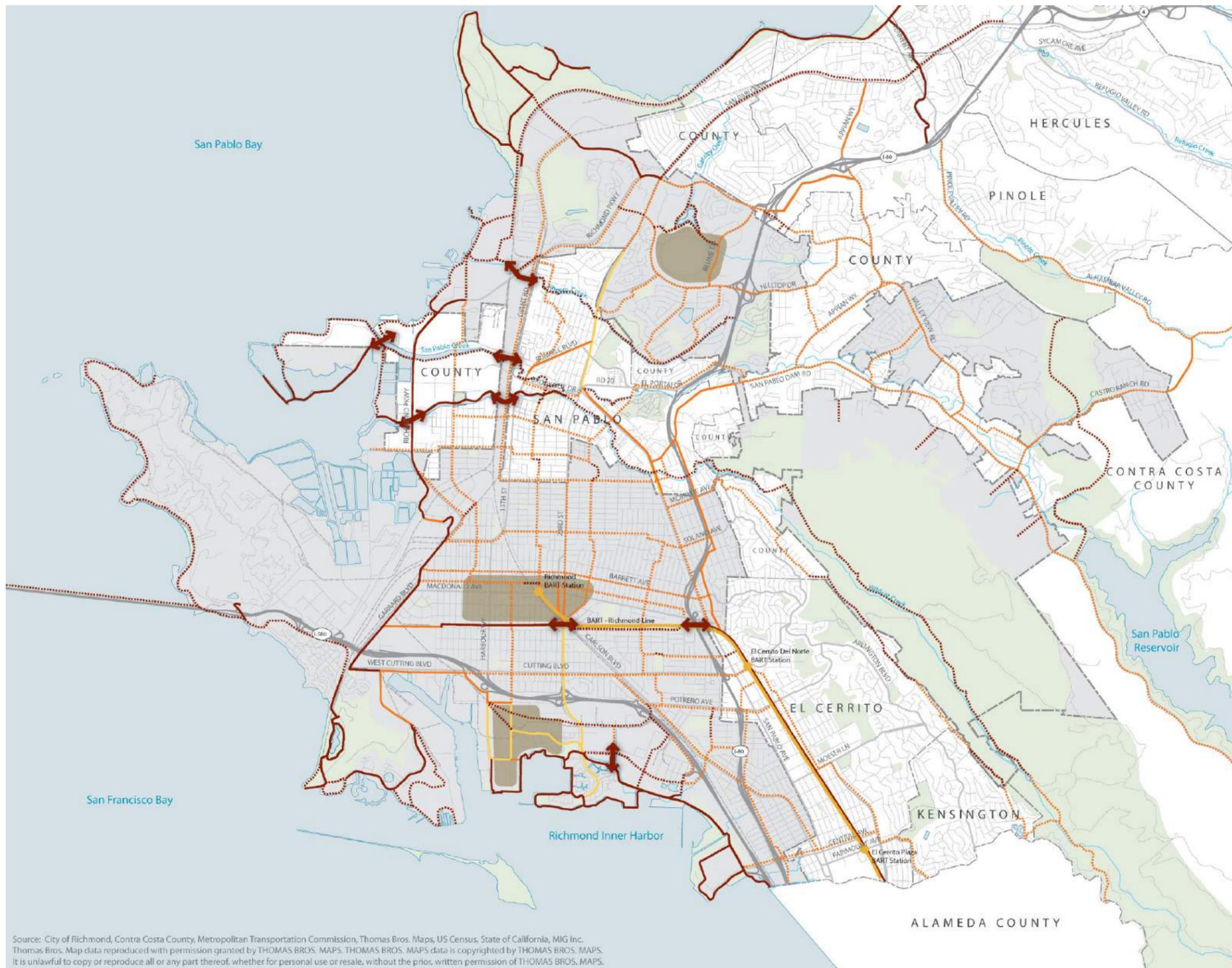


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FIGURE 3.14-8
Proposed General Plan Circulation Element Map 4.2: Planned Transit Improvements

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LEGEND:

Existing Bicycle Routes

- Class I
- Class II
- Class III

Planned Pedestrian Improvements and Bicycle Routes

- ⋯ Class I Bicycle Route
- ⋯ Class II and III Bicycle Route
- ↔ Bicycle and Pedestrian Connector
- Pedestrian Improvement District



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FIGURE 3.14-9
Proposed General Plan Circulation Element Map 4.1: Planned Pedestrian/Bicycle Improvements

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Trip Generation

Land use assumptions for the No Project and proposed General Plan cases were entered into the CCTA Travel Demand Model, and the model computed trips associated with each alternative for each TAZ in the model. Using a geographical correspondence between the model's TAZs and the "change areas" defined in the proposed General Plan, the daily trips associated with the change areas were estimated. Table 3.14-9 shows the results of this analysis. Note that these are daily *person-trips* generated, as opposed to daily vehicle trips.

Change Area		Existing Trips	New Trips Generated	
			No Project	Preferred
1	Downtown/Macdonald Ave	46,493	54,573	47,707
2	Hilltop Area	84,362	11,315	50,795
3	Ford Peninsula in Marina Bay	6,489	1,496	26,781
4	San Pablo Ave. Corridor	4,877	18,286	7,690
5	23rd St. Corridor	3,657	7,530	4,689
6	Marina Way Corridor	2,054	3,454	2,931
7	Cutting Blvd Corridor	4,821	4,655	5,705
8	Harbour Way Corridor	1,071	1,598	1,255
9	Ohio Ave Corridor	4,758	706	2,471
10	Carlson Blvd Corridor	7,043	986	4,249
11	Northern Parkway	11,367	1,872	5,004
12	Northshore	2,461	2,138	8,244
13	San Pablo Peninsula	8,406	4,948	36,334
14	Port Priority	5,205	4,779	1,873
15	Regatta/Marina Bay	7,624	14,231	8,606
16	Southern Gateway	8,027	2,724	8,751
*	Other areas	10,649	20,534	45,883
Total		219,365	155,824	268,967

Note: The analysis assumes additional growth outside of the 16 identified change areas.
Source: Fehr & Peers, September 2009.

Roadway Segment Levels of Service

The CCTA Travel Demand Model was run for the 2007, 2030 No Project and 2030 proposed General Plan cases, to obtain daily roadway model volumes. The change in volume between the existing and future model runs was added to existing daily counts for each study segment to obtain forecasts for daily roadway volumes in 2030, for the 2030 No Project and 2030 proposed General Plan cases. Cumulative levels of service are obtained in the same manner as existing levels of service, using capacity thresholds developed using the Transportation Research Board's Highway Capacity Manual (HCM) methods. Table 3.14-10 shows levels of service for each of the study segments in both the No Project and proposed General Plan cases. In addition, the level of service standard is presented to illustrate whether segments operate adequately. Levels of service in shaded cells indicate a segment that is operating below its standard.

#	Roadway	Capacity	LOS Standard	No Project		Proposed General Plan	
				Daily Volume	LOS	Daily Volume	LOS
1	Richmond Parkway from Blume to San Pablo	100,500	D	62,100	C	62,600	C
2	Blume from Richmond Parkway to Hilltop	38,200	D	13,600	A	16,600	A
3	Hilltop from I-580 to San Pablo	38,200	D	13,500	A	15,300	A
4	Robert Miller from San Pablo to Hilltop	38,200	D	22,800	C	26,300	D
5	San Pablo from Richmond Parkway to Robert Miller	38,200	E	24,700	C	24,700	C
6	Richmond Parkway from San Pablo to Giant	100,500	D	50,800	B	53,700	C
7	Richmond Parkway from Giant to Castro	67,000	D	50,200	D	52,500	D
8	Richmond Parkway from Castro to Barrett	67,000	D	21,900	B	24,800	B
9	13th/Pennsylvania from Sanford to Harbour	38,200	D	29,300	D	30,400	D
10	23rd from Sanford to Grant	17,300	D	26,400	E	26,500	E
11	Barrett from Richmond Parkway to Harbour	38,200	D	12,500	A	15,800	A
12	Barrett from Harbour to 22nd	38,200	D	16,800	A	18,800	B
13	Barrett from 22nd to San Pablo	38,200	D	15,100	A	14,900	A
14	MacDonald from Richmond Parkway to Harbour	38,200	D	6,800	A	7,300	A
15	MacDonald from Harbour to 22nd	38,200	D	14,000	A	14,600	A
16	MacDonald from 22nd to San Pablo	38,200	D	18,900	B	17,500	A
17	Richmond Parkway from Barrett to MacDonald	67,000	D	26,600	B	29,200	B
18	Harbour from Barrett to MacDonald	38,200	D	22,000	C	22,800	C
19	22nd from Grant to Bissell	17,300	D	13,900	D	13,800	D
20	23rd from Grant to Bissell	17,300	D	13,900	D	13,800	D
21	Castro from Richmond Parkway to I-580	67,000	D	38,000	C	38,700	C
22	Richmond Parkway from MacDonald to Cutting	67,000	D	27,600	B	30,800	B
23	Harbour from MacDonald to Cutting	38,200	D	24,500	C	26,800	D
24	23rd from Bissell to Cutting	38,200	D	23,600	C	24,000	C
25	Carlson from 23rd to Cutting	38,200	D	9,900	A	11,200	A
26	Cutting from S Garrard to Harbour	38,200	D	6,100	A	6,300	A
27	Cutting from Harbour to 23rd	38,200	D	14,300	A	16,900	A
28	Cutting from 23rd to Carlson	38,200	D	20,600	B	23,600	C
29	Cutting from Carlson to I-80	38,200	D	21,100	C	24,700	C
30	Canal from Cutting to Marina	38,200	D	7,800	A	7,800	A
31	Harbour from Wright to Marina	38,200	D	10,100	A	13,100	A
32	Marina Bay Pkwy from Meeker to Marina	38,200	D	13,700	A	13,300	A
33	Carlson from Cutting to I-80	38,200	D	11,700	A	17,300	A
34	Central from I-580 to I-80	38,200	D	31,000	D	27,400	D
35	San Pablo Dam from Barranca to El Portal	38,200	E	38,300	F	38,500	F
36	San Pablo Dam from Castro Ranch to City Limits	38,200	E	26,200	D	26,700	D
37	Castro Ranch from Hillside to City Limits	27,750	D	10,500	A	10,600	A
38	Valley View from Sobrante to Amend	38,200	D	17,900	A	17,800	A
39	I-80 from City Limits to Richmond Pkwy	172,800	F	241,400	F	240,000	F
40	I-80 from Richmond Pkwy to Hilltop Dr	129,600	F	211,800	F	209,500	F
41	I-80 from Hilltop Dr to El Portal Dr	172,800	F	230,600	F	229,900	F
42	I-80 from El Portal Dr to San Pablo Dam Rd	151,200	F	225,400	F	224,200	F

#	Roadway	Capacity	LOS Standard	No Project		Proposed General Plan	
				Daily Volume	LOS	Daily Volume	LOS
43	I-80 from San Pablo Dam Rd to Solano Ave	140,400	F	223,700	F	221,500	F
44	I-80 from Solano Ave to San Pablo Ave	151,200	F	237,900	F	233,000	F
45	I-80 from San Pablo Ave to Cutting Blvd	172,800	F	236,500	F	232,500	F
46	I-80 from Cutting Blvd to Potrero Ave	129,600	F	206,100	F	205,100	F
47	I-80 from Potrero Ave to Carlson Blvd	129,600	F	222,100	F	220,800	F
48	I-80 from Carlson Blvd to Central Ave	129,600	F	211,600	F	210,400	F
49	I-80 from Central Ave to City Limits	129,600	F	204,000	F	206,000	F
50	I-580 from I-80 to Central Ave	129,600	E	116,100	D	119,300	E
51	I-580 from Central Ave to Bayview Ave	129,600	E	114,800	D	127,400	E
52	I-580 from Bayview Ave to Regatta Blvd/Erlandson St	151,200	E	118,900	D	118,100	D
53	I-580 from Regatta Blvd/Erlandson St to 23 rd St/ Marina Bay Pkwy	151,200	E	108,100	C	107,100	C
54	I-580 from 23rd St/Marina Bay Pkwy to Harbour Way/ Cutting Blvd	151,200	E	93,800	C	99,900	C
55	I-580 from Harbour Way/Cutting Blvd to Canal Blvd	151,200	E	79,700	C	88,100	C
56	I-580 from Castro St to Western Dr	140,400	E	102,200	C	115,600	D
57	I-580 from Western Dr to Richmond Bridge	86,400	E	105,000	F	107,000	F

Source: Fehr & Peers, September 2009, developed using HCM Methodology/HCS+ Software

Cumulative Daily Vehicle Miles Traveled

Cumulative Daily VMT is presented in Table 3.14-11. Daily VMT for internal and external trips were estimated using the CCTA Travel Demand Model for the Year 2030.

Trip Type	Total VMT Cumulative No Project	VMT per Trip	Total VMT Cumulative With Draft Plan	VMT per Trip
Richmond – internal trips	279,000	2.6	345,000	2.7
Richmond – external trips	1,862,000	12.2	2,158,000	12.9
Richmond – overall	2,141,000	8.2	2,503,000	8.4

Sources: CCTA Travel Demand Model, 2005; and, Fehr & Peers, 2009.

Overall Richmond VMT is projected to grow by about 28 percent in the No Project scenario, and by about 50 percent in the Preferred Alternative. This is consistent with the growth in jobs and population shown in Table 3.14-7 – in the No Project scenario, population and jobs are projected to grow 18 percent and 37 percent, respectively, and in the proposed General Plan, population and jobs are projected to grow 28 percent and 56 percent, respectively, with the Point Molate Mixed-Use Project contributing additional VMT.

Impacts and Mitigation Measures

3.14-1 The proposed General Plan may result in traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards. Because it is not certain that project-specific mitigation measures would reduce impacts to a less-than-significant level, this is a *significant and unavoidable impact*.

As shown in Table 3.14-10, three roadway segments are projected to exceed the LOS standard based on the City's current LOS standard and other regional agencies' standards. They are:

- 23rd Street between Sanford and Grant (LOS E)
- San Pablo Dam Road between Barranca and El Portal (LOS F)
- I-580 between Western Drive and the San Rafael Bridge (LOS F)

All of these roadways would exceed capacity with or without implementation of the proposed General Plan – that is, they exceed capacity in the No Project case also. The actual exceedances are due to traffic growth from within the City and other regional sources. On 23rd Street, regional traffic (that is, trips with both ends outside the City limits) makes up approximately 17 percent of the daily volume; on San Pablo Dam Road, the regional traffic constitutes approximately 42 percent of the daily volume; and on I-580, the regional traffic constitutes approximately 68 percent of the daily volume.

While the current LOS standard used by the City is LOS D, the proposed General Plan, particularly through Policy CR1.9 and Action CR1.N, makes clear that the City's circulation system should be managed, going forward, to ensure balanced access to all modes of travel, and that vehicle capacity and LOS would not be the sole criterion by which physical and operational improvements are planned and implemented. The proposed General Plan does not include a vehicle-based LOS standard. Therefore, mitigation of the vehicle LOS impacts relative to the current criteria of Richmond and other regional jurisdictions (Caltrans, CCTA, and WCCTAC) cannot be assured. Consequently, for the above segments, the impact would continue to be significant, because the standards of the appropriate agencies would not be met.

The following proposed General Plan Policies and Actions would contribute to the mitigation of this impact.

Policies

- CR1.1 Balanced Modes of Travel and Equitable Access.** Encourage multiple circulation options in the City and work with transit operators to ensure equitable access for all members of the community. Create streets and corridors that support a variety of travel modes including transit, pedestrians, bicycles and goods movement as well as automobiles. Provide affordable circulation options which meet the needs of low-income populations, seniors, youth and persons with disabilities to ensure equitable access.
- CR1.2 An Interconnected Street System.** Promote an interconnected system of streets that adequately serves current and future travel needs. By promoting an interconnected system for streets along with pedestrian, bicycle and transit facilities, the City can support

streets that are compatible with surrounding land uses, street function and community character.

CR1.3 Local and Regional Linkages. Enhance circulation linkages within the City and region. The City will work with regional transportation agencies such as AC Transit, BART, West Contra Costa Transit Agency, and Amtrak to provide or improve connections to Richmond's key transportation hubs such as the proposed ferry terminal in Marina Bay, the Downtown Intermodal Transit Station, Hilltop Mall, the shoreline and commercial and mixed-use streets. Collaborate with regional, state and federal transportation agencies and neighboring jurisdictions to support a high level of service for all users including pedestrians, bicyclists, and automobile drivers.

CR1.4 Expanded and Affordable Public Transit. Support enhanced and expanded public transit to improve mobility options for residents and visitors. Public transit provides an environmentally-friendly, cost-effective and equitable mode of travel for residents and visitors. Encouraging transit-supportive development patterns can further maximize the efficiency of these systems and help reduce air pollution and greenhouse gas emissions within Richmond.

Public transit service should connect major destinations in Richmond including education institutions, community facilities, regional open space areas and major commercial corridors to serve a greater number of riders and reduce commuter vehicle miles. All housing units and employment centers in Richmond should have access to a local and regional public transit stop. Ensure that all transit stations and routes to and from these stations are safe. As many residents and visitors rely on regional passenger rail and air travel, support efforts to create efficient public transit connections to train stations and regional airports.

Support efforts to expand service at night and on weekends and to make transit affordable and accessible to people of all abilities, seniors, youth and low-income households.

CR1.5 Safe and Convenient Walking and Bicycling. Promote walking and bicycling as a safe and convenient mode of transportation. Improve pedestrian and bicycle amenities to serve the recreation and travel needs of residents and visitors in all parts of Richmond. Where feasible, the City will: connect major destinations such as parks, open spaces, civic facilities, employment centers, retail and recreation areas with pedestrian and bicycle infrastructure; promote shared roadways in residential streets; require new development and redevelopment projects to provide pedestrian and bicycle amenities, streetscape improvements and linkages to planned and completed City and regional multi-use trails; and develop safe routes to schools and out-of-school programs that allow access by bicycle and pedestrian paths or reliable and safe transit.

Explore innovative solutions such as bicycle-sharing programs and encourage businesses, schools and residential developments to provide secure bicycle parking to ensure that these ecologically-friendly, low-impact transportation modes are available to all community members, thereby reducing emissions from vehicles within the City, improving environmental quality and enhancing mobility and connectivity.

CR1.6 Comprehensive Network of Multi-Use Trails. Develop a comprehensive network of multi-use trails including to enhance bicycle and pedestrian connectivity throughout the City and the region. Completion of the Bay Trail will enhance access to the Richmond shoreline and adjacent open space. The proposed San Francisco Bay Water Trail will also provide enhanced access and recreational opportunities to the Bay. Connecting the Richmond Greenway with the Ohlone Greenway and the Bay Trail, and linking Richmond with Marin County with a bicycle trail across the Richmond-San Rafael Bridge will help create a comprehensive network of multi-use trails.

CR1.7 Regional Ferry Service. Support and plan for the proposed ferry service to Richmond. Public transit, bicycle and pedestrian linkages between the proposed ferry terminal and

other major destinations such as the Downtown, BART stations, key commercial areas and civic uses will support a successful regional ferry service. Also, regional ferry service can be supported by allowing higher-density, mixed-use development around the proposed ferry terminal.

- CR1.8 Place-Based Circulation Approach.** Promote the place-based planning approach and classification system. This integrated approach linking functional accessway requirements with surrounding land uses and urban design promotes community character, active use of streets and improved quality of life.

Actions

CR1.A Regional Circulation Improvements. Continue to participate in regional circulation planning efforts to identify and advocate for improvements that enhance regional connectivity and mobility in Richmond.

CR1.B Public Transit and Paratransit Service Improvements. Continue to collaborate with AC transit, BART, West Contra Costa Transit Agency, Amtrak and major employers in Richmond that provide shuttle service to explore the potential for expanding transit in the evenings and late nights, and for people with special needs. Also explore the potential to enhance Richmond's paratransit service. Collaborate with major employers to provide employer-based "open-door" shuttles to BART, the planned ferry terminal and other transit hubs. Collaborate with regional and Contra Costa County transportation agencies to maintain and enhance service within the City and region. Explore strategies to address affordability, access and safety. Expand outreach and information programs to promote transit use.

CR1.C Bicycle and Pedestrian Plans. Develop and implement citywide bicycle and pedestrian plans to make Richmond a more pedestrian and bicycle-friendly City. Identify gaps in the network, major travel routes and priority safety improvements. Designate a network of multi-use trails and off-street paths. Include connections to open space amenities such as Point Isabel, San Francisco Bay Trail, Point San Pablo, Point Pinole and the Richmond Greenway.

Update design guidelines and standards for bicycle and pedestrian facilities and amenities that meet local, state and federal standards. Include a uniform citywide signage plan and comply with all Americans with Disabilities Act (ADA) requirements.

Explore the potential to designate pedestrian priority areas or districts. Include strong connections to the downtown, recreation destinations, commercial and mixed-use streets, transit stations and schools. Address pedestrian and bicycle connections in parking lots.

Collaborate with Contra Costa County and other jurisdictions to ensure links to the regional trail network including the San Francisco Bay Trail and coordination with the County Bicycle and Pedestrian Plan. Coordinate efforts with ongoing bicycle and pedestrian community initiatives.

CR1.D Bicycle, Pedestrian, and Trail Standards. Develop standards for bicycle, pedestrian, and trail improvements and amenities in new development and redevelopment projects. Include requirements for adequate, safe and accessible bicycle parking, drinking fountains, public restrooms, benches, landscaping and lighting. Require new development and redevelopment projects to be pedestrian and bicycle-friendly, and to provide adequate connections to the existing and proposed bicycle and pedestrian network.

Require all new commercial, industrial and residential development to provide access for construction and operation of a trail where a local or regional trail is

designated or planned. Include provisions that require owners of property along the shoreline to provide maximum feasible public access to the shoreline and to complete the Bay Trail as part of any project approval process.

- CR1.E Trails and Greenway Program. Expand multi-use trails and greenways in the City. Provide connector trails and linkages to improve access from neighborhoods in Central Richmond to the regional open space in the hills and along the shoreline. Address barriers such as freeways, the Richmond Parkway and railroad tracks that limit shoreline access. Provide interpretive signs, maps, brochures and signage along the trails to enhance the experience of users and to provide information on the City's cultural and historical assets. Consider creating a Class I multi-use trail loop north of Meeker Tidal Creek and Stege Marsh as a scenic route. Also consider providing trailhead staging areas at the south end of 32nd and 46th streets with bridges across Meeker Tidal Creek.
- CR1.F Community-Based Self-Evaluation and Transition Plan. Develop a community-based self-evaluation and transition plan to work toward access for all and Americans with Disabilities Act (ADA) compliance. With involvement from the community and specifically people with disabilities, the plan should assess the City's ability to serve the needs of all Richmond residents and visitors. Specifically, the plan should assess policies, programs, services and facilities that are available to the public and provide recommendations for adapting service delivery methods and making physical improvements to ensure access for all. The plan should also include a timeline, priorities, implementation and financing strategies.
- CR1.G Capital Improvement Program. Coordinate development with the Capital Improvement Program (CIP) to ensure completion of high-priority facility and infrastructure projects. Ensure that CIP projects are prioritized in a manner that is socially equitable.
- CR1.H Street Capacity and Infrastructure Improvements. Maintain adequate street capacity and reduce congestion for all modes of transportation on the street and freeway system. Address congestion along corridors by enhancing the public transportation system, promoting mixed-use development patterns to reduce vehicle miles traveled and by implementing transportation demand management strategies to increase mobility options.
- CR1.J Streetcar Service Feasibility Study. Explore the feasibility of providing a municipally owned streetcar electric bus or other shuttle service that connects the proposed ferry terminal with the Downtown and other key destinations in the City. Include provisions for a rubber-tire shuttle service as an alternative to a rail-based streetcar system.
- CR1.K Richmond Shuttle Service Feasibility Study. Explore the potential for a City-operated shuttle service to complement transit and paratransit services in Richmond. The shuttle service could link key destinations throughout the City including schools, community facilities, parks, major employment centers, commercial centers, health facilities, transit centers and neighborhoods. In addition, the service should provide convenient weekend access between neighborhoods and cultural, recreational and commercial destinations such as regional open space, national park sites, museums, cultural events and the Downtown. Based on feasibility study outcomes, develop follow-up steps such as a plan for service delivery and funding.
- CR1.L Station Area Plans. Develop station area plans for major transit stations including the BART Station, proposed ferry terminal and Hilltop Mall. Revise and update plans already underway to encourage higher-density development within

a half-mile of stations; improve pedestrian, bicycle and transit connectivity; and address parking, safety and congestion.

- CR1.M Parking Requirements and Parking Strategies Toolbox. Revise parking requirements to support mixed-use urban environments and transit-oriented development along major commercial corridors, the Downtown and major transit stations such as BART and the proposed ferry terminal. Develop a parking strategies toolbox that includes parking supply strategies to increase parking availability, parking management strategies for more efficient use of parking and parking demand strategies to reduce the demand of parking.
- CR1.N Place-Based Street Classification and Multi-Modal Level of Service Standards. Classify all streets in the City to conform to the place-based classification system articulated in the Circulation Element of the General Plan and establish multi-modal level of service (MLOS) standards consistent with each street's intended function and character. Classification of streets and adoption of MLOS standards should occur before any significant improvements or realignments are approved.

In particular, Action CR1.N requires the City to classify all streets in the City to conform to the place-based classification system articulated in the Circulation Element of the General Plan and establish multi-modal level of service (MLOS) standards consistent with each street's intended function and character, which should occur before any significant improvements or realignments are approved. In addition, Actions CR1.A, B, and H address working with regional planning agencies (such as Caltrans, CCTA and WCCTAC, and transit agencies) to develop and implement improvements that would mitigate impacts on roadways either partly or fully under other agencies' jurisdictions.

Proposed policies and implementing actions would reduce the impact by converting more trips to alternative modes and optimizing roadway and intersection capacity within the constraints of the "Place Based" street classification and evaluation policy. However, the impacts would not be reduced to a less than-significant level, due to potential for LOS impacts to remain on 23rd Street between Sanford and Grant and roadways under non-City jurisdiction or monitoring. This impact would remain **significant and unavoidable**.

Full Buildout Analysis

The City's population increase under the full buildout scenario would be beyond the amount of projected regional growth the City anticipates it could capture within the General Plan's 2030 planning horizon. Although such growth is unlikely, if such additional growth were to occur, it would generate additional traffic congestion that would conflict with the City of Richmond's existing traffic standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards. Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the traffic congestion would be substantially greater and would also be significant.

The proposed General Plan includes policies that would reduce traffic associated with development. At this time, however, the extent of additional growth that could occur and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to review to determine impacts on traffic in accordance

with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

3.14-1 *Future projects shall incorporate project-specific mitigation measures to reduce traffic impacts.*

3.14-2 The proposed General Plan's Planned Roadway Improvements would improve mobility and safety for all modes, fulfilling the proposed General Plan's goals and policies regarding safety and provision of a multi-modal circulation system. This is a less-than-significant impact.

Figure 3.14-7 shows Map 4.3 from the proposed General Plan Circulation Element. It identifies a new roadway connection through the South Shoreline area, connecting to the I-580/Bayview/Carlson interchange; three potential railroad/roadway grade separation (bridge) projects; freeway interchange improvement and/or reconstruction projects planned by Caltrans; and several streetscape projects that would implement the Plan's vision of multi-modal, place-based street design. With the exception of the Marina Bay Parkway grade separation, which is substantially funded and in design, the other improvements have not had funding fully identified. Without adequate funding, some of the improvements identified in the proposed General Plan may not be implemented, which could result in inadequate transportation infrastructure to serve the proposed General Plan. This would be a significant impact. It is not expected that the long-term improvements in a General Plan have a full funding and implementation plan identified upon adoption, but rather that the Plan contains policies and actions to ensure that the City take the proper steps toward funding and implementing the improvements.

Proposed General Plan Action CR1.G (listed above under Impact 3.14-1) recognizes high priority projects for the Capital Improvement Plan, and states that the CIP should be regularly updated. In addition, Action CR1.H (also listed above) would reduce congestion for all modes of transportation by enhancing the public transportation system, promoting mixed-use development patterns to reduce vehicle miles traveled and by implementing transportation demand management strategies to increase mobility options. Policy CR3.3 and Action CR3.C, listed below, require that new development within Richmond contribute to infrastructure improvements through a circulation fee. With these policies and actions, the City would provide funding mechanisms to support the proposed transportation infrastructure improvements, which would ensure the impact is **less than significant**.

Policy

CR3.3 Concurrent Infrastructure Development. Require concurrent infrastructure development for new and redevelopment projects that may have a significant impact on the existing circulation system including streets, trails, sidewalks, bicycle paths and public transit.

Action

CR3.C Circulation Impact Fee Program. Update the fee program and a nexus study to provide needed circulation improvements associated with new development and redevelopment projects. Include provisions for improvements to pedestrian,

bicycle and public transit facilities and amenities. Link the fee program to priorities included in the capital improvement program.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to transportation infrastructure improvements would be the same as presented above. Future development would be subject to review to determine impacts related to mobility and safety for all modes of transportation in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None required.

3.14-3 Implementation of the proposed General Plan would produce higher demand for transit service, potentially exceeding the capacity of transit service providers. This is a significant and unavoidable impact.

The proposed General Plan contains several inter-related policies and actions that, taken together, promote higher transit use among Richmond residents, employees, and visitors. These include Policy CR1.4 and its supporting Actions (listed above under Impact 3.14-1), supporting expanded and affordable public transit; Policy CR1.7 and its supporting actions (also listed above), supporting regional ferry service to Richmond; Policy CR1.8 and its supporting Actions (also listed above), promoting the place-based roadway classification system, which would include transit-priority streets; and the following additional policies and actions:

Policy

CR2.2 Complete Streets. Promote mixed-use urban streets that balance public transit, walking and bicycling with other modes of travel. Support pedestrian and bicycle connectivity by restoring and reinforcing Richmond's grid-based network of streets with landscaping and amenities for transit, bicycles, pedestrians, and people with disabilities. Establish a process for modifying streets to support various modes of travel.

Action

CR2.C Streetscape Improvements. Continue to implement streetscape improvements to enhance access, lighting, safety and experience for pedestrians, bicyclists, transit users, and motorists. Focus improvements in areas with the highest need such as the Downtown, mixed-use corridors, key intersections, designated pedestrian priority districts and multi-use trails that connect high-density areas of the City to parks and open space.

Provide universal accessibility improvements, pedestrian-scale lighting and landscaping in streetscape improvements. Explore the potential for establishing assessment districts for implementing improvements in existing neighborhoods. Explore the potential for incorporating green street elements into streetscape design such as bioswales, rain gardens, planter strips and permeable pavement.

Policies

CR3.1 Safety and Accessibility. Enhance safety and accessibility for pedestrians, bicyclists and public transit riders. Promote walking, bicycling and transit use by improving key intersections and streets to reduce pedestrian and bicycle collisions. Support improvements at transit stations and stops to reduce crime and vandalism. Continue to work toward the elimination of at-grade railroad crossings to minimize traffic conflicts and increase connectivity and streetscape design to address traffic speeds and pollution.

CR5.1 Transportation Demand Management. Promote transportation demand management strategies among residents and businesses to reduce reliance on automobiles. Encouraging major employers to develop and implement transportation demand management (TDM) for employees will address peak commute traffic, congestion and air quality.

Actions

CR5.A Transportation Demand Management Program. Develop a transportation demand management (TDM) program that encourages use of public transit, bicycling and walking. TDM programs may include transit subsidies, car-share service, parking cash-out programs, bicycle-share programs, bicycle amenities and facility enhancements, among others.

Include an incentive program to promote TDM in the City. Program elements may include reduction in transportation impact fees for new or redevelopment projects that demonstrate commitment to TDM strategies and reductions in parking requirements for mixed-use development and for projects that provide TDM programs and/or shared parking. Explore the feasibility of developing citywide TDM program that would be funded by annual fees or assessment on new development.

CR1.L Station Area Plans. (see above)

CR1.J Streetcar Service Feasibility Study. (see above)

CR1.K Richmond Shuttle Service Feasibility Study. (see above)

The effect of these proposed General Plan Circulation Element policies and actions, in combination with the residential and employment growth projected by 2030 within the change areas, would be to substantially increase the demand for transit. The current bus frequencies, at typical 30-to-60-minute headways and high passenger loading of certain key routes, would not be sufficient to support the transit demand generated by the proposed General Plan growth patterns.

The same policies and actions listed above that promote transit use would be instrumental in helping the City push for the service increases needed to serve the new demand; however, the impact would remain significant, since provision of adequate transit service cannot be assured. The policies and actions discussed in Impact 3.14-3 would reduce impacts on transit, but the impact would remain **significant and unavoidable**.

Full Buildout Analysis

The City's population increase under the full buildout scenario would be beyond the amount of projected regional growth the City anticipates it could capture within the General Plan's 2030 planning horizon. Although such growth is unlikely, if such additional growth were to occur, it would generate a higher demand for transit service, potentially exceeding the capacity of transit service providers. Because the development under the full buildout scenario would be substantially more

intense than the growth projected within the General Plan planning horizon, the need for public transit services would be greater.

The proposed General Plan includes policies that would promote transit use which would be instrumental in helping the City push for the service increases needed to serve the new demand associated with development. At this time, however, the extent of additional growth and the exact nature of future effects from this growth are unknown, and it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to review to determine impacts on traffic in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None available.

3.14-4 Implementation of the proposed General Plan would provide enhanced facilities to serve pedestrians and bicyclists, increasing connectivity and safety for these modes. Therefore, the project would result in *no impact*.

The Land Use and Circulation Element are consistent in the vision of a development pattern and circulation system that promote and support bicycling and walking. By concentrating new development within key corridors and change areas, the density and urban design of new land uses would be more conducive to non-auto modes of travel than typical suburban land use patterns. The Circulation Element responds to the land use plans by implementing a "place based" circulation system (see Policy CR1.8) that ensures the appropriate transportation infrastructure is provided to serve adjacent land uses within a corridor or development area. In addition, Policies CR1.5 and 6, and Action CR1.D and E, listed above under Impact 3.14-1, promote pedestrian and bicycle improvements and incentives. The additional policies and actions listed below would also support bicycling and walking in Richmond.

Policies

CR2.2 Complete Streets. (see above)

CR2.3 Integrated Bicycle and Pedestrian System. Plan, construct and maintain a safe, comprehensive and integrated bicycle and pedestrian system. Walking and bicycling to work, to schools and for recreation can be encouraged by providing amenities and facilities for pedestrians and bicycles, enhancing pedestrian and bicycle connectivity within neighborhoods, promoting multimodal trails and pathways accessible to all and addressing major barriers in the community such as freeways, railroads and steep terrain. Pedestrian improvements at parks, community centers, open space areas, schools, transit stops and commercial nodes will further enhance the bicycle and pedestrian system.

Actions

CR2.A Community Access and Mobility. Develop access and mobility criteria for capital improvement projects and new development to enhance physical access to community facilities, schools, parks, shoreline open spaces, historical destinations, commercial and employment centers and transit hubs. The criteria

should address access by walking, bicycling and public transit as well as vehicular access.

The community access and mobility criteria should:

Ensure safe connections to large and small open spaces, community facilities such as schools, community centers, recreational facilities, cultural and enrichment centers, historical destinations, transit hubs and commercial and employment centers;

Address travel routes, infrastructure improvement needs and barriers such as roads, railroad lines, highways, fences and natural features; and

Provide bicycle and pedestrian-friendly routes including completion of major trails and pathways like the San Francisco Bay Trail and Richmond Greenway.

CR2.B Safe Routes to School Program. Develop a Safe Routes to School Program in collaboration with West Contra Costa Unified School District and other educational institutions to improve walking and bicycling access and safety to schools and after school programs. Also explore opportunities to create “walking school bus” programs where parents and other responsible adults can share the responsibility of escorting children to and from school by foot or bicycle.

CR2.C Streetscape Improvement. (see above)

CR2.D Street Design Standards. Update the City’s street design standards so that they support public transit, bicycles and walking on all streets. The updated standards should be consistent with and tailored to street or trail function and adjacent land use type.

Pedestrian-friendly designs should address maximum lane widths, maximum curb radii, sidewalk width, curb ramps and Americans with Disabilities Act (ADA) requirements. Bicycle-friendly design should address lane widths, street and intersection crossings and parking areas. Include guidelines for transit access.

Identify priority thoroughfares for developing green streets in the City to implement a natural systems approach for stormwater management and to expand urban greenery.

Evaluate the feasibility of reducing the number or width of travel lanes on key mixed-use streets that have excess capacity such as Cutting Boulevard, and using the capacity and/or regained width for wider sidewalks and bicycle lanes.

CR2.E Signage and Wayfinding. Install comprehensive signage and wayfinding elements that address all modes of travel including transit, trucks, bicycles, multi-use trails and cars. Include gateway elements at key locations such as Downtown and at major entry points to the City. Ensure consistency with signage and wayfinding elements for historic resources, recreation destinations and the Bay Trail.

CR2.F Lower Speed Limit Zone Study. Explore the potential to designate streets around schools, parks and public gathering places as safety zones where the vehicular speed limit may be lowered to 20 miles per hour. Slower speed limits will make streets safer for bicyclists, children and seniors and help reduce fatalities (see also Community Health and Wellness Element, Action HW4.J).

Policy

CR3.1 Safety and Accessibility. (see above)

As shown in Figure 3.11-9, the planned pedestrian and bicycle facilities in the proposed General Plan Circulation Element include improvements to several key bicycle route crossings of major barriers – higher volume roadways and railroad tracks. These barriers have historically been a safety and mobility concern for the City. The crossings would provide much better connectivity citywide, enabling longer bicycle trips for a variety of recreational and utilitarian purposes. The proposed General Plan bicycle network is consistent with the Contra Costa Countywide Bicycle and Pedestrian Plan. The Pedestrian Improvement Districts shown for the Hilltop Mall, Downtown/MacDonald, and Ford Peninsula/South Shoreline areas would focus attention on providing better pedestrian facilities (sidewalks, crosswalks, benches, buffers between the pedestrian and vehicle realms, etc) in these key mixed-use change areas.

The proposed General Plan would not disrupt existing bicycle and pedestrian facilities, would not interfere with planned bicycle/pedestrian facilities, and is consistent with the adopted Countywide Bicycle and Pedestrian Plan. The proposed General Plan would improve safety for non-vehicular travel modes and would result in ***no impact***.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, impacts related to safety and facilities to serve pedestrians and bicyclists, along with the incorporation of the policies and actions that support bicycling and pedestrian access in Richmond, would be the same as presented above. Future development would be subject to review to determine impacts related to connectivity and safety for these modes in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None required.

3.14-5 The proposed General Plan would reduce the potential for conflicts at rail/roadway crossings, improving safety for all modes. Therefore, the result would be *no impact*.

The proposed General Plan includes Policy CR3.1 and Action CR3.A which are aimed at improving mobility and safety around rail crossings:

Policy

CR3.1 Safety and Accessibility. (see above)

Action

CR3.A At-Grade Railroad Crossings Improvements. Work with the railroads to improve safety at at-grade railroad crossings. Establish formulas that will provide fair-share contributions towards improvements where grade separations will enhance safety, community linkages and access for pedestrians, bicyclists and public transit. Explore the long-term feasibility of locating the railroad lines below grade at some areas of the City to reduce impact on the surrounding retail and residential uses while enhancing pedestrian safety and linkages.

Figure 3.14-7 shows the proposed General Plan's priority grade separation projects, at Harbor Way, Marina Way South, and Marina Bay Parkway. The latter location is already in the design stage. However, there are several other crossing locations in the City that could benefit from additional safety measures to limit the potential for train-vehicle, train-pedestrian, and train-bicycle conflicts. Policy CR3.1 and Action CR3.A provide the direction for the City to study, design, and implement these measures, which could include upgrades to the existing railroad crossing warning devices, modifications to the traffic control devices at the crossing, provision of enhanced pedestrian barriers and/or better pedestrian routing, or changes to the street system, including street closures and provision of better roadway connections that avoid or reduce the crossing conflicts. The City will need to work with the railroad owners and operators and the California Public Utilities Commission in these efforts.

As discussed under Impact 3.14-2, the City currently does not have a full funding program for the grade separation projects or for safety improvements at other at-grade crossings. However, the Policies and Actions noted under Impact 3.14-2 – specifically, Actions CR1.G and CR1.H, Policy CR3.3, and Action CR3.C – ensure that the City would work to provide funding mechanisms to support the proposed transportation infrastructure improvements. Therefore, with these Policies and Actions, there would be ***no impact***.

Full Buildout Analysis

The analysis presented above assumes buildout of the General Plan. Therefore, there would be no impacts related to conflicts at rail/roadway crossings under a full buildout scenario. In addition, with incorporation of General Plan Policy and Actions that support the proposed transportation infrastructure improvements, the potential for conflicts at rail/roadway crossings would be reduced and safety for all modes would be improved. Future development would be subject to review to determine impacts related to conflicts at rail/roadway crossings in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measures

None required.

3.14-6 The proposed General Plan would increase congestion and reduce travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials). This is a *significant and unavoidable impact*.

The two thresholds of significance for emergency vehicle response are (1) provide inadequate design features to accommodate emergency vehicle access and circulation, and (2) cause a substantial decrease in travel speeds on primary emergency response routes such that emergency vehicles would be significantly delayed. The first criterion is not triggered by the proposed General Plan, as the policies and actions guiding street improvements and design would ensure that emergency vehicles are physically accommodated. However, the second criterion may be triggered

by the proposed General Plan. The proposed General Plan policies and actions regarding roadway improvements and capacity management are designed to provide “mixed-use urban streets that balance public transit, walking and bicycling with other modes of travel” (excerpted from Policy CR2.2). The proposed General Plan does not contain a vehicle LOS standard for intersections or roadways. As a result, congestion may grow as population and job growth occurs. The extent to which travel speeds may drop is beyond the scope of this analysis. However, the volume of new vehicle traffic generated by the proposed General Plan, along with the limited new roadway capacity proposed, makes this impact *potentially significant*. Action CR1.H, listed above under Impact 3.14-1, discusses providing street capacity and infrastructure improvements to address congestion. This action would reduce this impact, although not necessarily to a less-than-significant level, so this would remain ***significant and unavoidable***.

Full Buildout Analysis

The City’s population increase under the full buildout scenario would be beyond the amount of projected regional growth the City anticipates it could capture within the General Plan’s 2030 planning horizon. Although such growth is unlikely, if such additional growth were to occur, it would generate additional traffic congestion that would reduce travel speeds on various roadways throughout the City. Because the development under the full buildout scenario would be substantially more intense than the growth projected within the General Plan planning horizon, the traffic congestion would be substantially greater and the potential for delays of emergency vehicles would be increased.

The proposed General Plan includes policies that would reduce traffic associated with development. However, the extent of additional growth and the exact nature of future effects are unknown, and it would be speculative to attempt a more detailed analysis at this time. Any future development would be subject to review to determine impacts on traffic in accordance with CEQA. Future planning efforts and environmental analysis would address additional growth beyond the General Plan’s planning horizon and the potential implications of this growth.

Mitigation Measure

None available.

Cumulative Impacts

Because the projection of traffic volumes and operating conditions to 2030 necessarily includes other regional sources of traffic growth, the traffic impacts discussed above are both project-specific and cumulative impacts.

3.15 VISUAL RESOURCES

3.15 VISUAL RESOURCES

INTRODUCTION

This section provides a description of existing visual conditions in the City and evaluates potential changes to those conditions that could result from implementation of the proposed General Plan. Applicable federal, state, and local regulations are identified, followed by analysis of impacts and identification of mitigation measures to reduce adverse impacts on visual resources, where available.

Information used to prepare this section includes the 1994 Richmond General Plan, the Richmond Municipal Code, and the 2030 Richmond General Plan Update. In the 2030 General Plan, Visual Resources are addressed primarily in the Land Use and Urban Design Element and the Historic and Cultural Resources Element. The policies of these elements seek to enhance the quality of life in the City of Richmond by creating and preserving attractive buildings, streets, and public spaces that facilitate and enrich the life of the community, and by seeking a balanced and sustainable mix of residential, employment, commercial, and service uses.

Comments received in response to the Notice of Preparation (NOP; see Appendix A) include concerns about the visual effects of increasing densities in the neighborhoods surrounding the downtown area. In addition, concerns were also expressed about the General Plan's impact on viewsheds along the hillsides.

ENVIRONMENTAL SETTING

City Wide

Scenic Resources

Visual resources are an important component of the quality of life of any community. As users experience a place, their primary sensory interaction with that place is visual in nature. A wide variety of shapes, colors, and textures form the view of and from the City, including structures, roadways, waterways, and vegetation.

"Aesthetic value" refers to the perception of the natural beauty of an area, as well as the elements that create or enhance its visual quality. While aesthetic value is subjective, it is typically included as a criterion for evaluating those elements that contribute to the quality that distinguishes an area. Most communities identify scenic resources as an important asset, although what is considered "scenic" may vary according to its environmental setting.

"Scenic resources" can include natural open spaces, topographic formations, historic sites, and landscapes. These are resources that can be maintained and enhanced to promote a positive image in the future. People often only associate natural landforms and landscapes with scenic resources, such as oak woodlands, lakes, rivers, streams, and some historical areas. However, scenic

resources can also include urban open spaces and the built environment. Examples of these would include parks, trails, pathways, nature centers, urban skylines, community art, archaeological and historical resources, and architectural features. “Viewsheds” constitute the range of vision in which scenic resources may be observed. They are defined by physical features that frame the boundaries or context to one or more scenic resources.

Existing Urban Form

The City of Richmond provides an urban context within a coastal and mountainous backdrop that typifies many cities in the San Francisco Bay Area. Richmond is oriented along the eastern edge of the San Francisco/San Pablo Bay and to the west of the Sobrante Ridge, a portion of the San Pablo/Potrero Hills Range within Contra Costa County. The City is relatively flat and low-lying, with gradual elevation increases occurring towards the eastern portions of the City. Richmond is a predominately built-out environment, with the majority of natural open space areas limited to the City edges. The City’s proximity to the Bay, combined with the gradual topographic changes from the coastal edge to the mountain ranges, provide a wide range of natural hillside and bay views from various areas. Long-range views within the City are generally expansive because of the flat terrain throughout the City. However, due to the flat terrain, existing mature trees and buildings often block views.

Interstate 580 (I-580) and Interstate 80 (I-80) are the two major highways that provide access to and through Richmond. Major commercial and industrial uses are gathered along the highway corridors and along the ports. Despite a rich history of productive industrial and commercial operations throughout most of the 20th Century, the last 30 years has seen a number of established businesses and residents leave the City of Richmond for more suburban communities, often resulting in blighted buildings, commercial districts, and residential neighborhoods near the downtown core.

The majority of the older residential neighborhoods are located inland near the downtown core. The newer and more suburban residential neighborhoods are primarily located near Hilltop. In addition, a small number of residential uses exist along the Bay and along the hillsides. Due to high quality of natural views provided along the coast and the San Pablo/Potrero Hill Range, the amount of development planned for these areas has historically been limited.

Views of the City Center

The City center includes large portions of developed areas, ranging from single-family homes to medium-rise office and public buildings in the downtown area. Building height guidelines within the City center are established by the City’s Zoning Ordinance, (Chapter 15.4 of the City’s Municipal Code), where a maximum building height of up to 75 feet or 7 stories is allowed for commercial/office buildings. The areas where residential uses dominate the viewshed have a maximum building height of 35 feet and are generally areas with more green space, less artificial light, meaning darker nighttime views, and less glare due to the limited amount of reflective materials. However, the City center is also significantly brighter than the outlying residential areas (Hilltop) due to the amount of artificial light associated with exterior building lights, street lights, roadways, and parking area lights associated with the urban center. Views of the City center offer a mix of building types and sizes,

interspersed with parks, trees, public art, and municipal uses. Building designs run from historic architecture to modern structures. Views of the Central City include the Social Security Building, Civic Center Complex, the BART Station, Interstate 580, and Interstate 80. As mentioned above, portions of the City center remain visually blighted due to the recent economic downturn and the continued effect of the loss of industrial jobs and urban families to the suburbs.

Views of the Shoreline

Views of the shoreline can be seen from both low-lying areas and hillsides. The foreground of the viewshed is dominated by a number of bedrock outcrops located along the San Francisco and San Pablo Bays. The areas include Point Isabel, Point Richmond, Point Molate, Castro Point, Point Orient, Point San Pablo, and Point Pinole. It should be noted that a development plan for Point Molate is currently undergoing separate environmental review. Between each of the points are a number of beaches, marshes, and coves that provide views of the Bay. From various locations within the City, the coastline view provides a clear look at the Marin Hills/Mount Tamalpais, the Golden Gate Bridge, San Francisco, and the Richmond/San Rafael Bridge to the west, south, and north. In addition, the shoreline provides a view of the ports and specifically the active and historic vessels that dock in Richmond, including the USS Red Oak Victory. In order to preserve existing views along the coastline, the City of Richmond Zoning Code has established a uniform maximum building height limit of 35 feet for all building types along the shoreline.

Views of the Hillside

The eastern portion of the City is dominated by the San Pablo-Potrero Hills Range, which can reach elevations of up to 1,050 feet. The 400-foot crest of the Sobrante Ridge serves the elevation transition between the City core's low-lying areas and the San Pablo-Potrero Hills Range. The range can be seen throughout the City and is generally undeveloped. The majority of the City's park and open space areas exist within the hillside viewshed, which provides a very natural backdrop to the City's urban core. There is a limited number of hillside residential properties that have been developed in a clustered manner that maintains the overall open space character of the hillside. Hillside Residential structures have a current maximum building height of 35 feet.

Natural Elements

From the elevated freeways that go through the middle of the City, to vistas from the eastern foothills, Richmond is distinguished by its proximity to the San Francisco and San Pablo Bays. The San Pablo and Wildcat Creeks both exist along the coastline in the marshes and mudflats and contain the majority of the natural plant communities within the City that provide a unique aesthetic quality.

Manmade Elements

Manmade elements such as buildings and structures, historic buildings and landmarks, freeways and scenic highways, as well as City neighborhoods, can also be considered scenic resources, as discussed below.

Landmarks

In addition to the linear infrastructure systems, there are discrete manmade elements within the landscape that serve as landmarks that inform City character. The term landmark here is used to refer to something (e.g., monument, building, other structure) that is easily recognizable and associated with the City. While landmarks in this sense could include an historic resource, it should not be confused with the discussion of historic landmarks in the Cultural Resource section of this Draft EIR. Through their scale and/or distinctive design, landmarks become reference points within the City that provide structure and orientation, and contribute to the design character of the surrounding area. The Richmond Shipyards and the Rosie the Riveter Memorial are two key landmarks in Richmond. Together, these landmarks create a dramatic gateway entrance to the City that establishes a visual representation of Richmond's history sustained by military and port activity, a trait that characterizes the appearance of many of the City's buildings. Other City landmarks that provide some insight into the architectural and aesthetic character of the City include the Civic Center and Memorial Auditorium, the Richmond Museum of History, the Point Richmond Historic District, and the former Ford Motor Company Assembly plant, and the historic train station (The Depot) in the Union Pacific rail yards. Buildings and structures such as the Hotel Don, the Richmond San Rafael Bridge, Kaiser Hospital, and more contemporary buildings like the Hilltop Mall complex also serve as modern structural landmarks for the City in terms of style, size, and scale.

Scenic Highways

California's Scenic Highway Program was created in 1963, and the scenic highway designation serves to protect and enhance California's natural scenic beauty and to protect the social and economic values provided by the State's scenic resources. I-80 and I-580 are not designated as Scenic Highways within the City of Richmond, according to California Scenic Highway mapping system.

Scenic Corridors/Scenic Vistas

While no formal scenic highways currently exist within the City per the California Scenic Highway Program, a number of scenic routes, scenic corridors, and scenic vistas were identified as having a positive aesthetic value for both visitors and residents. The 1994 General Plan and General Plan EIR identified portions of I-580 south and north, Richmond Parkway, I-80 east and west, San Pablo Dam Road, Arlington Boulevard from Tamalpais Drive to Terrace Avenue, Barrett Avenue, Blume Drive, Carlson Boulevard, Cutting Road (west of I-80), Giant Highway, Harbor Way- Pennsylvania Avenue-13th Street- Rumrill Boulevard, McDonald Avenue west of I-80 to Third Street, Marina Way, Meade Street, Meeker Avenue, Moeser Lane, Pinole Valley Road-Alhambra Valley Road, Regatta Boulevard, Robert H. Miller Drive-Hilltop Drive to La Paloma Road, San Pablo Avenue South of Richmond Parkway, San Pablo Dam Road, Seacliff Drive, Canal Boulevard to Brickyard Cove Road, South Garrard Boulevard-Dornan Drive-Brickyard Cove Road Valley View Road-south of Sunset Lane, Hilltop Drive, the Richmond BART Corridor, and Western Drive constitute scenic corridors with access to valuable scenic vistas. The following views have been determined important according to the 1994 General Plan and General Plan EIR and should be maintained upon plan buildout along with the above mentioned scenic corridors:

- Panorama views of the San Pablo Bay and Point Pinole
- Views of Marin Hills/Mount Tamalpais
- Views of the San Francisco Bay
- Views of the Chevron Refinery
- Views of the Richmond/San Rafael Bridge
- Views of Red Rock
- Views of Brothers Island
- Albany Hills and Albany mudflats
- Views of the Potrero-San Pablo Hills
- Views of Hoffman Marsh
- Views of Marin County/San Quentin

Light Rail

Bay Area Rapid Transit (BART) provides aboveground light rail service that is intended to attract people and to serve populated destinations. The elevated rail lines stand out visually from street level receptors and partially obstruct existing views from low level areas west of San Pablo Avenue to the hillside east of the City boundary. As mentioned above, the elevated BART lines are a locally recognized scenic corridor that provides commuters unobstructed views of the City's urban, shoreline, and hillside views.

Light and Glare

The City of Richmond is urban in its context and has a relatively dense population. As a result, the City presently has numerous buildings, vehicles, and facilities that emanate artificial nighttime light. While light dissipates with increased distance from the source, when this light falls beyond the intended area it is referred to as light trespass. Types of light trespass include spill light and glare. Nighttime lighting is necessary to provide and maintain safe, secure, and attractive environments; however, these lights have the potential to produce spill light and glare, waste energy, and if designed incorrectly, could be considered unattractive. Spill light can also adversely affect light-sensitive uses, such as residential neighborhoods at night.

Glare results when a light source directly in the field of vision is brighter than the eye can comfortably accept. Squinting or turning away from a light source is an indication of glare. The presence of a bright light in an otherwise dark setting may be distracting or annoying, referred to as discomfort glare, or it may diminish the ability to see other objects in the darkened environment, referred to as disability glare.

As described above, the City includes a wide variety of visual characteristics, which include various light and glare levels. The City of Richmond is primarily built-out, and a significant amount of artificial light and glare from urban uses already exists.

Change Areas

As discussed in Chapter 2, Project Description, development activity under the proposed General Plan is intended to occur in 16 change areas. While each of these change areas would experience some level of intensification of use under the proposed General Plan, three areas would likely undergo the most significant change in land use and development character due to increased building height limits in the High Intensity Mixed Use land use designation. These change areas include Downtown/Macdonald Avenue, Hilltop, Ford Peninsula in Marina Bay, (see Figures 2-4, 2-5, and 2-6 in Chapter 2.0, Project Description). The proposed General Plan includes approximately 500 acres of High Intensity Mixed Use land use within these three change areas. The remainder of the City is anticipated to remain generally consistent with the type of land use designation that currently exists. The following list provides a brief, general descriptive paragraph on the visual aspects of each of the areas.

Downtown/Macdonald Avenue

The Downtown/Macdonald Avenue area is located in the City center area and is characterized by historic architecture, community facility presence, and its traditional grid circulation system. This area contains some of the City's most important assets including the City Center, the BART/Amtrak Station, and Kaiser Hospital. The General Plan aims to make this area the center of major economic and cultural activity within the City, with increased residential and commercial densities.

Hilltop

The Hilltop area is located in the northern part of the City, bounded by I-80 and Hilltop Drive. It is currently described as an auto-oriented regional shopping center surrounded by medium-density residential uses, primarily apartments and townhomes. The General Plan aims to make this area the center of major regional economic and employment activity within the City, with increased residential, retail, office, and commercial densities.

Ford Peninsula in Marina Bay

The Ford Peninsula in Marina Bay area is located along the water in the southern part of the City and bounded the I-580 to the north, Port of Richmond to the east, and the San Francisco Bay to the west and south. This area was the former home of the Ford Motor Company Auto Plant building. The General Plan aims to reinvigorate the area with a mix of light industrial and high-density residential, commercial, and office uses, and the possible development of a ferry terminal.

REGULATORY CONTEXT

Federal

No federal regulations apply to the evaluation of visual resources.

State

California Scenic Highway Program

As stated in section IV of Caltrans' *Guidelines for the Official Designation of Scenic Highways*, a Scenic Corridor is defined as the area of land generally adjacent to and visible from the highway. No California Scenic Highways exist within the City of Richmond.

Local

City of Richmond Municipal Code

Article 15 of the City of Richmond Municipal Code establishes zoning land use and design guidelines and development protocols for the City. Upon approval of the proposed General Plan, portions of the Municipal Code would be amended in order to ensure consistency.

IMPACTS AND MITIGATION MEASURES

Methods of Analysis

The impact analysis for visual resources is based on a review of the 1994 Richmond General Plan, the Richmond Municipal Code, and the Land Use and Urban Design Element of the proposed 2010 Richmond General Plan. The impact analysis considers the known visual character, existing viewsheds and visual resources within the City, and evaluates the potential of physical effects on the character, viewsheds, and resources that could occur as a result of implementation of the proposed General Plan. Impacts are assessed in accordance with thresholds of significance based on the Environmental Checklist Form included as Appendix G of Title 14, California Code of Regulations, Chapter 3, *Guidelines for Implementation of the California Environmental Quality Act*. The impact analysis also considers the mitigating effects of the proposed City of Richmond Land Use and Urban Design policies, other state and local laws and regulations when determining the anticipated impact on visual resources.

Standards of Significance

For the purposes of this EIR, implementation of the proposed project would have significant impact if it would do any of the following:

- Cause a substantial adverse effect on an existing designated scenic vista;
- Result in substantial degradation of existing designated scenic resources including but not limited to tree formations, rock outcroppings, and historic buildings within a state designated scenic highway;
- Substantially degrade the existing visual character or quality of the City of Richmond or surrounding areas; or
- Create a new source of substantial light or glare that would result in an adverse effect on daytime or night time views in the area.

General Plan Visual Character

From the macro or city-wide scale to a more location-specific scale, four basic community building blocks can be used to describe the proposed Richmond General Plan's visual character and urban design goals: residential neighborhoods, activity centers, districts, and corridors.

Residential Neighborhoods

Residential neighborhoods are the fundamental building blocks of the City. More than the City as a whole, neighborhoods are the areas with which people can most identify. The existing residential neighborhoods are generally considered to be stable growth areas according to the General Plan, as the land use designations experience minimal change. Residential neighborhoods vary in their land use composition, but generally consist of predominantly one- and two-story residential uses supplemented by public facilities such as public transit access centers, parks, and schools, as well as by local-serving retail services, entertainment centers, and employment centers. In addition to traditional residential neighborhood uses, the proposed General Plan provides a variety of more urban residential neighborhood types that are consistent with the City's desire to provide more high-density residential uses within the activity centers. Maximum residential building heights would range from 35 feet in the existing residential communities to up to 135 feet in the City Center (see the Activity Center discussion below).

Neighborhoods are defined by a number of factors. Externally, neighborhoods can be defined by natural features, such as the hillsides and the Bay, or by manmade features such as freeways, arterial roadways, rail lines, and canals. Most often, however, they are defined by inherent qualities such as their historic identity, physical character, or some other unifying feature. In some cases, particularly in newer development areas, neighborhoods can be often be defined by planned combination of development uses. New residential neighborhood buildings will be designed in a manner that is visually and structurally compatible with the existing character of a community, as well as the planned future uses of an area in terms of size, scale, and composition.

Activity Centers

Activity Centers are unique, identifiable areas that are defined by their common functional role, mix of uses, density/intensity, physical form and character, and/or environmental setting as places for commerce, employment, entertainment, culture, and living. Centers usually provide commercial and employment uses (without housing) and/or mixed-use projects that integrate housing with retail, office, community facilities, and other uses within the same structure or on the same site. The proposed activity centers within the proposed Richmond General Plan include taller and higher density buildings than the rest of the City, with a focus on ground level commercial uses and pedestrian activity. Building heights range from 15 feet to 135 feet and would include a mix of residential uses, plazas, cafes, bookstores, office uses, and restaurants that draw a variety of people and offer a welcome setting for public gathering. Examples of identifiable activity centers within the region include Union Square in San Francisco and Downtown/Midtown Sacramento. The proposed General Plan includes the Downtown, Hilltop, and the Ford Peninsula in Marina Bay proposed activity center locations.

Districts

The proposed General Plan aims to create Districts where the focus of neighborhoods is a dominant single use or destination, such as a park, public gathering place, cultural center, major economic generator, or tourist attraction. These Districts can also be defined more generally by a common pattern of use such as the City's industrial districts. The General Plan identifies six mixed-use Districts (change areas) that provide the City with significant opportunities to improve, change, and redefine the visual characteristics of certain underutilized uses. These Districts include Northern Parkway Area, Northshore, San Pablo Peninsula, Port Priority Use Area, Regatta/Marina Bay, and Southern Gateway Area. See Chapter 2.0 Project Description for a detailed description of each area. Each of the proposed Districts would incorporate taller and denser building designs to ensure the consistency with the overall goals of the General Plan.

Corridors

Corridors are connectors between districts and neighborhoods, and include boulevards, arterial streets, and light rail lines. The defining elements of a corridor are the presence of high quality pedestrian amenities, higher-density and mixed-use infill development opportunities, public transit access, bicycle amenities, and public gathering spaces. The corridors serve as a connector between destinations within the community and its function as a transportation route. Richmond has identified seven key corridors (change areas) that fit this description, including: San Pablo Avenue, 23rd Street, Marina Way, Cutting Boulevard, Harbour Way, Ohio Avenue, and Carlson Boulevard. Each of these is a primary route that links the downtown to the outlying portions of the City or interconnects districts. See Chapter 2.0 Project Description for a detailed description of each area.

The combination of connector and transportation route combines to make corridors a magnet for certain uses, but also generate significant community design issues. The proposed General Plan provides corridors with a range of building heights, as they pass through and connect a number of areas with different land use designations. As regional connectors, corridors are particularly attractive to commercial uses that desire high visibility, high volumes of vehicle and pedestrian traffic, and convenient access. As a result, the General Plan aims to increase sidewalk width, add street art, encourage outdoor seating, and provide street lighting and canopies along the corridors. These improvements would increase pedestrian activity and facilitate the development of live/work parcels that help create a smooth transition between different land uses.

Project-Specific Impacts and Mitigation Measures

3.15-1 Development activities associated with the proposed General Plan could have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of the site and its surroundings. Though project-specific mitigation measures would be implemented, this remains a *significant and unavoidable impact*.

The General Plan provides the framework for development of the City and establishes a vision for the community's urban form and development patterns and outlines the community's land uses,

street network, prototypical housing types, and a system of parks and trails. As discussed in the environmental setting, various points throughout the City of Richmond have views of the shoreline or the hillside that would constitute a locally recognized scenic vista or corridor. To the extent that development would occur in the “stable areas,” (areas not included in the change areas), it would remain generally consistent with existing land use types, which would result in similar visual characteristics as existing development. Development within the designated change areas - the activity centers, the improvement districts, and the corridor areas - would be allowed at a higher density and would allow maximum building heights ranging from 55 feet to 135 feet, which is an increase over the existing maximum building height range of 35 to 75 feet. The tallest buildings (135 feet) could only be developed within the three activity center areas that include the High Intensity Mixed Use land use designation. This potential increase in building height would create a more urban feel and could result in a substantial adverse change in the character of the change areas as well as those areas that have views of and beyond those change areas. It is possible that existing residents could have existing views of the shorelines or hillsides that would either be fully or partially obscured by buildings developed under the proposed General Plan due to the increase in the number of buildings developed, as well as the increase in building height.

The General Plan provides a development model that encourages infill development in blighted and underutilized areas. The proposed General Plan would provide for the development of structural, artistic, cultural, and transit uses that would serve as a catalyst for high density, mixed-use development indicative of a modern, urban, 24-hour downtown. Despite the many potential benefits of the Plan, the proposed infill development identified in the General Plan could result in an adverse change in the existing visual character of the City. The promotion of new higher-density mixed uses and transit oriented development uses would be considered by some residents to improve the look of City, particularly in the Downtown/Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay change areas, and in district and corridor improvement areas, and other centrally located areas. However, the overall development would ultimately alter the skyline and views of the City for both residents and off-site receptors. While many improvements may occur from certain vantage points, some of the aforementioned scenic views and corridors could be obscured, particularly from residents on the eastern portion of the City. In addition, the General Plan allows for some additional residential development within existing vacant hillside areas, which could alter the visual character of the eastern portion of the City. Residential development along the hillside would be restricted to designated areas and would be clustered in a manner that preserves more open space.

As detailed in the *Regulatory Context* above, the Richmond Municipal Code provides development standards that guide the City in its development practices and protects valued scenic corridors and views. The municipal code guidelines aim to create standards that allow for the development of new and innovative structures that allow for the maintenance of establish natural and man-made views that help define the City of Richmond.

The following proposed General Plan Policies and Implementing Actions would reduce the potential for impact on scenic resources and visual character.

Policies

LU1.1 Higher-Density and Infill Mixed-Use Development. Provide higher-density and infill mixed-use development affordable to all incomes on vacant and underutilized parcels throughout the City. Ensure efficient use of land and existing circulation infrastructure by:

Promoting higher-density, transit-oriented and pedestrian-friendly development along key commercial corridors, at key intersections (community nodes and gateways); and

Supporting local-serving commercial activities in residential areas to provide needed services and amenities close to where people live and work.

LU1.2 Downtown and Civic Center. Promote the Downtown and Civic Center as a social, cultural and civic destination. Encourage the location and expansion of new and existing entertainment and cultural facilities in the Downtown area. Support improvements to cultural facilities, such as the Civic Auditorium, as catalytic projects for neighborhood revitalization.

Support the revitalization of the Civic Center area as a mixed-use district with a range of uses including public facilities, community gathering areas, retail, housing, entertainment and offices. Promote active use of the area at all times of the day and enhance connections to Macdonald Avenue, the Richmond BART Station and surrounding neighborhoods.

Celebrate Richmond's history through the preservation and reuse of historic and cultural properties, and by integrating artistic and historic features into public and private development. The City supports historic preservation efforts in Downtown and investment in historic buildings as well as public art projects and interpretive displays throughout the Downtown area to communicate the unique history, diversity and culture of Richmond.

LU1.4 Active Streets and Safe Public Spaces. Promote active use of public spaces in neighborhoods and commercial areas at all times of day to provide "eyes-on-the-street." Provide an appropriate mix of uses, high-quality design and appropriate programming of uses to facilitate natural surveillance in public spaces. Improve the sense of safety for potential users by providing amenities and services such as restrooms, street furniture, street lighting, trees for shade, public art and secure bicycle parking and by restricting or prohibiting uses that are incompatible with community needs and priorities including, but not limited to liquor stores and smoke shops.

Actions

LU1.B Corridor Improvement Plans. Develop plans for key commercial corridors in the City to guide redevelopment of these areas into mixed-use, pedestrian and transit-oriented corridors and nodes. Collaborate with regional agencies, neighboring jurisdictions and the County to develop the plans. Include development standards and urban design guidelines.

LU1.D Downtown Specific Plan . Develop a specific plan to guide capital investment, redevelopment and revitalization of the Downtown as the heart of Richmond. Incorporate key concepts from existing plans, such as the City Center Specific Plan and the Macdonald Avenue Revitalization Plan, into the specific plan. Include Macdonald Avenue, the Civic Center and the BART station in the planning area. Incorporate development standards and urban design guidelines in the specific plan.

LU1.H Vacant and Underutilized Sites. Compile an inventory of vacant and underutilized sites in the City that affect economic and social viability of neighborhoods and contribute physical blight. Include an inventory of large publicly owned sites that may be developed to serve community needs.

Policy

LU 2.2 Compact Walkable Neighborhoods and Livable Streets. Promote safe and walkable neighborhoods and inter-connected streets through the design of streetscapes, public gathering places and all types of physical development. Provide pedestrian amenities such as sidewalks and street trees, transit and bike improvements, lighting and landscaping and appropriate traffic calming measures to ensure a safe pedestrian environment.

Support uses and public space improvements that generate street-level activity, create eyes-on-the-street, provide opportunities for community interaction and encourage a sense of collective ownership of common areas. Encourage mixed-use development that attracts people and facilitates activity throughout the day. Prohibit isolated or gated communities in order to improve physical connectivity throughout the City, and create incentives to remove barriers in existing gated areas. Maintain streets to ensure that neighborhoods and streets are safe and well used.

Actions

LU2.B Streetscape Improvements. Continue to implement streetscape improvements to enhance access, lighting, safety and experience for pedestrians, bicyclists, transit users, and motorists. Focus improvements in areas with the highest need such as the Downtown, mixed-use corridors, key intersections, designated pedestrian priority districts and multi-use trails that connect high-density areas of the City to parks and open space.

Provide universal accessibility improvements, pedestrian-scale lighting and landscaping in streetscape improvements. Explore the potential for establishing assessment districts for implementing improvements in existing neighborhoods. Explore the potential for incorporating green street elements into streetscape design such as bioswales, rain gardens, planter strips and permeable pavement.

Policy

LU3.4 Efficient and Productive Use of Land. Promote the efficient and productive use of industrial and commercial land resources to maximize jobs and revenue. Encourage the reuse of underutilized vacant or blighted sites that may impact the viability of surrounding uses. Prioritize public investment in catalytic projects in major city centers such as Downtown, Hilltop and the Ford Peninsula in Marina Bay and the entire Southern Shoreline Area. Support the transformation of the Richmond Port into a 21st century business. Ensure that all planning and development efforts prioritize the needs of the local community and provide access and benefits for Richmond residents. This includes job creation and training, and access to recreation amenities and open space.

Actions

LU3.E Southern Shoreline Specific Plan. Develop a specific plan to guide improvements in the Southern Shoreline Area. Work with the University of California and other stakeholders to articulate a vision. The vision should address the need to merge existing and proposed development into a mixed-use community including education, research and development, light industrial,

residential and other sensitive uses. Maintain and improve public access to the shoreline including a mix of uses along the shoreline to activate the area throughout the day.

LU3.G Hilltop Area Specific Plan. Develop a specific plan for the Hilltop Area to guide development of a mixed-use neighborhood and a regional retail destination. As an older indoor shopping center, the Hilltop Mall must compete with newer region-serving power and lifestyle retail centers in Pinole and Emeryville. A reinvigorated center would allow the mall to draw shoppers from other communities along the Interstate 80 corridor. Hilltop's surplus surface parking represents an opportunity for creative consideration of more contemporary shopping center formats.

Include signage to provide clear directions from the Richmond Parkway, Interstate 80 and surrounding residential areas to and between the Hilltop Mall, the Hilltop Auto Mall and Hilltop plaza. Include recommendations for streetscape, circulation and infrastructure improvements that will enhance this area's ability to attract new residential, office and retail development. Identify strategies to promote local-serving retail in mixed-use projects at major intersections and along commercial corridors.

Policies

LU4.1 Richmond Shoreline. Conserve, protect and enhance natural and cultural resources along the Richmond shoreline. Promote a balance of uses along the shoreline that supports multiple community needs such as economic development, recreation, historic preservation and natural resource protection.

Provide a mix of residential and recreation uses in the Southern Shoreline area; support an active industrial waterfront around the Port and along the Santa Fe Channel; and promote a cultural heritage shoreline west of the Port.

Protect and restore wetlands, native habitats and open space; develop shoreline parks and trails to increase public access; encourage recreation and tourism activities; and enhance and showcase historic and cultural resources. Prepare plans that will protect natural and built environments from adverse potential impacts of sea level rise due to climate change.

LU4.2 Open Space and Conservation Areas. Preserve open space areas along the shoreline, creeks, and in the hills to protect natural habitat. Maintain the integrity of hillsides, creeks and wetlands. Protect existing open space, agricultural lands and parks.

Action

LU4.A Waterfront Redevelopment Plans. Facilitate ongoing efforts to plan and redevelop key shoreline areas to fully transform them from blighted areas into resources and amenities for the community. Promote a balance of uses along the shoreline that supports multiple community needs such as economic development, recreation, historic preservation and natural resource protection.

Policies

LU5.1 A Mix of Land Uses. Promote a mix of uses to create a balanced community. The City will encourage a mix of uses in major activity centers, community nodes and gateways, in neighborhood nodes (corner commercial clusters), and along key corridors as well as in industrial areas. Uses may include diverse housing options, office, civic, commercial, retail and parks and open space.

In residential areas, the re-establishment of neighborhood nodes allow walkable access to neighborhood retail, services, public parks and other neighborhood amenities that support the daily needs of residents.

A mix of uses such as business, residential, light industrial, waterfront commercial, and open space will enhance economic vitality and provide the flexibility needed to adapt to changing economic conditions. Along Richmond's shoreline, diverse uses should balance community needs for recreation, interpretation, conservation, historic and cultural preservation with economic development opportunities.

- LU5.2 A Mixed-Use Waterfront.** Continue to create a dynamic mixed-use waterfront that includes amenities and attractions for residents and visitors. There are a number of different uses, features and assets along Richmond's shoreline that can be enhanced to create a series of distinct places along the waterfront.

The San Pablo Peninsula is characterized by large natural open spaces, shoreline parks and beaches, sweeping views of the San Francisco Bay Area and historic structures. The City will support development on the Peninsula as a regional recreation destination that is well connected to rest of the City and accessible to the greater community. Disturbed sites such as the Winehaven complex at Point Molate and the Terminal 4 site at Point San Pablo will be remediated and redeveloped into mixed-use activity centers to serve a broad range of visitors and provide long-term revenue to the City.

The Richmond Port (public and private) is recognized as a productive and important component of the community's economy and identity. Many of the adjacent industries embrace high standards and provide high-wage, local jobs. Creative transitions should be developed between port related activities and potential mixed-used neighborhoods along the waterfront to provide strong connections, design cohesion and effective buffers where necessary.

The Ford Peninsula in Marina Bay is a gateway to Richmond and an integral part of the City where people work, live and recreate. The Peninsula's historic Ford Assembly Plant, open space, connection to the Bay Trail and convenient freeway access present great potential for developing the eastern portion of the area as an active mixed-use neighborhood that will attract visitors from around the Bay. In February 2006 the City Council passed Resolution No. 15-06 to support and promote the location of the proposed ferry terminal. Ferry transit to San Francisco will enhance the Southern Shoreline's appeal to residents and businesses.

- LU5.3 Land Use Compatibility.** Minimize conflicts between land uses to protect human and environmental health and safety, and preserve community character and retain job generating activities that have long-term viability. Types, intensities and ranges of use and development should be compatible with existing uses and should minimize or eliminate conflicts that adversely impact public safety, human or environmental health or generate nuisances. All new development must mitigate or avoid potential negative impacts such as noise, nuisance and pollution.

Encourage existing larger industries that have surplus land to develop modern industrial parks that could attract new and existing industries and facilitate a reduction of existing and future land use conflicts.

New development should complement the character and scale of existing neighborhoods, cultural resources, historic structures and landscapes. In particular, existing industrial and residential uses can successfully coexist through well-conceived circulation and urban design strategies including buffers (which may be in the form of sound walls and/or

enclosed buildings) and transitional uses, rerouting of truck traffic and design components that mark transitions in land use. Similar to other cities that host mixed uses, consider requiring land use covenants for new development in areas where new uses may generate a perception of conflict with existing uses.

Action

LU5.B Design Guidelines. Develop design guidelines and standards for all land uses and development prototypes. The guidelines will build on zoning codes to promote high-quality design. Guidelines should also address compatibility between new and existing historic structures and districts, residential and adjacent non-residential uses and urban and natural areas.

Policies

CN 2.3 Natural Topography and Hillside Protection. Protect natural topography to preserve and enhance Richmond's natural beauty and require developers to concentrate residential development below the 400 foot elevation. The natural characteristics of the Berkeley Hills, San Pablo Ridge, El Sobrante Ridge, Point Potrero and San Pablo Peninsula should be protected and enhanced by regulating allowable methods of site preparation, grading, soils repair, foundation design and topographic alteration, as well as the height, color, material and siting of structures and roadways, quantities of cut and fill, placement of utility crossings and removal of vegetation.

AC 2.2 Arts and Culture Identity. Build on the arts and cultural assets of Richmond to establish a positive image and business environment. To strengthen its arts and cultural identity, the City encourages inclusion of multicultural and diversity-themed artistic offerings in new commercial and mixed-use developments; incentives such as affordable studio workspace for local artists and arts organizations; and sponsoring festivals and events to provide opportunities to draw the community together and welcome visitors to share in Richmond's unique celebrations. Richmond's unique heritage and strong diversity can be portrayed through theatrical performances, festivals, music, art shows and foods that reflect Richmond's diverse population.

Policy LU1.1 aims to protect, preserve, and enhance visual character within the City by encouraging the development of high-density mixed-use products on vacant and blighted property; Policy LU1.2 promotes adaptive reuse of historic buildings and the use of public art as a means of improving the visual character of blighted areas. Policy LU1.4 promotes the provision of street benches, street lighting, and shade trees in a manner that promotes context-sensitive design while improving the visual character of the community. Implementing Action LU1.B requires that design guidelines be incorporated into the corridor improvement plans. Implementing Action LU1.D requires that urban design guidelines are incorporated into the Downtown Specific Plan; Implementing Action LU1.H would encourage the City to prepare an inventory of blighted and underutilized properties and evaluate their redevelopment potential; Policy LU2.2 would provide visual amenities such as sidewalks street trees, street lighting and landscaping improvements to improve pedestrian views; Implementing Action LU2.B would incorporate green design elements such as bioswales and planter strips street elements into streetscape design; Policy LU3.4 aims to protect, preserve, and enhance visual character within the City by encouraging the development of job creating structures on vacant and blighted property; Implementing Action LU3.E promotes the preparation of a Shoreline Specific Plan to guide the design and development standards for the various shoreline areas; Implementing Action LU3.G promotes the preparation of a Hilltop Specific Plan to guide the design and

development standards for the area; Policy LU4.1 promotes the preservation of scenic viewsheds, such as Point San Pablo, by maintaining the existing condition and limiting proposed shoreline development; Policy LU4.2 promotes the preservation of scenic viewsheds along the hillsides and the shoreline through preservation, enhancement, and restoration of the City's open space areas; Implementing Action LU4.A promotes the preparation of shoreline specific plans to guide the design and development standards for the shoreline areas. The goal of these plans is to increase local access and visibility of the shoreline. Policy LU5.2 promotes the creation of districts along the waterfront that include designs that highlight the visual character of the shoreline through interpretive displays and use of rehabbed historic structures; Policy LU5.3 promotes the development of compatible adjacent uses in terms of size, scale, and use of buildings; Implementing Action LU5.B aims to prepare design guidelines that focus on the visual compatibility of contemporary and historic uses; Policy CN2.3 aims to protect the natural topography of the area, with a specific focus on the hillside and regulate the grading and site design concepts that are allowable within the City's hillsides; and Policy AC2.2 would provide façade improvements in an effort to visually define the City's Art and Culture character.

The proposed City of Richmond General Plan policies and implementation actions are important in addressing the potentially adverse physical impacts on visual resources resulting from development by ensuring visual compatibility, promoting design standards and building height restrictions, and incorporating building façade and streetscape improvements. The impacts of development on visible hillsides would be protected through implementation of proposed General Plan policy CN2.3, which calls for protection of these ridgelines and visible hillsides from inappropriate development and preservation of these viewsheds.

However, while the Richmond Municipal Code provides clear legal guidelines and standards that would ensure that development activities resulting from implementation of the proposed General Plan Update would undergo project-specific development and design review, there remains no guarantee that the scenic view impacts and visual character impacts would be eliminated or reduced to a less than significant level given the information available at the program level. Therefore, because the existing Municipal Code regulations in combination with the proposed General Plan policies protect but cannot prevent some alteration of the existing visual character or existing shoreline or hillsides views, implementation of the proposed General Plan Update could cause a substantial adverse change in the significance of the visual character or a scenic vista. Impacts on visual resources are, therefore, considered *potentially significant*.

On the pedestrian level, the changes that would occur within the change areas of the City would result in physical improvements and a reduction in blighted conditions, which most viewers would find an improvement in the overall visual character of those areas. However, at greater distances, the physical changes could dramatically affect the scale of development in the City, which could block views and substantially alter the character of the City. Because high intensity development is a necessary part of developing major activity centers that promote transit use, increased pedestrian activity, and associated commercial and residential development, substantial reductions on land use intensity would be inconsistent with the direction of the General Plan and not be feasible. Therefore, this would be considered a ***significant unavoidable impact***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario and would also be significant. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

None available.

3.15-2 The development of the proposed General Plan could create a new source of substantial of light or glare that would adversely affect day or nighttime views in the area. Though all available mitigation would be implemented, this remains a *significant and unavoidable impact*.

The City of Richmond is primarily built-out, and a significant amount of light and glare from urban uses already exists. However, new development permitted under the proposed General Plan could create new sources of glare from paved surfaces, glare from reflective building surfaces, exterior building lighting, lighted recreation facilities (such as outdoor ball fields), new street lighting, parking lot lights, and headlights of vehicular traffic. These new sources would be more noticeable from new development in large infill areas and previously undeveloped sites outside of the downtown area. As a result, these new sources of glare could affect the day or nighttime views of adjacent sensitive land uses. These sensitive land uses could generally be undeveloped lands and residential uses adjacent to commercial or industrial areas.

As development under the General Plan occurs, it would primarily result in development of infill of vacant or underutilized parcels, as well as intensification and reuse of existing developed sites. The majority of the development would occur within the change areas, which are primarily in urbanized parts of the City. New development would be located in areas that commonly experience at least minimal impacts from existing light sources. The only exception to this would be development in those few outlying areas that are currently undeveloped along the shoreline and the hillside.

Under the proposed General Plan, there would be some construction of residential uses adjacent to commercial uses, which could result in some lighting impacts on new receptors. Commercial facilities typically involve lighting for building exteriors and parking lots, which could result in light spillover onto adjacent residential properties.

Because the City is primarily built-out, a significant amount of ambient light already exists, especially near the downtown area. With an emphasis on infill development within the City, additional light sources would be concentrated within existing lighted areas and would not result in extensive use of lighting in outlying areas of the City. It is reasonable to assume that the increase in development density, particularly in activity areas, could result in spill light impacts, in comparison to the existing ambient light already present in the City. This is particularly true due to the General Plan's desire to add street lighting throughout the change areas, and create a 24-hour lifestyle within the proposed

activity centers. Due to the anticipated increase in night activity associated with the Plan, as well as the uncertainty and lack of specificity of the mechanisms in place aimed at reducing the impacts of light on surrounding uses including residential and roadways, this impact is considered *potentially significant*.

Daytime glare could be produced by the increased amount of surface area of proposed commercial and residential structures, which could reflect or concentrate sunlight. While the majority of development would be focused within the defined change areas, the increase in maximum building heights within the defined activity centers could result in the development of structures of up to 135 feet. Because details of the type of building materials to be used are unknown, exterior materials used to construct new buildings could include materials that could result in glare if the surfaces are highly reflective. In particular, proposed high-rise buildings in the downtown area could produce glare if significant amounts of glass and other reflective materials are used on the exterior of the building. These types of projects would be required to go through the City's Design Review process as well as undergo project level CEQA analysis once project-specific information is available. However, because the extent to which future development could contribute to glare is not known, this is considered a *potentially significant impact*.

The following proposed General Plan Policies and Implementation Actions would reduce the potential for impact on light and glare.

Policy

LU5.3 Land Use Compatibility. (see above)

Action

LU5.B Design Guidelines. (see above)

The proposed General Plan contains Policy LU5.3 and Implementing Action LU5.B, which require Design Guidelines to address all aspects of land use compatibility, including lighting compatibility. Compliance with Mitigation Measure 3.15-2 would reduce glare associated with new development, particularly in the downtown area, but could not ensure that impacts would be reduced to less than significant. Therefore, the impact would remain ***significant and unavoidable***.

Full Buildout Analysis

Under the full buildout scenario, the same effects would occur as discussed above under the City's projected buildout scenario. The analysis of new sources of light or glare that could adversely affect day or nighttime views in the area assumed full buildout conditions. Any future development would be subject to review to determine impacts on of light or glare in accordance with CEQA. Additional growth that could occur under full buildout would occur beyond the General Plan's 2030 planning horizon. Future planning efforts and environmental analysis would address additional growth beyond the General Plan's planning horizon and the potential implications of this growth.

Mitigation Measure

- 3.15-2 a. *All street lighting shall be directed downward and shielded to prevent light spill onto surrounding properties, sky glow, and glare.*
- b. *The City shall restrict the use of high level outdoor lighting for new homes, particularly along the hillside ridges.*
- c. *Landscaping shall be incorporated along internal roads and near off-site homes to reduce spill light emanating from vehicles and buildings.*
- d. *The City shall require design review of any project containing reflective glass or metal building materials that exceed 50 percent of any building surface or the first three floors.*

Cumulative Impacts and Mitigation Measures

The geographic context for the analysis of cumulative visual resource impacts is the City of Richmond and the cumulative growth within Contra Costa County and the surrounding cities of El Cerrito, San Pablo, and Pinole, and the community of Kensington. This cumulative impact analysis considers implementation of the proposed General Plan.

The cumulative development of the proposed General Plan, in combination with buildout of Contra Costa County, would change the visual characteristics of the City of Richmond and the view corridors/scenic vistas. The previously identified view corridors would be significantly impacted by the cumulative development. Cumulative development within the County could further block hillside viewsheds from the west. The development of the entire County would result in the overall building intensification within rural, hillside, shoreline, and urban contexts, which would constitute a substantial cumulative change. The cumulative change would be considered significant.

The CEQA Guidelines determine cumulative impacts based on a project's contribution to "an adverse change." What is now a region typified by urban and suburban uses, would be directly and significantly impacted by Richmond's downtown, high-density, transit-oriented, port and waterfronts focused development plan. Views to and from the rolling hills that constitute a large part of the county could be adversely impact by the size and scale of the buildings and land uses proposed by the Richmond General Plan. While future projects will attempt to preserve the "character" of Contra Costa County, it must be acknowledged that the proposed project represents an increase in the number of residential units, commercial/industrial space, and building height/type within the context of the County. Considering Richmond is the largest city in the County, the development of the proposed project constitutes the majority of the cumulative visual resource change within the Contra Costa County and would, therefore, result in a direct adverse visual character change and alteration of scenic views. Therefore the proposed project's contribution would be considerable and this would be a *significant and unavoidable cumulative impact* on the existing views.

Richmond is an urbanized City and contains numerous existing sources of nighttime lighting. Existing development within the City as well as the cities of El Cerrito, San Pablo and the remainder

of Contra Costa County outside of the city limits have resulted in a cumulative increase in nighttime lighting and future development in these areas would further increase night lighting. The cumulative effect of this past development and future development would result in a cumulative loss of available nighttime views resulting in a potentially significant cumulative effect.

Future development under the General Plan would occur primarily within the change areas, which consist of existing urban uses, which would already be subject to lighting from existing development and vehicle headlights. However, the proposed 24-hour nature of the Downtown/Macdonald Avenue change area could result in substantial amounts of new night lighting. Policies LU5.3 would reduce light impacts within the City, but the City of Richmond would be a major contributor to the cumulative amount of artificial light, resulting, therefore, in the project's contribution to the cumulative increase being *cumulatively considerable*.

Glare from sunlight hitting a glass surface could cause a public hazard or annoyance to motorists. At certain times of the day, buildings with glass-dominated facades can impact drivers within sight of them. Development along the shoreline and the hillside within the City and in the surrounding County also contributes to the cumulative glare in the area. However, the majority of glare comes from tall buildings located in downtown or along major roadways. Cumulative development in neighboring El Cerrito, San Pablo, and Pinole could increase daytime glare primarily through intensified infill development. This could result in a potentially significant cumulative effect. The General Plan's increased emphasis on high density development in the downtown could also contribute to cumulative impacts from glare.

Under the proposed General Plan, the majority of cumulative development would occur within the proposed change areas. At this time the specifics concerning building materials and configurations are not known. However, many projects would be required to go through the City's Design Review process and future projects would, in many cases, also be subject to CEQA review and may require further mitigation for glare impacts. However, it is uncertain the extent to which glare would be generated by future development. Therefore, the project's contribution would be considerable and the cumulative impact would be considered *significant*.

4. CEQA CONSIDERATIONS

4.0 CEQA CONSIDERATIONS

INTRODUCTION

Section 15126 of the CEQA Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the EIR must also identify (1) cumulative effects, (2) significant environmental effects of the proposed project, (3) significant environmental effects that cannot be avoided if the proposed project is implemented, (4) significant irreversible environmental changes that would result from implementation of the proposed project, and (5) growth-inducing impacts of the proposed project. It should be noted that although growth inducement itself is not considered an environmental effect, it could potentially lead to foreseeable physical environmental effects, which are discussed under the Growth Inducing Impacts heading below.

SIGNIFICANT ENVIRONMENTAL EFFECTS

The Executive Summary and Sections 3.1 through 3.15 of this EIR provide a comprehensive identification of the proposed project's environmental effects, including the level of significance both before and after mitigation.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The environmental effects of the proposed General Plan on various aspects of the environment are discussed in detail in Chapter 3 of this EIR. Project-specific and cumulative impacts that cannot be avoided if the project is approved as proposed are listed below:

Project-Specific Significant-and-Unavoidable Impacts

Project-specific significant and unavoidable impacts identified for the proposed General Plan include:

Air Quality

- 3.3-1 Implementation of the proposed General Plan could provide new sources of regional air emissions that would conflict with or obstruct implementation of the Clean Air Plan.
- 3.3-2 Implementation of the proposed General Plan would result in operational emissions that could contribute substantially to an existing or projected air quality violation.

Cultural Resources

- 3.5-1 Development activities associated with the proposed Richmond General Plan Update could cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines.

Climate Change

- 3.6-1 Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment.
- 3.10-1 Construction activities associated with the future land use changes under the proposed General Plan could generate noise levels that exceed the noise standards established by the City of Richmond Municipal Code and would expose sensitive receptors to substantial temporary or periodic increases in ambient noise levels.
- 3.10-2 Construction of future new land uses under the proposed General Plan could generate or expose persons or structures to excessive groundborne vibration.
- 3.10-3 Implementation of the proposed General Plan could expose sensitive receptors to noise levels in excess of the noise standards established by the City of Richmond.
- 3.10-5 Operation of new land uses under the proposed General Plan would generate increased local traffic volumes that would cause a substantial permanent increase in ambient noise levels in the project vicinity.

Public Utilities

- 3.13-3 Implementation of the General Plan Update would require the construction or expansion of wastewater treatment facilities or conveyance systems that could cause significant environmental effects.

Transportation and Circulation

- 3.13-1 The proposed General Plan may result in traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards.
- 3.13-3 Implementation of the proposed General Plan would produce higher demand for transit service, potentially exceeding the capacity of transit service providers.
- 3.13-6 The proposed General Plan would increase congestion and reduce travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials).

Visual Resources

- 3.15-1 Development activities associated with the proposed General Plan could have a substantial adverse effect on a scenic vista or substantially degrade the existing visual character or quality of the site and its surroundings.
- 3.15-2 The development of the proposed General Plan could create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Significant and Unavoidable Cumulative Impacts

Cumulative significant and unavoidable impacts identified for the proposed General Plan include:

Air Quality

The proposed General Plan is not currently consistent with the 2009 Clean Air Plan (CAP) with respect to population increases; therefore, the proposed General Plan's contribution to cumulative effects on the CAP would be significant.

The emissions associated with vehicle miles traveled are higher than the rate of increase in population within the City; this impact on cumulative conditions would be considered significant.

Implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable federal or state ambient air quality standard.

Cultural Resources

The project's incremental contribution to the cumulative loss of cultural resources would be potentially cumulatively considerable, and thus potentially significant.

The proposed General Plan has the potential to adversely affect significant paleontological resources that are non-renewable members of finite classes. Consequently, the project's incremental contribution to these cumulative effects would itself be potentially cumulatively considerable, and therefore potentially significant.

Development in the City and the region could result in the destruction of historic resources. This would be a significant cumulative impact; the proposed General Plan's contribution to this impact would be considerable, and therefore significant.

Climate Change

Implementation of the proposed General Plan would result in the generation of GHGs that may have a significant impact on the environment.

Noise

The construction of future development allowed under the proposed General Plan could occur concurrently and adjacent to similar development/construction within 1,000 feet of City limits; therefore, cumulative impacts would be significant.

Vibration from construction of future new land uses within the City and immediately surrounding areas could potentially combine with construction vibration of the proposed project to result in a potentially significant cumulative impact.

Rail operations could expose sensitive receptors under the cumulative condition to noise levels above established standards and some of the exposure to rail noise would be attributable to the proposed General Plan. This impact would be significant.

The contribution of the proposed project to future roadway noise levels would be considered cumulatively considerable with respect to the projected exceedance of identified thresholds of significance.

Public Utilities

The growth associated with the proposed General Plan would be the major contributor to future flows to the wastewater treatment facilities, resulting in the need for expansion, which would be a significant cumulative impact.

Solid waste generation from approved and foreseeable cumulative projects in the area would exacerbate regional landfill capacity issues in the future. The proposed General Plan's contribution would be cumulatively considerable and this impact would be significant.

Transportation and Circulation

The proposed General Plan would contribute to traffic congestion that exceeds the previous City of Richmond traffic LOS standard of LOS D, as well as CCTA and WCCTAC LOS and MTOS standards.

Implementation of the proposed General Plan would contribute to higher demand for transit service, potentially exceeding the capacity of transit service providers.

The proposed General Plan would contribute to increased congestion and reduced travel speeds on various roadways throughout the City, including some that are on primary emergency response routes (i.e. freeways and arterials).

Visual Resources

The development associated with the proposed General Plan, in combination with cumulative development could result in the obstruction of existing scenic views and the adverse alteration of the existing visual character. The proposed General Plan would generate a considerable contribution to this impact, which would be significant.

The development associated with the General Plan would generate buildings, vehicles, and structure that would emit lighting and glare impacts onto local receptors within the cumulative context. This would be a significant cumulative impact with considerable contribution from the proposed General Plan.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL EFFECTS

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project. Section 15126.2(c) states:

Use of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if:

- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a large commitment of nonrenewable resources; and/or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

The proposed General Plan would result in the commitment of concentrated development resources within the identified change areas. The General Plan would increase building densities, population concentration, and transit oriented development opportunities, providing a more walkable urban development context, thereby precluding any other proposed development opportunities for the lifespan of the plan. Restoration of the change areas to a less developed condition would be inconsistent with the goals and policies of the General Plan, which focus on the development of a dense and concentrated urban core. Restoration of the areas to a natural (undeveloped) state would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment.

The proposed General Plan would result in the use, transport, storage, and disposal of hazardous wastes, as described in Section 3.8, Hazards and Hazardous Materials, all activities would be required to comply with applicable state and federal laws related to hazardous materials, which significantly reduces the likelihood and severity of accidents that could result in significant irreversible environmental damage.

Implementation of the proposed General Plan would result in the long-term commitment of resources to urban development. The most notable significant irreversible impacts are alteration of the visual character of the City, increased generation of pollutants, and the commitment of non-renewable and/or slowly renewable natural and energy resources during construction activities and operation of uses allowed under the proposed General Plan. These unavoidable consequences of urban growth are described in the appropriate sections in Chapter 3 of this EIR.

Resources that would be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in the unnecessary, inefficient, or wasteful use of resources. With respect to operational activities, compliance with all applicable building codes, mitigation measures, planning policies, and standard conservation features would ensure that natural resources are conserved to the maximum extent possible. It is also possible that new technologies or systems will emerge, or will become more cost-effective or user-friendly, to further reduce the reliance upon nonrenewable natural resources. Nonetheless, activities related to the proposed General Plan, including construction and operation, would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobiles and construction equipment.

GROWTH-INDUCING IMPACTS

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through the establishment of policies or other precedents that directly or indirectly encourage additional growth. Although growth inducement itself is not considered an environmental effect, it could potentially lead to environmental effects.

In general, a project may foster spatial, economic, or population growth in a geographic area if the project removes an impediment to growth (e.g., the establishment of an essential public service, the provision of new access to an area; a change in zoning or general plan amendment approval); or economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion, etc). These circumstances are further described below:

- **Elimination of Obstacles to Growth:** This refers to the extent to which a proposed project removes infrastructure limitations or provides infrastructure capacity, or removes regulatory constraints that could result in growth unforeseen at the time of project approval.
- **Economic Effects:** This refers to the extent to which a proposed project could cause increased activity in the local or regional economy. Economic effects can include effects such as the “multiplier effect.” A “multiplier” is an economic term used to describe inter-relationships among various sectors of the economy. The multiplier effect provides a quantitative description of the direct employment effect of a project, as well as indirect and induced employment growth. The multiplier effect acknowledges that the on-site employment and population growth of each project is not the complete picture of growth caused by the project.
- **Increased Pressure on Land Intensification:** Unforeseen future development can be spurred by the construction of certain projects that have the effect of creating unique and currently unmet market demands, or by creating economic incentive for future projects by

substantially increasing surrounding property values. These types of impacts are most often identified for projects developed in areas that are currently lacking a full spectrum of economic activity. For example, newly developing office areas may be lacking in a full range of support commercial uses; this commercial demand can cause increased pressure for rezones or general plan amendments aimed at providing adequate land to accommodate businesses seeking to serve the unmet demand.

Elimination of Obstacles to Growth

Growth in an area may result from the removal of physical impediments or restrictions to growth, as well as the removal of planning impediments resulting from land use plans and policies. In this context, physical growth impediments may include nonexistent or inadequate access to an area or the lack of essential public services (e.g., water service), while planning impediments may include restrictive zoning and/or general plan designations.

The project would be developed in an urbanized area that contains numerous infill development opportunities and supporting infrastructure (roads, water distribution, wastewater and drainage collection, and energy distribution). The proposed General Plan would focus future planned development in the City on urban infill of brownfields, undeveloped urban lots, and redevelopment of underused existing development. These areas are currently served by roads, water distribution, wastewater and drainage collection, and energy distribution facilities. Some upgrades to these facilities may be required by the intensified uses that could occur under the General Plan. However, because the proposed General Plan is focused on infill development and the City currently is served by infrastructure, any improvements to infrastructure would likely be sized for development as visualized by the City and would not be sized such that it would induce substantial growth.

The proposed General Plan includes land use designations for all areas that are currently within the City limits. The City has identified “stable areas” where the intensity and type of use would not change and those areas have been assigned land use designations that are generally consistent with the existing uses. These areas would not change substantially over the life of the General Plan. Land uses in identified change areas allow for substantial growth. However, the City does not intend for this level of growth to occur over the life of the Plan, because such a level of growth is unlikely. Instead, the City based projections for growth on capture of regional growth that is projected to occur in Contra Costa County. Although the City does not assume full buildout of the General Plan, the growth projections are actually aggressive in that they far exceed the past growth in the City and also exceed the growth projected in the City by the Association of Bay Area Governments. The City proposes to achieve this more realistic level of growth through implementation of policies and implementing actions that promote mixed-use, walkable, transit-oriented communities with viable neighborhoods, commercial centers, and public spaces, which would attract projected growth to the City of Richmond.

Economic Effects

In addition to the employment generated by the proposed project, additional local employment can be generated through the multiplier effect. The multiplier effect tends to be greater in regions with

larger diverse economies due to a decrease in the requirement to import goods and services from outside the region.

Two different types of additional employment are tracked through the multiplier effect. Indirect employment includes those additional jobs that are generated through the expenditure patterns of direct employment associated with the project. For example, workers in the commercial and public uses would spend money in the local economy, and the expenditure of that money would result in additional jobs. Indirect jobs tend to be in relatively close proximity to the places of employment and residence.

The multiplier effect also relates to induced employment. Induced employment follows the economic effect of employment beyond the expenditures of the employees within the proposed project area to include jobs created by the stream of goods and services necessary to support businesses within the proposed project. For example, when a manufacturer buys or sells products, the employment associated with those inputs or outputs are considered induced employment. When an employee from the project goes out to lunch, the person who serves the project employee lunch holds a job that was indirectly caused by the proposed project. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered induced employment. The multiplier effect also considers the secondary effect of employee expenditures. Therefore, it includes the economic effect of the dollars spent by those employees who support the employees of the project.

Increased future employment generated by employee spending ultimately results in physical development of space to accommodate those employees. It is the characteristics of this physical space and its specific location that will determine the type and magnitude of environmental impacts of this additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are too speculative to predict or evaluate, since they can be spread throughout the City of Richmond and beyond. In addition, as discussed above, the projected growth for the City is aggressive and the City assumes some level of this multiplier effect to achieve the level of growth projected to occur within the planning horizon of the General Plan. Absent this effect, the growth in the City would likely be less than that projected in the General Plan and analyzed in this EIR.

Increased Pressure on Land Use Intensification

The proposed General Plan would result in the development of more residential, retail/commercial uses, and transportation uses within the City. The increase of residential, commercial, and mixed-use neighborhoods in the City of Richmond could stimulate the development of new jobs, retail uses, commercial uses, or industrial uses in the area. Areas within the unincorporated County that are currently not developed, and could be subject to increased development pressures as a result of the implementation of the proposed plan. While this undeveloped land is outside of the City of Richmond's city limits, the area could still be affected by the plans indirect impacts. It is possible that the development of the proposed General Plan could increase the pressure on the County to seek further development within the region's undeveloped areas, as well as increase pressure on

adjacent cities to intensify the land use designations and zoning to accommodate the planned regional growth. However, while the proposed General Plan assumes an aggressive growth rate, as discussed above, the growth assumptions for the General Plan do not assume full buildout of all land uses in the City; thus, there is sufficient capacity within the General Plan to accommodate additional growth in the case of increased pressure for development.

Summary

While growth is an intended consequence of the proposed General Plan, growth induced directly and indirectly by the proposed project could adversely affect the City of Richmond and surrounding areas within the County. Potential impacts associated with induced growth in the area could include: traffic congestion; air quality deterioration; loss of habitat and wildlife; impacts on utilities and services, such as fire and police protection, water, wastewater, solid waste, energy, and natural gas. Indirect and induced employment and population growth would further contribute to these impacts if there is additional conversion of undeveloped lands to urban uses for housing and infrastructure.

CUMULATIVE IMPACTS

CEQA requires that an EIR contain an assessment of the cumulative impacts that could be associated with the proposed project. This assessment involves examining project-related effects on the environment in the context of similar effects that have been caused by past or existing projects, and the anticipated effects of future projects. Although project-related impacts may be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed [CEQA Guidelines, §15130(a)].

The cumulative analysis in each technical section evaluates the proposed project's contribution to the cumulative scenario. The basis of the cumulative analysis varies by technical area. Air quality impacts are evaluated against conditions in the San Francisco Bay Air Basin. The hydrology and water quality cumulative analysis considers the multiple watersheds connected to the City. The utilities analysis is primarily based on the City's General Plan development assumptions and expansion plans, because the City would provide the majority of services and utilities to the proposed project. Other cumulative analyses, such as biology, consider the potential loss of resources in a broader, more regional context.

The following projects have been considered in the cumulative analysis and are located within the City of Richmond. Buildout of these proposed projects and the proposed General Plan would add additional residential units, vehicle trips, and regional job opportunities to the City.

Point Molate – The Point Molate project area is located northwest of the Richmond San Rafael Bridge. Redevelopment of the area could result in the taking approximately 266 acres of land into Federal trust and developing a 413-acre resort hotel casino operated by the Guidiville Band of the Pomo Indian Tribe, providing multiple hotel rooms, resort cottages, retail uses, restaurants, casino uses, roadways, and open space. Alternative redevelopment plans are under consideration. However, in order to ensure that all potential environmental effects are considered, the General Plan EIR assumes the maximum build-out scenario.

San Pablo Avenue Specific Plan – The San Pablo Specific Plan is a proactive and progressive planning tool through which the cities of El Cerrito and Richmond will be able to create a long-range vision, development framework and implementation measures for economic development and improvements along San Pablo Avenue. The Specific Plan will provide the cities, developers and the community with a user friendly, single document, detailed guide for all future land use and design along the corridor.

Honda Point of Entry – The Honda Point of Entry project includes improvements to the existing Point Potrero Marine Terminal (PPMT) including a new rail yard adjacent to the ship berths at the PPMT so that imported autos can be loaded directly onto rail cars without the intermediary step of shuttling them to the Burlington–Northern Santa Fe (BNSF) rail yard.

Miraflores – The Miraflores Housing Development project would redevelop an approximately 14-acre site with up to 336 dwelling units in a mix of affordable and market-rate housing, resulting in a population of approximately 971 residents. The affordable component of the project would consist of 110 affordable rental units for seniors, and one manager’s unit. The market-rate component would include up to 226 single-family units. The project would also incorporate design features reflecting the site’s history as the site of three former nurseries that were part of the Japanese American flower-growing industry in Richmond.

5. ALTERNATIVES TO THE PROPOSED PROJECT

5.0 ALTERNATIVES TO THE PROPOSED PROJECT

INTRODUCTION

The purpose of this chapter is to identify and describe alternatives to the proposed General Plan. Project alternatives are developed to reduce or eliminate the significant or potentially significant adverse environmental effects identified as a result of the proposed project, while still meeting most, if not all, of the basic project objectives.

CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

An EIR must evaluate the comparative merits of a reasonable range of alternatives to the proposed project, or to the location of the proposed project that could feasibly attain most of the basic objectives of the project while avoiding or substantially lessening any of the significant effects of the project (CEQA Guidelines, section 15126.6). An EIR need not evaluate the environmental effects of alternatives at the same level of detail as the proposed project, but must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project. The CEQA Guidelines provide the following language for discussing alternatives to a proposed project:

The specific alternative of the “no project” shall also be evaluated along with its impacts....If the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines, Section 15126.6 subd.(e)(2)).

The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the proposed objectives, or would be more costly (CEQA Guidelines, Section 15126.6 subd.(b)).

If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines, Section 15126.6 subd.(d)).

The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice....The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making....An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (CEQA Guidelines, Section 15126.6 subd.(f)).

The requirement that an EIR evaluate alternatives to the proposed project or alternatives that address the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that the objectives of the project could be attained while reducing the magnitude of, or avoiding, the environmental impacts of the proposed project. The EIR need examine in detail only the alternatives that could feasibly attain most of the basic objectives of the project. The Public Resources Code and the CEQA Guidelines direct that the EIR need “set forth only those alternatives necessary to permit a reasoned choice.” The CEQA Guidelines provide a

definition for “a range of reasonable alternatives” and, thus, limit the number and type of alternatives that need to be evaluated in a given EIR. According to the CEQA Guidelines (section 15126.6 (b)):

The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project.

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (CEQA Guidelines, section 15126.6 (f)(1)).

Finally, an EIR is not required to analyze alternatives when the effects of the alternative “cannot be reasonably ascertained and whose implementation is remote and speculative” (section 15126.6 (f)(2)(3)).

The selection of alternatives takes into account the project objectives provided in Chapter 2, Project Description. The project objectives are listed below.

- Present strategies and specific implementing actions to achieve the community’s overarching vision and long-term goals;
- Establish a basis for determining whether specific development proposals and public projects align with the community’s vision and long-term goals;
- Empower City departments, other public agencies, and private developers to design projects that will enhance community character and sustain and improve quality of life in accordance with particular values and principles defined in the General Plan;
- Provide a basis for developing more detailed plans and implementing programs such as the Zoning Ordinance, capital improvement plans, facilities plans, community needs assessments, and specific plans; and
- Guide public agencies that work with the City, such as school districts, regional boards, or state agencies, as well as private investors, as they contemplate future actions in the area.

Equally important to attaining the project objectives is the reduction of some or all significant impacts, particularly those that could not be mitigated to a level below the threshold of significance. The project-specific and cumulative significant and unavoidable impacts of the proposed project, after mitigation, are identified below.

PROJECT-SPECIFIC SIGNIFICANT AND UNAVOIDABLE IMPACTS

- During the analysis performed on the various CEQA topics throughout this EIR, several impacts were identified that were significant and unavoidable, even after the incorporation of mitigation measures. They include air quality, cultural resources, noise, wastewater, transportation/traffic, and visual resources.

CUMULATIVE SIGNIFICANT AND UNAVOIDABLE IMPACTS

- During the analysis performed on the various CEQA topics throughout this EIR, several impacts were identified that were cumulatively considerable and therefore significant and unavoidable, even after the incorporation of mitigation measures. They include air quality, cultural resources, climate change, noise, wastewater, solid waste, transportation/traffic, and visual resources.

ALTERNATIVES CONSIDERED AND DISMISSED FROM FURTHER CONSIDERATION

Consistent with the CEQA Guidelines, primary consideration was given to alternatives that would reduce significant impacts while still meeting most of the project objectives. Those alternatives that would have impacts identical to or more severe than the proposed project, or that would not meet most of the project objectives, were rejected from further consideration. The significant impacts identified for the proposed project are related to air quality, cultural resources, noise, wastewater, transportation/traffic, and visual resources. Alternatives that would exceed the significance thresholds for the aforementioned issue areas, including an alternative that increases the intensity of development, would not substantially lessen any significant environmental impacts identified in Chapter 4 of this Draft EIR and were rejected from further analysis.

As noted below, the alternatives analyzed include a No Project Alternative and two other scenarios, each of which were developed as part of an extensive community visioning process where individuals, organizations, and agencies from the community were able to express their expectations for the City of Richmond's future. Three land use alternatives, the proposed project and the two alternatives discussed below, were carried forward as part of the community visioning process. The two alternatives represent a reduction in density and intensity compared to the proposed project. Community opinion regarding alternatives that would include more intense development than the proposed project was that the larger scale development associated with such an alternative would alter the scale and character of the City and would be inconsistent with the vision developed for the General Plan. Because an increased intensity alternative would not be consistent with the vision and objectives of the General Plan, this Draft EIR does not analyze an increased intensity alternative.

ALTERNATIVES CONSIDERED IN THIS DRAFT EIR

Although a number of alternatives could be designed that could result in the reduction or elimination of project impacts, three representative alternatives are evaluated in this Draft EIR. The alternatives include a No Project Alternative and two other scenarios that represent a reduction in the level of development intensity compared to the proposed project. The alternatives are summarized below.

- **No Project/1994 General Plan Alternative** – Under this alternative, development for the proposed General Plan would not occur. Development would be guided by continued implementation of the existing General Plan.
- **Alternative 1:** This alternative assumes a lower intensity of development in the City with a lower share of the County's growth, 8.39 percent of the population growth in Contra Costa

County. Between 1980 and 2005, Richmond's share of regional population growth was 8.39 percent, so this alternative represents no change from the past growth trend.

- **Alternative 2:** This alternative assumes that Richmond would capture 10.19 percent of population growth for the County over the next 20 years. This growth rate is higher than the historic growth rate in the region (8.39 percent) and is a moderate growth rate.

Each of the alternatives is described in more detail, below, followed by an assessment of the alternative's impacts relative to the proposed project. The focus of this analysis is the difference between the alternative and the proposed project, with an emphasis on addressing the significant impacts identified under the proposed project. For each issue area, the analysis indicates which mitigation measures would be required of the alternative and which significant and unavoidable impacts would be avoided. If necessary, the analysis indicates what additional mitigation measures would be required for the alternative being discussed, and what significant impacts would be more or less severe. Unless otherwise indicated, the level of significance and required mitigation would be the same for the alternative as for the proposed project and no further statement of the level of significance is made. Table 5-1 provides a summary comparison of the severity of impacts for each alternative by topic.

Issue Area	Proposed Project	No Project/1994 General Plan	Alternative 1	Alternative 2
Air Quality	SU	Reduced	Reduced	Reduced
Biological Resources	LS	Equal	Equal	Equal
Climate Change	SU	Reduced	Reduced	Reduced
Cultural Resources	SU	Equal	Equal	Equal
Geology, Soils, and Mineral Resources	LS	Equal	Equal	Equal
Hazards and Hazardous Materials	LS	Equal	Equal	Equal
Hydrology and Water Quality	LS	Greater ¹	Equal	Equal
Noise	SU	Reduced	Reduced	Reduced
Parks and Open Space	LS	Equal	Equal	Equal
Public Services	LS	Equal	Equal	Equal
Public Utilities	SU	Reduced	Reduced	Reduced
Transportation and Circulation	SU	Reduced	Reduced	Reduced
Visual Resources	SU	Reduced	Equal	Equal
Notes: SU = Significant and Unavoidable – if any impact was identified as significant and unavoidable in the technical analysis. LS = Less than Significant – if all impacts were identified as less than significant in the technical analysis. NI = No impact would occur when compared to the proposed project. Equal = Level of significance is equal or similar to the proposed project. Greater = Level of significance is greater than the proposed project. Reduced = Level of significance is reduced compared to the proposed project, but not necessarily to a less-than-significant level. 1. One threshold was increased to a significant level from that of the proposed General Plan. Source: PBS&J, 2009.				

No Project/1994 General Plan Alternative

Under CEQA, the No Project Alternative must consider the effects of forgoing the project. The purpose of analyzing the No Project Alternative is to allow decision-makers to compare the impacts of the proposed project versus the status quo. The No Project Alternative can consist of either a No Development Alternative, in which no development occurs in the project area, or an Existing Designation Alternative, in which development is assumed to occur consistent with the existing land use designations.

The No Project/No Development Alternative describes the environmental conditions that exist at the time that the environmental analysis commences (CEQA Guidelines, section 15126.6 (e)(2)). This alternative would halt all development within the City, regardless of the status of entitlements. By stopping all future development, this alternative would eliminate growth in traffic impacts, greenhouse gas (GHG) emissions, demand for public infrastructure and services, and impacts on environmental resources, such as air quality, noise, biological, and cultural resources. However, while a No Development Alternative could be an option for an individual development project, for a General Plan, eliminating all future development in the entire City would not be a realistic alternative. Therefore, the No Project/No Development Alternative is not analyzed.

This Draft EIR analyzes the No Project Alternative that assumes development would occur consistent with the existing land use designations in the City: those of the existing 1994 General Plan. Under the No Project/1994 General Plan Alternative, the City would be developed consistent with currently allowable land uses and development intensities at a rate consistent with past growth. It is assumed that the existing General Plan policies would remain in place under this alternative. Development under this alternative would result in the increase in population in 2030 of 19,400 and job growth of 17,300. This alternative is expected to generate 155,824 new daily vehicles trips at buildout.

Comparative Environmental Effects

No new land use designations would be created under this alternative. Current land use densities and intensities would remain and similar development would continue to occur in the City. While development in the City would continue to occur, there likely would not be a substantial reinvestment in underutilized areas, as is visualized in the proposed General Plan. The following is a brief discussion of each of the CEQA topics, offering a comparative analysis between the proposed General Plan and this alternative.

Air Quality

The proposed General Plan was found to be inconsistent with the 2009 Clean Air Plan (CAP) prepared by the BAAQMD. Since this alternative is based on what could occur as a result of allowable uses/intensities set forth in the existing General Plan, and the CAP is based on growth projections assumed in the preparation of the CAP in 2007, the development allowed under this alternative would be in compliance with the assumptions in the CAP. This alternative would result in

a lesser impact than the proposed project and would be considered to have no impact for this threshold.

The potential for project related emissions contributing to a substantial existing or projected air quality violation caused by the proposed General Plan were analyzed in this EIR for both construction and operation. Since this alternative would allow new development to occur, there would be similar impacts related to construction for any of the CEQA thresholds related to air quality. However, for plan level analysis of construction emissions, the BAAQMD indicates that a General Plan is less than significant with the incorporation of the most recently available best management practices (BMPs) as determined by the BAAQMD. These BMPs would be required to be implemented under the proposed General Plan and for development currently allowed under this alternative. Therefore, impacts related to construction would be similar for this alternative and would be less than significant. Operational impacts related to the proposed General Plan were analyzed and found to be significant due to the long-range increase in vehicle miles traveled (VMT) resulting from future development. This alternative, however, would result in 113,143 fewer daily automobile trips than the proposed General Plan. This would, therefore, result in a substantial reduction in VMT compared the proposed General Plan. Thus, impacts resulting from this alternative would be less than the proposed General Plan, but impacts would remain significant and unavoidable.

Implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable federal or state ambient air quality standard. The Basin is currently in nonattainment for ozone, PM₁₀, and PM_{2.5}. With regard to determining the significance of the proposed plan level contribution, the BAAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor provides methodologies or thresholds of significance to be used to assess these impacts. Instead, a project's potential contribution to cumulative impacts should be assessed utilizing the same significance criteria as those for project-level impacts. Construction and operation of the proposed project could generate emissions that exceed the thresholds of significance recommended by the BAAQMD for ROG, NO_x, CO, PM₁₀, and PM_{2.5}. Because the Basin is in nonattainment for PM₁₀ and PM_{2.5} and because both ROG and NO_x are precursors of ozone, for which the Basin is also in nonattainment, the proposed General Plan could make a cumulatively considerable contribution to these emissions. This alternative would reasonably result in lesser impacts related to operation of future projects due to fewer average daily trips. However, it is unlikely that impacts would be reduced below a significant level, even with fewer trips generated. As for construction, reduced development intensities would not likely reduce impacts to less than significant levels because grading activities for example, are contingent upon area and not the number of units or allowable density. Therefore, impacts related to construction would be similar under this alternative and lesser as they relate to operation and remain *significant and unavoidable*.

Impacts related to substantial pollutant concentrations were found to be less than significant for the proposed General Plan. The analysis was completed using the CALINE4 methodology, which is based upon congestion at intersections within the City. Since this alternative would generate 113,143 fewer average daily trips at buildout, impacts as a result would be less than the proposed General Plan and would also be less *than significant*.

Impacts related to the creation of odors that would affect a substantial number of people were found to be less than significant for the proposed General Plan. At the plan level of analysis, BAAQMD determines significance levels of potential odor emissions based upon whether a jurisdiction has special overlay zones included in the plan policies, land use maps, and implementing ordinances. Ordinance 24-09 N.S. addresses odor impacts for Biodiesel Facilities and Refining and Manufacturing facilities. The BAAQMD has established screening levels to aid in the determination of adequate overlay zone distances for minimizing impacts from odor sources. With the evaluation and inclusion of all future odor source development into the existing zone areas and ensuring they are properly mapped, the proposed General Plan would result in less than significant impacts. The proposed alternative would also be subject to the applicable requirements of the ordinances and impacts would be the same as the proposed General Plan and remain less than significant.

Biological Resources

Impacts related to biological resources are related to the location of development, not to the land use types or density. Because the proposed General Plan does not include land uses outside of the current City limits, impacts of this alternative would be similar to the potential impacts related to the proposed General Plan. Like the proposed General Plan, this alternative would have a less than significant impacts for each of the thresholds related to biological resources.

Climate Change

With implementation of Mitigation Measure 3.6-1, which requires incorporation of the most recent BAAQMD Best Management Practices, the proposed General Plan's contribution to construction-related greenhouse gas (GHG) emissions would not be cumulatively considerable. For the purposes of this analysis, it is assumed that development projects under the No Project Alternative would also comply with BAAQMD Best Management Practices and the impact would also be less than considerable. The proposed General Plan would not conflict with plans adopted for the purpose of reducing the emissions of greenhouse gases, assuming compliance with the City of Richmond's pending Climate Action Plan to attain emissions of, at a minimum, the AB 32 goal of 29 percent below Business As Usual. Compliance with the Climate Action Plan under the No Project Alternative would also not conflict with adopted plans to reduce greenhouse gas emissions.

Long-term operational impacts of the proposed General Plan would result in an increase in GHG emissions and would still exceed the BAAQMD's threshold. Therefore, the impact with respect to operational emissions would be considered significant and unavoidable. Although the No Project Alternative would result in less intense development than the proposed General Plan, the No Project Alternative would not result in a reduction, relative to the proposed General plan, such that the emissions would be below the BAAQMD threshold of 6.6 MT CO₂e per service population. Therefore, the impact related to operational emissions under the No Project Alternative would also be significant and unavoidable.

Cultural Resources

As discussed previously, the proposed General Plan does not increase the size of the City or allow development in areas not already allowed in the existing General Plan. Because development could occur within the City, the potential for demolition of historic structures exists. Consequently, the potential for development under this alternative to impact historic or other cultural resources would be similar to the proposed General Plan. Therefore, the potential to adversely affect historical resources would also be significant under this alternative, as would the potential cumulative contribution to the loss of cultural resources.

Geology and Soils

Similar to the proposed General Plan, this alternative already exposes people and/or structures to potentially substantial adverse effects resulting from strong seismic groundshaking or seismic-related ground failure. All impacts associated with geological and soil impacts that were identified for the proposed General Plan would also apply to this alternative. The risks to people and structures would not be increased regardless of the size or type of development, as adherence to existing regulations would assure seismic safety to the greatest extent possible. All future development in the City would be required to adhere to the most recent California Building Code (CBC), which includes strict building specifications to ensure structural and foundational stability, under the proposed General Plan or the No Project Alternative. The City would continue to require all future development to prepare and submit a detailed soils and geotechnical analysis for site-specific projects. Therefore, because all future development projects would be required to adhere to existing regulations, impacts associated with rupture of a known earthquake fault, strong seismic groundshaking, seismic-related ground failure, and landslides would continue to be less than significant under this alternative.

Future development under the proposed General Plan or this alternative would result in ground-disrupting activities, such as excavation and trenching for foundations and utilities, soil compaction and site grading, and the erection of new structures, all of which would temporarily disturb soils. This could result in soil erosion; however, applicants for specific development projects must submit a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) for coverage under the Statewide General Construction Activity Stormwater Permit and must comply with all applicable requirements, including the preparation of a Storm Water Pollution Prevention Plan (SWPPP), applicable National Pollutant Discharge Elimination System (NPDES) Regulations, and best management practices (BMP). Such compliance, in addition to implementation of existing code requirements, would ensure that erosion and other soil instability impacts resulting from future construction would be less than significant. Impacts would be similar to the proposed General Plan.

Hazards and Hazardous Materials

The project site is in an urban area that is already developed. Thus, existing conditions are those discussed for the proposed project. Operation of the uses permitted under the proposed General Plan would involve the use, transportation, and disposal of hazardous materials. Future development under the proposed General Plan would be required to comply with applicable laws and regulations that would reduce the risk of hazardous materials use, transportation, and disposal through the

implementation of established safety practices, procedures, and reporting requirements. Compliance with existing regulations would also minimize the risks associated with the exposure of sensitive receptors, including schools, to hazardous materials. Section 3.8 of this EIR discusses potential hazards currently located within the City. Compliance with applicable regulations would occur under this alternative as well as the proposed General Plan. Impacts would be similar but slightly greater even with implementation of proposed General Plan Actions CN6.A, CN6.B, and CN6.C to reduce impacts related to hazards; these policies would not be part of this alternative. Implementation of existing regulations would, however, reduce the impact to less than significant.

Hydrology and Water Quality

The proposed General Plan was found to have less than significant impacts related to potential violation of any water quality standards or waste discharge requirements for construction and operation of future development under the plan. Compliance with NPDES permits requirements and General Plan Policies would reduce the risk of water degradation within the City from the operation of new developments to the maximum extent practicable. Since this alternative allows development under the 1994 General Plan, impacts would be expected to be similar to those of the proposed General Plan. Therefore, since violation of waste discharge requirements or water quality standards would be minimized, this impact would also be considered less than significant.

Impacts related to substantially depleting groundwater supplies or interfering substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level were found to be less than significant for the proposed General Plan. All existing land uses and future development contemplated in the proposed General Plan would utilize water from East Bay Municipal Utilities District (EBMUD), which receives its potable water mostly from the Mokelumne River. No new groundwater wells are proposed as a part of the proposed General Plan or this alternative. Therefore, this alternative would have impacts similar to the proposed General Plan, which would be less than significant.

Development under the proposed General Plan would result in alterations to drainage, such as changes in ground surface permeability due to paving, and changes in topography from grading and excavation. However, policies in the proposed General Plan would require implementation of BMPs, incorporation of stormwater detention facilities, design of drainage facilities to minimize adverse effects on water quality, and minimization of increases in impervious areas. Thus, impacts are less than significant. Development under the 1994 General Plan would have similar impacts to those of the proposed General Plan, since federal and state regulation would still apply, and remain less than significant.

Impacts related to the alteration of the existing drainage patterns in the area, including through the alteration of the course of a stream or river, or the substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site was found to be less than significant for the proposed General Plan with the incorporation of Mitigation Measure 3.9-4. In addition, impacts related to the creation or contribute of runoff water, which would provide substantial additional sources of polluted runoff, was also determined to be less than significant with

the implementation of Mitigation Measure 3.9-4 for the proposed General Plan. Most of the City would not result in new development that would substantially alter drainage patterns, because these areas are already developed with existing uses and impervious surfaces. Operation of the proposed General Plan could degrade runoff water quality by contributing chemicals associated with household, commercial, transportation, and landscape uses. This impact would be considered less than significant. Since this alternative consists of future development under the 1994 General Plan and would not include Mitigation Measure 3.9-4, impacts would be greater than those of the proposed General Plan, and impacts could be significant.

The City does not permit the construction of housing within the 100-year flood zone. Policies and implementation measures in the proposed General Plan set forth methods to reduce impacts related to flood zones. This alternative would include development consistent with the 1994 General Plan, but would not place housing within the flood zone. Impacts are expected to be similar and are considered less than significant.

The City is located within the inundation area from failure of the San Pablo Reservoir dam. San Pablo dam is owned and operated by EBMUD. Failure of the San Pablo dam would inundate the City the west of 23rd Street and between 23rd Street and I-80 from about Macdonald Avenue to between San Pablo Dam Road and Hilltop Drive and along San Pablo Creek, east of I-80. However, the risk of dam failure is reduced because EBMUD has constructed a seismic upgrade consisting of a larger buttress and improvements to the foundation to seismically strengthen the dam. The reservoir level limits have been returned to their pre-2004 status and the dam and reservoir are now fully operational. Therefore, the potential for this risk is the same for the proposed General Plan and this alternative. Development under the proposed General Plan would not increase the risk of dam failure, although it would increase the number of persons and amount of development exposed to this hazard. Dam failure could also result due to a seismic event. Implementation of the flood protection policies contained in the proposed General Plan, and existing Floodplain Ordinance, would minimize the impact of flooding. These protective measures would also reduce impacts from flooding as a result of dam failure to the extent feasible. Thus, risks associated with flooding, including dam failure inundation, would be considered less than significant, similar to the proposed General Plan.

The potential risks associated with inundation by tsunami are the same for this alternative and the proposed General Plan. Potential risks from mudflow (i.e., mudslide, debris flow) would be considered prevalent, as slopes of 10 percent or more exist in the City. Prolonged rainfall during certain storm events would saturate and could eventually loosen soil, resulting in slope failure. However, construction methods employed in areas with slopes would ensure impacts remain less than significant for the proposed General plan or the No Project Alternative.

Implementation of the flood protection policies contained in the Safety Element of the proposed General Plan would also help minimize the impact of flooding and mudflows on persons and structures. Furthermore, all new development in the City occurring in areas that are subject to flood hazards would be required to comply with the flood damage prevention provisions of the City's Floodplain Ordinance and the Hazard Mitigation Plan for the region. Thus, risks associated with

inundation by seiche, tsunami, and mudflow as a result of this alternative are similar to the proposed General Plan and are considered less than significant.

Noise

Implementation of this alternative would involve the use of construction equipment and techniques similar to those of the proposed General Plan. Therefore, similar significant and unavoidable impacts related to construction noise would occur. Significant and unavoidable impacts related to groundbourne vibration would also result due to future construction under this alternative, similar to the proposed General Plan.

Groundbourne vibration impacts related to operation of the future development was found to be less than significant for the proposed General Plan. Average vibration throughout the City was found to be around 50 VdB, which is substantially less than the threshold of 85 VdB. Since future development under this alternative would generate fewer average daily trips than that of the proposed General Plan, impacts would be expected to be similar but less than the proposed General Plan, and remain less than significant.

The proposed General Plan was found to have significant and unavoidable impacts related to the exposure of sensitive receptors to noise levels in excess of the noise standards established by the City of Richmond. This would be caused by relatively close proximity of residential, commercial, and industrial uses to one another as well as cases where these uses could share the same site. Operational impacts were found to be created by HVAC units associated with large non-residential uses as well as truck deliveries. The HVAC units could range in noise level from 57-72 dBA at 50 feet, which could exceed the allowable noise levels of 60 and 65 dBA for single-family and multi-family residential, respectively. Policies set forth in the proposed General Plan require design considerations aimed at reducing noise impacts. In addition, the City's Noise Ordinance section 9.52.090 requires that continuous or periodically-operating equipment must be enclosed or muffled to reduce noise impacts. Noise from truck deliveries is limited to the hours of 7:00 a.m. to 10:00 p.m. The land uses in this alternative would be less intense in the change areas than proposed under the proposed General Plan and would not include mixed uses. Thus, impacts would be expected to be lesser, although they would remain significant and unavoidable since the proposed policies would not apply to this alternative.

Based on noise measurements and on existing and future noise modeling, noise levels in excess of City ambient standards currently occur and would continue to occur in many residential areas and other noise-sensitive uses throughout the City. The Noise section of this EIR indicates that six roadway segments would result in a potentially significant impact as a result of the proposed General Plan due to increased average daily trips associated with future development. Policies set forth in the proposed General Plan would help to reduce noise impacts. In addition, development of new construction using modern materials capable of more sound attenuation may reduce interior noise levels from what currently exist. Noise abatement is possible but not guaranteed in the proposed General Plan and thus impacts were found to be significant and unavoidable. Development under this alternative would generate fewer car and truck trips than the proposed

General Plan. However, this is not likely to reduce impacts to less than significant levels. Traffic noise would be higher in the future than it is now along freeways and highways, and along most major arterial and collector roads in the City due to anticipated development both inside and outside of the City, regardless of whether the proposed General Plan is adopted. Therefore, impacts related to this alternative would be significant and unavoidable since the condition currently exists and is expected to deteriorate as a result of development outside the City.

Public Services

Implementation of this alternative would not result in additional impacts on public services beyond those identified for the proposed General Plan. Development would occur in a fashion that was previously contemplated in a certified EIR for the 1994 General Plan. Regarding fire protection services, population increase does not necessarily affect fire protection; the geographic placement of structures has more of an impact of fire response times. Currently, the RFD has adequate response times. Since the City is mostly built out, the geographic spatial location of structures is not expected to change significantly under either the proposed General Plan or this alternative.

The proposed General Plan would increase the intensity of development in the change areas, but these areas are already currently served by police protection services. The extent to which development would actually occur in the change areas is not known at this time and it is unclear whether existing police facilities would be able to serve new development in the change areas while maintaining acceptable response times. Future development under the proposed General Plan and under this alternative would be subject to Article XII (Public Works) Chapter 12.64 (Public Facilities Fee) and Chapter 12.65 (Public Facilities Impact Fees) which sets forth a means to provide for the equitable and consistent collection of fees for public improvements and facilities which are needed to serve the developing areas of the City of Richmond. Impact fees will be imposed based on an amount set by a resolution of the City Council and payable prior to the issuance of building permits. Thus, impacts under this alternative would be similar to those of the proposed General Plan and remain less than significant.

As discussed in section 3.2, Demographics, the proposed General Plan would add approximately 15,548 housing units in the City by 2030. WCCUSD bases its student population projection on state trends and various other factors in order to accommodate future student populations within the district. Impacts due to increases in school enrollment would be reduced through the payment of school fees, required for all new residential development pursuant to Municipal Code 15.10 *et seq.* These fees are based on the use and size of a project. School fees are collected from residential uses to fund necessary school service and facility improvements to accommodate anticipated population and school enrollment growth within the City of Richmond. The process of determining specific fees involves review by WCCUSD school board and the adoption of a resolution by City Council. Since this is a requirement for either the proposed General Plan or this alternative, and fees are proportional to development, impacts would be similar and remain less than significant.

The City of Richmond currently has no standard for library services. Increased development in the City does not necessarily equate to an increase in need for total volumes or square feet of library

space. Through compliance with section 12.63 of the Municipal Code (Library Impact Fees), which requires the payment of impact fees resulting from new residential or commercial development, it is anticipated that any future identified need would be identified and addressed under either the proposed General Plan or this alternative and impacts would remain less than significant.

Recreation

The City currently contains 4,312 acres of parklands and open space, which accounts for 22 percent of the land area. The City owns and operates 74 parks consisting of compact parks, which include pocket parks, overlooks, pathways, neighborhood parks, and community parks. The City also has five joint-use recreational facilities and seven regional open space areas. In addition to publicly-owned and operated parks, open spaces, and recreational facilities, several private facilities are located in Richmond, including the Richmond Country Club, Marina Bay Yacht Harbor, Richmond Yacht Club Harbor, the YMCA, and Red Rock Marina. Chapter 15.08.04 of the City of Richmond Municipal Code sets a goal of 3 acres of parkland per 1,000 residents. Including the 4,029 acres of regional open space, the City has 42 acres of park per 1,000 residents. Development under this alternative would result in fewer residents than the proposed General Plan. However, as a condition of approval of a final map or parcel map, the developer is required to either dedicate land or pay a fee for park or recreational purposes. The amount of land to be provided is determined pursuant to Section 15.08.400(4)(a) of the Municipal Code, or developers may pay an in-lieu of fee equal to the value of the land prescribed. Payment of an in-lieu of fee or dedication of land to be used for recreation purposes would ensure that new development in the City would provide adequate park facilities. As a result, the impact under this alternative would be the same as the proposed General Plan and would remain less than significant.

Impacts related to the proposed General Plan causing increased demand for the construction of construction or expansion of recreational facilities beyond that which was contemplated in the General Plan was found to be less than significant due to the imposition of development impact fees pursuant to Chapter 15.08.04 of the City of Richmond's Municipal Code. These fees would be required under this alternative and impacts would be similar to those of the proposed General Plan and remain less than significant.

Transportation

The proposed General Plan would produce a significantly higher average daily trips (268,967 new trips) than this alternative (155,824). However, as shown in Table 3.14-10 in Section 3.14, Transportation, while the 1994 General Plan alternative could result in reductions in flow or congestion on area roadway segments relative to the proposed General Plan, it would not result in the reduction of an environmental impact to a less than significant level. Therefore, while impacts are reduced under this alternative, impacts remain significant and unavoidable.

Impacts related to roadway improvements were found to be significant for the proposed General Plan. As shown in Table 3.14-10 in the Transportation section, the same segments would be affected under the No Project/Existing General Plan Alternative condition. Therefore, the impact would be similar under this alternative and would be significant.

The effect of residential and employment growth projected by 2030 within the change areas and the proposed General Plan Circulation policies and actions would be to substantially increase the demand for transit. The current bus frequencies, at typical 30-to-60-minute headways and high passenger loading of certain key routes, would not be sufficient to support the transit demand generated by the proposed General Plan growth patterns. This was found to cause a significant and unavoidable impact. According to the *Transportation Impact Analysis of Project Alternatives* prepared for the project, this alternative would have a reduced demand for transit services compared to the proposed General Plan, but would not be reduced to less than significant levels. Therefore, this alternative would have a reduced impact on transit, but the impact would remain significant and unavoidable.

Implementation of the proposed General Plan would increase walking and bicycling trips and provide safety and connectivity improvements to serve the higher activity levels as a result of policies and associated implementation measures identified in the proposed General Plan. Transportation improvements would be subject to City transportation engineer approval during the development review process to ensure adequate safety standards, including line-of-site, are incorporated. The increase in biking and walking trips may not exist under this alternative because the aforementioned policies would not be in place in the 1994 General Plan. Therefore, impacts would be greater under this alternative, but remain less than significant.

Impacts related to safety at railroad crossings would be greater under this alternative since policies in the proposed General Plan that call for studies, design, and implementation of grade separations at various roadways would not be included in the No Project/Existing General Plan Alternative. Impacts would be potentially significant because safety issues at railroad crossings would likely remain.

Utilities

Water and sewer service is provided to the City by EBMUD. As discussed in section 3.13, impacts related to the need for construction or expansion of water supply facilities or insufficient supplies as a result of insufficient entitlements was found to be less than significant. Since this alternative allows lesser overall development, it would be reasonable to assume that this alternative would have lesser impacts and remain less than significant.

Impacts on wastewater services would occur if wastewater requirements were exceeded for the RWQCB, if the project would result in the need for expanded or new wastewater facilities (the construction of which would cause significant environmental effects), or if the wastewater provider could not provide adequate service based on existing commitments. Impacts related to wastewater RWQCB requirements or if the wastewater provider could not provide adequate service based on existing commitments were found to be less than significant for the proposed General Plan. Thus, since this alternative proposes less development overall, based on regulatory requirements and reduced wastewater flows compared to the proposed General Plan, it would be reasonable to assume that these impacts resulting from this alternative would also be less than significant.

Because the existing wastewater treatment facilities are currently inadequate under wet weather conditions, expansion of the facilities would be required, which was determined to be a significant impact for the proposed General Plan. Although this alternative would result in less development and less wastewater generation compared to the proposed General Plan, expansion of facilities would still be required, which would also be a significant impact for this alternative.

Impacts related to solid waste would be significant if the proposed project would be served by a landfill with insufficient permitted capacity, or if it failed to comply with existing regulations. Since the daily permitted capacity at the landfills that serve the City (Potrero Hills, Keller Canyon Landfill, Pacheco Pass Landfill, and Redwood Sanitary Landfill) have capacity to serve the proposed General Plan, which proposes more overall development than this alternative, it would be reasonable to assume that this alternative would have reduced impact and also be less than significant. Impacts related to the City complying with existing regulations related to solid waste were found to be less than significant for the proposed General Plan. This alternative would not have policies for waste reduction and recycling, but existing regulations would be required. Therefore, impacts related to solid waste regulations under this alternative would be similar and remain less than significant.

Impacts related to the provision of energy (electricity and natural gas) were found to be less than significant for the proposed General Plan. Because demand associated with development under the existing General Plan would be less than the proposed General Plan, the impact on energy would also be less than significant for this alternative.

Visual Resources

Impacts associated with visual resources are related to the amount of development/density of development, the look and character of the development, the location of development, and the anticipated land use types for the City. Because the proposed General Plan boundary and the existing General Plan include development within the same footprint, the physical impacts associated with development of this alternative would be similar to the potential impacts related to the proposed General Plan. Unlike the proposed General Plan, this alternative would have a less than significant impacts for each of the thresholds due to the consistency of the planned development with existing uses. Implementation of existing General Plan Policies and the City's Hillside development ordinances would protect scenic viewsheds and scenic routes, reduce the proposed building heights, and eliminate potential hillside development concerns. This alternative would not include a high degree of impact compared to potential development under the proposed General Plan, which allows buildings up to 135 feet. While the aesthetic impact of the proposed General Plan was found to be significant, because a large portion of land would be developed in a manner that is consistent with the existing General Plan, the impact would be less severe than that of the proposed General Plan.

Mitigation That Would No Longer Be Required

Although the No Project/1994 General Plan Alternative would result in less development than the proposed General Plan, substantial development would still take place under the No Project/1994 General Plan Alternative. Therefore, all of the mitigation measures identified for the proposed

General Plan would have a mitigating effect on potential impacts of the No Project/1994 General Plan Alternative and would be required.

Significant and Unavoidable Impacts that Would No Longer Occur

Nearly all of the significant and unavoidable impacts identified for the proposed General Plan would occur under this alternative, including cultural resources, greenhouse gas emissions, noise, public utilities, transportation/ traffic, visual resources. One impact related to air quality regarding project compliance with the CAP set forth by the BAAQMD would be reduced from significant and unavoidable to less than significant under this alternative.

However, under this alternative, one threshold under Hydrology and Water Quality related to alteration of drainage patterns and increased runoff would increase from less than significant in the proposed General Plan to significant and unavoidable in this alternative.

Relationship of the No Project Alternative to the Project Objectives

The No Project Alternative does not achieve the goals of the proposed General Plan, which is the reason that the City has chosen to update its current General Plan. The current General Plan was adopted 16 years ago. Cities and societies change over time, as does the environment, community preferences, and regulatory values. As described in section 2 Project Description of this EIR, the City has overarching goals that have become the underpinning of the goals and policies in the proposed General Plan. These values include considering the physical, economic, cultural, and societal needs of all persons, regardless of social strata, income levels, or physical abilities. The City intends to restore its traditional compact neighborhoods where walkable, mixed uses occurred, with ample access to transit. The proposed General Plan also intends to allow for the development of neighborhoods, commercial centers, and public spaces that are aesthetically pleasing places where people want to live and work. The proposed General Plan is intended to facilitate development that is exemplary of its community

Development under this alternative would continue to implement the 1994 General plan, which fails to incorporate the City's evolved values. In addition, the concept of environmental sustainability has entered the consciousness of society as have related laws and regulations. The current General Plan has become outdated and does not reflect the values of the changing society.

Alternative 1

Alternative 1 represents a reduction in development intensity compared to the proposed General Plan and is based on a continuation of the past growth trend in the City in which 8.39 percent of the population growth in Contra Costa County occurred in the City of Richmond. Based on this level of growth, this alternative would theoretically result in a population increase of 19,460, and add 17,377 jobs, and 9,413 new households in 2030. Table 5-2 shows population and jobs compared to the proposed General Plan.

As shown in Table 5-2, this alternative would result in a population increase that is approximately 65 percent of the proposed project and job increases that represents 77 percent of that of the proposed project. Of change areas 11 through 16, planned as mixed-use districts for the proposed General Plan, only change area 11, the Northern Parkway area, would include residential development under this alternative. Change areas 12 through 16 would remain generally non-residential with the population focused in the Downtown/Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay areas under this alternative.

Alternative 1		Proposed Project	
Population	Jobs	Population	Jobs
19,460	17,377	30,147	22,488
<small>Source: City of Richmond, July 2009.</small>			

With the reduced densities and pared quantity of residential units in change areas 12 through 16, the daily number of automobile trips would be significantly reduced. At 2030, development under this alternative is expected to generate an additional 181,303 additional daily trips; 87,664 fewer trips compared to the proposed General Plan, which would generate 268,967 additional trips.

Comparative Environmental Effects

The allowable land uses within this alternative would be similar to those of the proposed General Plan, but at a lower intensity. In addition, change areas 12 through 16 would not include residential uses. This alternative would have similar environmental effects as that of the proposed General Plan.

Air Quality

Implementation of the proposed General Plan was found to be inconsistent with the CAP prepared by the BAAQMD. Since this alternative is based on a reduced development intensity scenario and the CAP is based on growth projections assumed in the preparation of the CAP in 2007, (the existing 1994 General Plan data) the development allowed under this alternative would not be in compliance therewith. This alternative would result in a similar impact to the proposed project and would be considered to have a *significant and unavoidable* impact for this threshold.

As discussed above, for plan level analysis of construction emissions, the BAAQMD indicates that a General Plan is less than significant with the incorporation of the most recently available BMPs as determined by the BAAQMD. As with the proposed General Plan, BMPs would be required to be implemented under this alternative. Therefore, impacts related to construction would be similar for this alternative and would be less than significant. Operational impacts related to the proposed General Plan were found to be significant due to the long-range increase in VMT resulting from future development. This alternative, however, would result in 87,664 fewer daily automobile trips than the proposed General Plan. This would, therefore, result in a substantial drop in VMT relative to the proposed General Plan. Thus, impacts resulting from this alternative would be less than the

proposed General Plan, but because this alternative would also increase VMT, impacts would remain significant and unavoidable.

Implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable federal or state ambient air quality standard. Construction and operation of the proposed General Plan could generate emissions that exceed the thresholds of significance recommended by the BAAQMD for ROG, NO_x, CO, and PM₁₀, and PM_{2.5}. Because the Basin is in nonattainment for PM₁₀ and PM_{2.5} and because both ROG and NO_x are precursors of ozone, for which the Basin is also in nonattainment, the proposed General Plan could make a cumulatively considerable contribution to these emissions. This alternative would reasonably result in lesser impacts related to operation of future projects due to fewer average daily trips. However, it is unlikely that even with fewer trips generated that impacts would be reduced below a significant level. As for construction, reduced intensities would not likely reduce impacts to less than significant levels because grading activities, for example, are contingent upon area and not the number of units or allowable density. Therefore, impacts related to construction would be similar under this alternative and lesser as they relate to operation. The impact under this alternative would be reduced compared to the proposed General plan, but would also be significant and unavoidable.

Impacts related to substantial pollutant concentrations were found to be less than significant for the proposed General Plan. Since this alternative would generate 87,664 fewer average daily trips at buildout, impacts as a result would be less than the proposed General Plan and remain less than significant.

Impacts related to the creation of odors that would affect a substantial number of people were found to be less than significant for the proposed General Plan. Ordinance 24-09 N.S. addresses odor impacts for Biodiesel Facilities and Refining and Manufacturing facilities. The BAAQMD has established screening levels to aid in the determination of adequate overlay zone distances for minimizing impacts from odor sources. With the evaluation and inclusion of all future odor source development into the existing zone areas and ensuring they are properly mapped, the proposed General Plan would result in less than significant impacts. The proposed alternative would also be subject to the requirements of the applicable ordinances and impacts would be the same as the proposed General Plan and remain less than significant.

Biological Resources

Impacts related to biological resources are related to the location of development, not to the land use types or density. Because the proposed General Plan does not include land uses outside of the current City limits, impacts of this alternative would be similar to the potential impacts from the proposed General Plan. Like the proposed General Plan, this alternative would have a less than significant impacts for each of the thresholds.

Climate Change

As discussed above, impacts related to construction-related GHG emissions and conflicts with plans adopted for the purpose of reducing the emissions of GHGs would not be significant under the proposed General Plan. However, long-term operational impacts of the proposed General Plan would result in an increase in GHG emissions that would exceed the BAAQMD's threshold. Therefore, the impact with respect to operational emissions would be considered significant and unavoidable. It is assumed that development projects under this alternative would also comply with BAAQMD Best Management Practices and the impact related to construction-related GHG emissions would also be less than considerable. Like the proposed General Plan, compliance with the Climate Action Plan under this alternative would not conflict with adopted plans to reduce greenhouse gas emissions. Like the No Project Alternative, Alternative 1 would result in less intense development than the proposed General Plan, but the reduction in intensity would not be sufficient enough to reduce emissions below the BAAQMD threshold of 6.6 MT CO₂e per service population. Therefore, the impact related to operational emissions under Alternative 1 would also be significant and unavoidable.

Cultural Resources

The proposed General Plan would result in development in the same areas of the City as Alternative 1 and both could result in the potential for demolition of historic structures. Consequently, the potential for development under this alternative to impact historic or other cultural resources would be similar to the proposed General Plan. Therefore, the potential to adversely affect historical resources would also be significant under this alternative, as would the potential cumulative contribution to the loss of cultural resources.

Geology and Soils

Similar to the proposed General Plan, this alternative would expose people and/or structures to potentially substantial adverse effects resulting from strong seismic groundshaking or seismic-related ground failure. All impacts associated with geological and soil impacts that were identified for the proposed General Plan would also apply to this alternative. The risks to people and structures would not be increased regardless of the size or type of development, as adherence to existing regulations would assure seismic safety to the greatest extent possible. Existing development has been constructed in adherence with applicable laws and regulations. All future development in the project area would be required to adhere to the most recent CBC, which includes strict building specifications to ensure structural and foundational stability, similar to the proposed project. In addition, the City would continue to require all future development to prepare and submit a detailed soils and geotechnical analysis for site-specific projects. Therefore, because all future development projects would be required to adhere to existing regulations, impacts associated with rupture of a known earthquake fault, strong seismic groundshaking, seismic-related ground failure, and landslides would continue to be less than significant.

Future development under the proposed General Plan or Alternative 1 would result in ground-disrupting activities, such as excavation and trenching for foundations and utilities; soil compaction

and site grading; and the erection of new structures, all of which would temporarily disturb soils. This could result in soil erosion; however, applicants for specific development projects must submit a Notice of Intent to the SWRCB for coverage under the Statewide General Construction Activity Stormwater Permit and must comply with all applicable requirements, including the preparation of a SWPPP, applicable NPDES Regulations, and best management practices. Such compliance, in addition to implementation of existing code requirements would ensure that erosion and other soil instability impacts resulting from future construction would be less than significant. Impacts would be similar to the proposed General Plan and remain less than significant.

Hazards and Hazardous Materials

The project site is in an urban area that is already developed. Thus, existing conditions are those discussed for the proposed project. Operation of the uses permitted under the proposed General Plan would involve the use, transportation, and disposal of hazardous materials. Future development under the proposed General Plan would be required to comply with applicable laws and regulations that would reduce the risk of hazardous materials use, transportation, and disposal through the implementation of established safety practices, procedures, and reporting requirements. Compliance with existing regulations would also minimize the risks associated with the exposure of sensitive receptors, including schools, to hazardous materials. As discussed in Section 3.8 of this EIR, there are potential hazards located within the City currently. Development under this alternative would be required to comply with applicable regulations, similar to that for the proposed General Plan and Actions CN6.A, CN6.B, and CN6.C, which would lessen impacts related to hazards. Impacts would remain less than significant.

Hydrology and Water Quality

The proposed General Plan was found to have less than significant impacts related to potential violation of any water quality standards or waste discharge requirements for construction and operation of future development under the plan. Compliance with NPDES permits requirements and General Plan Policies would reduce the risk of water degradation within the City from the operation of new developments to the maximum extent practicable. Since development under this alternative would be similar in nature to that of the proposed General Plan, impacts would be expected to be similar. Therefore, since violation of waste discharge requirements or water quality standards would be minimized, this impact would be considered less than significant.

Impacts related to substantially depleting groundwater supplies or interfering substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater level were found to be less than significant for the proposed General Plan. Existing land uses and future development contemplated in the proposed General Plan would utilize water from EBMUD, which receives its potable water mostly from the Mokelumne River. No new groundwater wells are proposed as a part of the proposed General Plan or this alternative. Therefore, this alternative would have impacts similar to the proposed General Plan and they would be less than significant.

Development under the proposed General Plan would result in alterations to drainage, such as changes in ground surface permeability from paving and changes in topography due to grading and excavation. Development under the proposed General Plan would comply with federal and state regulations and would also comply with policies that require implementation of BMPs, incorporation of stormwater detention facilities, design of drainage facilities to minimize adverse effects on water quality, and minimization of increases in impervious areas. Thus, impacts would be less than significant. This alternative allows future development similar to the proposed General Plan although at a lesser overall rate. As a result, this alternative would have impacts similar to those of the proposed General Plan since federal and state regulations would apply, and remain less than significant.

Impacts related to the alteration of existing drainage patterns, including through the alteration of the course of a stream or river, or the substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site was found to be less than significant for the proposed General Plan with the incorporation of Mitigation Measure 3.9-4. In addition, impacts related to the creation or contribution of runoff water which would provide substantial additional sources of polluted runoff, was also determined to be less than significant with the implementation of Mitigation Measure 3.9-4 for the proposed General Plan. Most of the City would not include new development that would substantially alter drainage patterns because these areas are already developed with existing uses and impervious surfaces. Operation of the proposed General Plan could degrade runoff water quality by contributing chemicals associated with household, commercial, transportation, and landscape uses. This impact would be less than significant. Since this alternative consists of future development similar to the proposed General Plan, and would include Mitigation Measure 3.9-4, impacts would be similar to those of the proposed General Plan. Impacts would be less than significant.

The City does not permit the construction of housing within the 100-year flood zone. Policies and implementation measures in the proposed General Plan set forth methods to reduce impacts related to flood zones. Alternative 1 would include new development similar to the proposed General Plan, and does not place housing within the flood zone. Impacts would be similar and are considered less than significant.

The City is located within the inundation area from failure of the San Pablo Reservoir dam. San Pablo dam is owned and operated by EBMUD. Failure of the San Pablo dam would inundate the City the west of 23rd Street and between 23rd Street and I-80 from about Macdonald Avenue to between San Pablo Dam Road and Hilltop Drive and along San Pablo Creek, east of I-80. However, the risk of dam failure is reduced because EBMUD has constructed a seismic upgrade consisting of a larger buttress and improvements to the foundation to seismically strengthen the dam. The reservoir level limits have been returned to their pre-2004 status and the dam and reservoir are now fully operational. Therefore, the potential for this risk is the same for the proposed General Plan and this alternative. Development under the proposed General Plan would not increase the risk of dam failure, although it would increase the number of persons and amount of development exposed to this hazard. Dam failure could also result due to a seismic event. Implementation of the flood protection policies contained in the proposed General Plan, and existing Floodplain Ordinance,

would minimize the impact of flooding. These protective measures would also reduce impacts from flooding as a result of dam failure to the extent feasible. Thus, risks associated with flooding, including dam failure inundation, would be considered less than significant, similar to the proposed General Plan.

The potential risk associated with inundation by tsunami is the same as for this alternative and the proposed General Plan. Potential risks from mudflow (i.e., mudslide, debris flow) would be considered prevalent, as slopes of 10 percent or more exist in the City. Prolonged rainfall during certain storm events would saturate and could eventually loosen soil, resulting in slope failure.

Implementation of the flood protection policies contained in the Safety Element of the proposed General Plan would also help minimize the impact of flooding and mudflows on persons and structures. These policies would also apply to Alternative 1. Furthermore, all new development in the City occurring in areas that are subject to flood hazards would be required to comply with the flood damage prevention provisions of the City's Floodplain Ordinance and the Hazard Mitigation Plan for the region. Thus, risks associated with inundation by seiche, tsunami, and mudflow as a result of this alternative are similar to the proposed General Plan and are considered less than significant.

Noise

Implementation of this alternative would involve the use of construction equipment and techniques similar to those of the proposed General Plan. Therefore, similar significant and unavoidable impacts related to construction noise would occur. Significant and unavoidable impacts related to groundbourne vibration would also result due to future construction under this alternative, similar to the proposed General Plan.

Groundbourne vibration impacts related to operation of the future development, including vibration from automobiles, was found to be less than significant for the proposed General Plan. Average vibration throughout the City was found to be around 50 VdB, which is substantially less than the threshold of 85 VdB. Since future development under this alternative would generate fewer average daily trips than the proposed General Plan, impacts would be expected to be similar but lesser and remain less than significant.

The proposed General Plan was found to have significant and unavoidable impacts related to the exposure of sensitive receptors to noise levels in excess of the noise standards established by the City of Richmond. This was found to be caused by relatively close proximity of residential, commercial, and industrial uses to one another as well as cases where these potentially incompatible uses share the same site. Operational impacts were found to be created by HVAC units associated with large non-residential uses as well as truck deliveries. The HVAC units were found to range in noise level from 57-72 dBA at 50 feet, which could exceed the allowable noise levels of 60 and 65 dBA for single family and multi-family residential, respectively. Policies set forth in the proposed General Plan require design considerations aimed at reducing noise impacts. In addition, the City's Noise Ordinance section 9.52.090 requires that continuous or periodically-operating equipment must be enclosed or muffled to reduce noise impacts. Noise from truck

deliveries is limited to the hours of 7:00 a.m. to 10:00 p.m. The land uses in this alternative would be less intense in the areas of change proposed under the proposed General Plan and would not include residential uses in 12 of the 18 areas of change. Thus, impacts would be expected to be less than the proposed General Plan, although they would remain significant and unavoidable.

Based on noise measurements and on existing and future noise modeling, noise levels in excess of City ambient standards currently occur and would continue to occur in many residential areas and other noise-sensitive uses throughout the City. The Noise section of this EIR indicates that six roadway segments would result in a potentially significant impact as a result of the proposed General Plan due to increased average daily trips associated with future development. Policies set forth in the proposed General Plan would help to reduce noise impacts. In addition, development of new construction using modern materials capable of more sound attenuation may reduce interior noise levels from that which currently exists. Noise abatement is possible but not guaranteed in the proposed General Plan and thus impacts were found to be significant and unavoidable. Development under this alternative would generate fewer car and truck trips than the proposed General Plan. However, this is not likely to reduce impacts to less than significant levels. Traffic noise would be higher in the future than it is now along highways, and along most major arterial and collector roads in the City due to development both inside and outside of the City. Therefore, impacts related to this alternative would be significant and unavoidable since the condition currently exists and is expected to deteriorate as a result of development outside the City.

Public Services

Implementation of this alternative would not result in additional impacts on public services beyond those identified for the proposed General Plan. Development would occur in a fashion that is slightly less than the proposed project. Population increase does not necessarily affect fire protection; the geographic placement of structures has more of an impact of fire response times. Currently the RFD has adequate response times. Since the City is mostly built out, the geographic spatial location of structures is not expected to change significantly under either the proposed General Plan or this alternative.

The proposed General Plan would increase the intensity of development in the change areas, but these areas are already currently served by police protection services. The extent to which development would actually occur in the change areas is not known at this time and it is unclear whether existing police facilities would be able to serve new development in the change areas while maintaining acceptable response times. Future development under the proposed General Plan and under this alternative would be subject to Article XII (Public Works) Chapter 12.64 (Public Facilities Fee) and Chapter 12.65 (Public Facilities Impact Fees) which set forth a means to provide for the equitable and consistent collection of fees for public improvements and facilities that are needed to serve the developing areas of the City of Richmond. Impact fees would be imposed based on an amount set by a resolution of the City Council and payable prior to the issuance of building permits. Thus, impacts under this alternative would be similar to those of the proposed General Plan and remain less than significant.

As discussed in section 3.2, Demographics, the proposed General Plan would add approximately 15,548 housing units in the City by 2030. Impacts due to increases in school enrollment would be reduced through the payment of school fees, required for all new residential development pursuant to Municipal Code 15.10 *et seq.* These fees are based on the use and size of a project. School fees are collected from residential uses to fund necessary school service and facility improvements to accommodate anticipated population and school enrollment growth within the City of Richmond. The process of determining specific fees involves review by WCCUSD school board and the adoption of a resolution by City Council. Since this is a requirement for either the proposed General Plan or this alternative and fees are proportional to development, impacts will be similar and remain less than significant.

Through compliance with section 12.63 of the Municipal Code (Library Impact Fees) which requires the payment of impact fees resulting from new residential or commercial development, it is anticipated that any future identified need would be identified and addressed under either the proposed General Plan or this alternative and impacts would remain less than significant.

Recreation

The City currently has 4,312 acres of parklands and open space, which accounts for 22 percent of the land area. Chapter 15.08.04 of the City of Richmond Municipal Code sets a goal of 3 acres of parkland per 1,000 residents. Development under this alternative would result in fewer residents than the proposed General Plan. However, as a condition of approval of a final map or parcel map, the developer is required to either dedicate land or pay a fee for park or recreational purposes. The amount of land to be provided is determined pursuant to Section 15.08.400(4)(a) of the Municipal Code, or developers may pay an in-lieu of fee equal to the value of the land prescribed. Payment of an in-lieu of fee or dedication of land to be used for recreation purposes would ensure that new development in the City would provide adequate park facilities. Since this alternative would also be required to dedicate land or pay in-lieu fees for development proposed, the implementation of this alternative would also be *less than significant*.

Impacts related to the proposed General Plan causing increased demand for the construction or expansion of recreational facilities beyond that which was contemplated in the General Plan was found to be less than significant due to the imposition of development impact fees pursuant to Chapter 15.08.04 of the City of Richmond's Municipal Code. These fees would be required under this alternative and impacts would be similar and remain less than significant.

Transportation

This alternative would result in less development than the proposed General Plan, thus, average daily trips would be reduced under this alternative, as shown in Table 5-3. As discussed above, while this alternative would result in reductions in flow or congestion on area roadway segments relative to the proposed General Plan, it would not result in the reduction of an environmental impact to a less than significant level. The impacts under this alternative would be similar to the alternative above. Therefore, while impacts are reduced under this Alternative 1, impacts remain significant and unavoidable.

TABLE 5-3			
DAILY TRIP GENERATION – ALTERNATIVE 1			
Existing Trips	New Trips Generated		
	No Project	Draft General Plan	Alt 1
219,365	155,824	268,967	181,303
<small>Source: Fehr & Peers, September 2009.</small>			

Impacts related to roadway improvements were found to be significant for the proposed General Plan. Because substantial growth would also occur under this alternative, the segments identified as impacted under the proposed General Plan would also likely be affected under this alternative. As disclosed in the *Transportation Impact Analysis of Project Alternatives* prepared for the project (see Appendix E), this alternative would reduce the congestion on freeways and arterials in the City relative to the proposed General Plan, because they include less growth in population and jobs, but not necessarily to a less-than-significant level. The impact would be less severe under this alternative, but would also be significant.

The effect of the residential and employment growth projected by 2030 within the change areas and the proposed General Plan Circulation policies and actions would be to substantially increase the demand for transit. The current bus frequencies, at typical 30-to-60-minute headways and high passenger loading of certain key routes, would not be sufficient to support the transit demand generated by the proposed General Plan growth patterns. This was found to cause a significant and unavoidable impact. According the *Transportation Impact Analysis of Project Alternatives* prepared for the project, this alternative would have a reduced demand for transit services compared to the proposed General Plan, but would not be reduced to less than significant levels. Therefore, this alternative would have a reduced impact on transit, but the impact would remain significant and unavoidable.

Implementation of the proposed General Plan would increase walking and bicycling trips and provide safety and connectivity improvements to serve the higher activity levels as a result of policies CR2.2, CR2.3, and CR3.1 and associated implementation measures. Transportation improvements would be subject to City transportation engineer approval during the development review process to ensure adequate safety standards, including line-of-site, are incorporated. The increase in biking and walking trips would also exist under this alternative due to the aforementioned policies. Therefore, impacts would be the same under this alternative, and remain less than significant.

Impacts related to safety at railroad crossings would be similar under this alternative with implementation of Policy CR3.1 and its associated implementation measure. These policies call for studies, design, and implementation of grade separations at various roadways. Impacts will remain less than significant.

Utilities

Water and sewer service is provided to the City by EBMUD. Impacts related to the need for construction or expansion of water supply facilities or insufficient supplies as a result of insufficient entitlements was found to be less than significant for the proposed General Plan. Since this alternative would include less overall development, it would be reasonable to assume that this alternative would have a reduced impact compared to the proposed General Plan and remain less than significant.

Impacts on wastewater services would occur if wastewater requirements are exceeded for the RWQCB, if the project would result in the need for expanded or new wastewater facilities (the construction of which would cause significant environmental effects), or if the wastewater provider could not provide adequate service based on existing commitments. Impacts related to wastewater RWQCB requirements or if the wastewater provider could not provide adequate service based on existing commitments were found to be less than significant for the proposed General Plan. Thus, since this alternative proposes less development overall (based on regulatory requirements and anticipated wastewater flows), it would be reasonable to assume that impacts resulting from this alternative would be less than the proposed project and remain less than significant.

Because the existing wastewater treatment facilities are currently inadequate under wet weather conditions, expansion of the facilities would be required, which was determined to be a significant impact for the proposed General Plan. Although this alternative would result in less development and less wastewater generation compared to the proposed General Plan, expansion of facilities would still be required, which would also be a significant impact for this alternative.

Impacts related to solid waste would be significant if the proposed project would be served by a landfill with insufficient permitted capacity, or if it failed to comply with existing regulations. Since the daily permitted capacity at the landfills that serve the City (Potrero Hills, Keller Canyon Landfill, Pacheco Pass Landfill, and Redwood Sanitary Landfill) have capacity to serve the proposed General Plan, which assumes more development than this alternative, it would be reasonable that the impact from this alternative would be less than that of the proposed General Plan and also be less than significant. Impacts related to the City complying with existing regulations related to solid waste were found to be less than significant for the proposed General Plan. Compliance with proposed General Plan policies and implementing actions and existing regulations are assumed for the proposed General Plan and this alternative. Impacts related this alternative would be similar and remain less than significant.

Visual Resources

Because this alternative would include development of the same areas as the proposed General Plan, the physical impacts associated with development of this alternative would be similar to the potential impacts related to the proposed General Plan. This alternative would include the High Intensity Mixed Use land use, which, like the proposed General Plan, would allow development that is taller than the existing development. Although this alternative assumes less development than the proposed General Plan, much of the reduction in intensity is assumed due to a reduction in

residential units. This alternative would also allow for high intensity development in the Downtown/Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay change areas, which would result in significant impacts for each of the thresholds due to the potential for development that would substantially alter the character of the City. This alternative would result in impacts on visual resources and character that are similar to the proposed General Plan.

Mitigation That Would No Longer Be Required

All mitigation measures required under the proposed General Plan would be required under this alternative.

Significant and Unavoidable Impacts That Would No Longer Occur

All of the significant and unavoidable impacts identified for the proposed General Plan would occur under this alternative.

Relationship of Alternative 1 to the Project Objectives

Alternative 1 would support most of the values and attain many of the goals of the proposed General Plan. The goals and policies set forth in the proposed General Plan would remain under this alternative. However, the reduction in land use intensity and lack of residential mixed-uses in change areas 12 through 16 could potentially circumvent the values and objectives of the Plan. Creating transit-oriented, compact, and walkable neighborhoods is a key objective of the proposed General Plan. Eliminating residential uses in areas slated for mixed-use development could also be inconsistent with the City's intent to intensify the uses in the change areas. Also, development under this alternative is expected to create 9,100 fewer jobs than the proposed General Plan. This would likely reduce economic development opportunities, which reduce access to a variety of quality jobs.

Alternative 2

Alternative 2 represents a reduction in development intensity compared to the proposed General Plan, but would result in more development than Alternative 1. This alternative assumes that Richmond would capture 10.19 percent of population growth for the County over the next 20 years, compared to approximately 13 percent for the proposed project. Based on this level of growth, Alternative 2 would result in a population increase of 25,300, and add 20,170 jobs, and 12,426 new households by 2030. Table 5-4 shows the population and jobs compared to the proposed General Plan.

TABLE 5-4			
ALTERNATIVE 2 POPULATION AND JOB COMPARISON			
Alternative 1		Proposed Project	
Population	Jobs	Population	Jobs
25,300	20,170	30,147	22,488
Source: City of Richmond, July 2009.			

As shown in Table 5-3, the population increase under Alternative 2 would be approximately 84 percent of the proposed General Plan. Assuming jobs would be generated at a rate of 0.48 per person for the total population, this alternative would have an additional 20,170 jobs, or 90 percent of those under the proposed project. Like Alternative 1, this alternative would not include residential in some of the mixed-use districts included in the proposed General Plan. Residential growth could occur in the Northern Parkway, San Pablo Peninsula, and Regatta/Marina Bay areas. Under this alternative, there would be no residential growth in the Northshore, Port Priority Use, and Southern Gateway. The population in these change areas would be approximately 42 percent of that of the proposed General Plan.

Comparative Environmental Effects

The allowable land uses within this alternative would be similar to those of the proposed General Plan, but at a lower intensity. In addition, change areas 12 through 16 would not include residential uses. This alternative would have similar environmental effects as that of the proposed General Plan.

Air Quality

The proposed General Plan was found to be inconsistent with the CAP prepared by the BAAQMD. Since this alternative is based on a reduced development intensity scenario and the CAP is based on growth projections assumed in the preparation of the CAP in 2007, (the existing 1994 General Plan data) the development allowed under this alternative would also not be in compliance with the CAP. This alternative would result in an impact similar to the proposed project and would be considered to have a significant and unavoidable impact for this threshold.

The potential for contributions to a substantial existing or projected air quality violation caused by the proposed General Plan were analyzed in this EIR for both construction and operation. Since this alternative would allow new development similar to the proposed General Plan, but at a lesser rate (approximately 4,850 fewer future residents), there would be similar impacts related to construction for any of the CEQA thresholds related to air quality. However, for plan level analysis of construction emissions, the BAAQMD indicates that a General Plan is less than significant with the incorporation of the most recently available BMPs as determined by the BAAQMD. These BMPs would be required to be implemented under this alternative. Therefore, impacts related to construction would be similar for this alternative and would be less than significant. Operational impacts related to the proposed General Plan were analyzed and found to be significant due to the long-range increase in VMT resulting from future development. This alternative, however, would result in 87,664 fewer daily automobile trips than the proposed General Plan. This would, therefore, result in a substantial drop in VMT relative to the proposed General Plan. Thus, impacts resulting from this alternative would be less than the proposed General Plan, but impacts would remain significant and unavoidable.

Implementation of the proposed General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the region is in nonattainment under an applicable federal or state ambient air quality standard. The Basin is currently in nonattainment for ozone, PM₁₀, and PM_{2.5}. Construction and operation of the proposed project could generate emissions that exceed the

thresholds of significance recommended by the BAAQMD for ROG, NO_x, CO, PM₁₀, and PM_{2.5}. Because the Basin is in nonattainment for PM₁₀ and PM_{2.5} and because both ROG and NO_x are precursors of ozone, for which the Basin is also in nonattainment, the proposed General Plan could make a cumulatively considerable contribution to these emissions. This alternative would reasonably result in lesser impacts related to operation of future projects due to reduced average daily trips. However, it is unlikely that even with fewer trips generated that impacts would be reduced below a significant level. As for construction, reduced intensities would not likely reduce impacts to less than significant levels because grading activities, for example, are contingent upon area and not the number of units or allowable density. Therefore, impacts related to construction would be similar under this alternative and lesser as they relate to operation. The impact under this alternative would remain significant and unavoidable.

Impacts related to substantial pollutant concentrations were found to be less than significant for the proposed General Plan. Since this alternative would generate 87,664 fewer average daily trips at buildout, impacts as a result would be less than the proposed General Plan and remain less than significant.

Impacts related to the creation of odors that would affect a substantial number of people were found to be less than significant for the proposed General Plan. Ordinance 24-09 N.S. addresses odor impacts for Biodiesel Facilities and Refining and Manufacturing facilities. The BAAQMD has established screening levels to aid in the determination of adequate overlay zone distances for minimizing impacts from odor sources. With the evaluation and inclusion of all future odor source development into the existing zone areas and ensuring they are properly mapped, the proposed General Plan would result in less than significant impacts. The proposed alternative would also be subject to the requirements of the applicable ordinances and impacts would be the same as the proposed General Plan and remain less than significant.

Biological Resources

Impacts related to biological resources are related to the location of development, not to the land use types or density. Because the proposed General Plan does not include land uses outside of the current City limits, impacts of this alternative would be similar to the potential impacts related to the proposed General Plan. Like the proposed General Plan, this alternative would have a less than significant impacts for each of the thresholds.

Climate Change

As discussed above, impacts related to construction-related GHG emissions and conflicts with plans adopted for the purpose of reducing the emissions of GHGs would not be significant under the proposed General Plan. However, long-term operational impacts of the proposed General Plan would result in an increase in GHG emissions that would exceed the BAAQMD's threshold. Therefore, the impact with respect to operational emissions would be considered significant and unavoidable. It is assumed that development projects under this alternative would also comply with BAAQMD BMPs and the impact related to construction-related GHG emissions would also be less than considerable. Like the proposed General Plan, compliance with the Climate Action Plan under

this alternative would not conflict with adopted plans to reduce greenhouse gas emissions. Alternative 2 would result in less intense development than the proposed General Plan, but the reduction in intensity would not be sufficient enough to reduce emissions below the BAAQMD threshold of 6.6 MT CO₂e per service population. Therefore, the impact related to operational emissions under Alternative 2 would also be significant and unavoidable.

Cultural Resources

The proposed General Plan would result in development in the same areas of the City as this alternative and both could result in the potential for demolition of historic structures. Consequently, the potential for development under this alternative to impact historic or other cultural resources would be similar to the proposed General Plan. Therefore, the potential to adversely affect historical resources would also be significant under this alternative, as would the potential cumulative contribution to the loss of cultural resources.

Geology and Soils

Similar to the proposed General Plan, this alternative would expose people and/or structures to potentially substantial adverse effects resulting from strong seismic groundshaking or seismic-related ground failure. All impacts associated with geological and soil impacts that were identified for the proposed General Plan would also apply to this alternative. The risks to people and structures would not be increased regardless of the size or type of development, as adherence to existing regulations would assure seismic safety to the greatest extent possible. All future development in the project area would be required to adhere to the most recent CBC, which includes strict building specifications to ensure structural and foundational stability, similar to the proposed project. In addition, the City would continue to require all future development to prepare and submit a detailed soils and geotechnical analysis for site-specific projects. Therefore, because all future development projects would be required to adhere to existing regulations, impacts associated with rupture of a known earthquake fault, strong seismic groundshaking, seismic-related ground failure, and landslides would continue to be less than significant.

Future development under the proposed General Plan as well as this alternative would result in ground-disrupting activities such as excavation and trenching for foundations and utilities; soil compaction and site grading; and the erection of new structures, all of which would temporarily disturb soils. This could result in soil erosion; however, applicants for specific development projects must submit a Notice of Intent to the SWRCB for coverage under the Statewide General Construction Activity Stormwater Permit and must comply with all applicable requirements, including the preparation of a SWPPP, applicable NPDES Regulations, and best management practices. Such compliance, in addition to implementation of existing code requirements, would ensure that erosion and other soil instability impacts resulting from future construction would be less than significant. Impacts would be similar to the proposed General Plan and remain less than significant.

Hazards and Hazardous Materials

The project site is in an urban area that is already developed. Thus, existing conditions are those discussed for the proposed project. Operation of the uses permitted under the proposed General Plan would involve the use, transportation, and disposal of hazardous materials. Future development under the proposed General Plan would be required to comply with applicable laws and regulations that would reduce the risk of hazardous materials use, transportation, and disposal through the implementation of established safety practices, procedures, and reporting requirements. Compliance with existing regulations would also minimize the risks associated with the exposure of sensitive receptors, including schools, to hazardous materials. As discussed in Section 3.8 of this EIR, there are potential hazards located within the City currently. Compliance with applicable regulations would occur under this alternative as well as the proposed General Plan. Impacts would be similar to the proposed General Plan with implementation of Actions CN6.A, CN6.B, and CN6.C, which would lessen impacts related to hazards. Impacts would remain less than significant.

Hydrology and Water Quality

Compliance with NPDES permits requirements and General Plan Policies would reduce the risk of water degradation within the City from the operation of new developments to the maximum extent practicable. Therefore, the proposed General Plan was found to have less than significant impacts related to potential violation of any water quality standards or waste discharge requirements for construction and operation of future development under the plan. Since this alternative assumes development similar in nature to that of the proposed General Plan, impacts would be expected to be similar. Since violation of waste discharge requirements or water quality standards would be minimized, this impact would be considered less than significant.

Existing land uses and future development contemplated in the proposed General Plan would utilize water from EBMUD, which receives its potable water mostly from the Mokelumne River. Impacts related to substantially depleting groundwater supplies or interfering substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater level were, therefore, found to be less than significant for the proposed General Plan. No new groundwater wells are proposed as a part of the proposed General Plan or this alternative. Therefore, this alternative would have impacts similar to the proposed General Plan and they would be less than significant.

Development under the proposed General Plan would result in alterations to drainage, such as changes in ground surface permeability from paving, changes in topography from grading and excavation. However, policies in the proposed General Plan would require implementation of BMPs, incorporation of stormwater detention facilities, design of drainage facilities to minimize adverse effects on water quality, and minimization of increases in impervious areas. Thus, impacts would be less than significant. This alternative allows future development similar to the proposed General Plan although at a lesser overall rate. As a result, this alternative would have impacts similar to those of the proposed General Plan since federal and state regulations would apply, and remain less than significant.

Impacts related to the alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or the substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site was found to be less than significant for the proposed General Plan with the incorporation of Mitigation Measure 3.9-4. In addition, impacts related to the creation or contribute runoff water that would provide substantial additional sources of polluted runoff, was also determined to be less than significant with the implementation of Mitigation Measure 3.9-4 for the proposed General Plan. Most of the City would not result in new development that would substantially alter drainage patterns because these areas are already developed with existing uses and impervious surfaces. Operation of the proposed General Plan could degrade runoff water quality by contributing chemicals associated with household, commercial, transportation, and landscape uses. This impact would be considered less than significant. Since this alternative consists of future development similar to the proposed General Plan, with implementation of Mitigation Measure 3.9-4, impacts would be similar to those of the proposed General Plan, and impacts would be less than significant.

The City does not permit the construction of housing within the 100-year flood zone. Policies and implementation measures in the proposed General Plan set forth methods to reduce impacts related to flood zones. This alternative proposes new development similar to the proposed General Plan, and does not place housing within the flood zone. Impacts are expected to be similar and are considered less than significant.

The City is located within the inundation area from failure of the San Pablo Reservoir dam. San Pablo dam is owned and operated by EBMUD. Failure of the San Pablo dam would inundate the City the west of 23rd Street and between 23rd Street and I-80 from about Macdonald Avenue to between San Pablo Dam Road and Hilltop Drive and along San Pablo Creek, east of I-80. However, the risk of dam failure is reduced because EBMUD has constructed a seismic upgrade consisting of a larger buttress and improvements to the foundation to seismically strengthen the dam. The reservoir level limits have been returned to their pre-2004 status and the dam and reservoir are now fully operational. Therefore, the potential for this risk is the same for the proposed General Plan and this alternative. Development under the proposed General Plan would not increase the risk of dam failure, although it would increase the number of persons and amount of development exposed to this hazard. Dam failure could also result due to a seismic event. Implementation of the flood protection policies contained in the proposed General Plan, and existing Floodplain Ordinance, would minimize the impact of flooding. These protective measures would also reduce impacts from flooding as a result of dam failure to the extent feasible. Thus, risks associated with flooding, including dam failure inundation, would be considered less than significant, similar to the proposed General Plan.

The potential risk associated with inundation by tsunami is the same as for this alternative and the proposed General Plan. Potential risks from mudflow (i.e., mudslide, debris flow) would be considered prevalent, as slopes of 10 percent or more exist in the City. Prolonged rainfall during certain storm events would saturate and could eventually loosen soil, resulting in slope failure.

Implementation of the flood protection policies contained in the Safety Element of the proposed General Plan would also help minimize the impact of flooding and mudflows on persons and structures. Furthermore, all new development in the City occurring in areas that are subject to flood hazards would be required to comply with the flood damage prevention provisions of the City's Floodplain Ordinance and the Hazard Mitigation Plan for the region. Thus, risks associated with inundation by seiche, tsunami, and mudflow as a result of this alternative are similar to the proposed General Plan and are considered less than significant.

Noise

Implementation of this alternative would involve the use of construction equipment and techniques similar to those of the proposed General Plan. Therefore, similar significant and unavoidable impacts related to construction noise would occur. Significant and unavoidable impacts related to groundborne vibration would also result due to future construction under this alternative, similar to the proposed General Plan.

Groundborne vibration impacts related to operation of the future development was found to be less than significant for the proposed General Plan. Average vibration throughout the City was found to be around 50 VdB, which is substantially less than the threshold of 85 VdB. Since future development under this alternative will generate fewer average daily trips than that of the proposed General Plan, impacts would be expected to be similar but less than the proposed General Plan and remain less than significant.

The proposed General Plan was found to have significant and unavoidable impacts related to the exposure of sensitive receptors to noise levels in excess of the noise standards established by the City of Richmond due to the relatively close proximity of residential, commercial, and industrial uses to one another as well as cases where these potentially incompatible uses share the same site. Operational impacts were found to be created by HVAC units associated with large non-residential uses as well as truck deliveries. The HVAC units would range in noise level from 57-72 dBA at 50 feet, which could exceed the allowable noise levels of 60 and 65 dBA at nearby single family and multi-family residential, respectively. Policies set forth in the proposed General Plan require design considerations aimed at reducing noise impacts. In addition, the City's Noise Ordinance section 9.52.090 requires that continuous or periodically-operating equipment must be enclosed or muffled to reduce noise impacts. Noise from truck deliveries is limited to the hours of 7:00 a.m. to 10:00 p.m. The land uses in this alternative would be less intense in the areas of change proposed under the proposed General Plan and would not include residential uses in some of the change areas that would include residential for the proposed General Plan. Thus, impacts would be expected to be reduced, although they would remain significant and unavoidable.

Based on noise measurements and existing and future noise modeling, noise levels in excess of City ambient standards currently occur and would continue to occur in many residential areas and other noise-sensitive uses throughout the City. The Noise section of this EIR indicates that six roadway segments would result in a potentially significant impact as a result of the proposed General Plan due to increased average daily trips associated with future development. Policies set forth in the

proposed General Plan would help to reduce noise impacts. In addition, development of new construction using modern materials capable of more sound attenuation may reduce interior noise levels from that which currently exists. Noise abatement is possible, but not guaranteed, in the proposed General Plan and thus impacts were found to be significant and unavoidable. Development under this alternative would generate fewer car and truck trips than the proposed General Plan. However, this is not likely to reduce impacts to less than significant levels. Traffic noise would be higher in the future than it is now along highways, and along most major arterial and collector roads in the City due to development both inside and outside of the City that is anticipated to occur regardless of whether the proposed General Plan is adopted. Therefore, impacts related to this alternative would be significant and unavoidable since the condition currently exists and is expected to deteriorate as a result of development outside the City.

Public Services

Implementation of this alternative would not result in additional impacts on public services beyond those identified for the proposed General Plan. Development would occur in a fashion that is slightly less than the proposed project. Population increase does not necessarily affect fire protection. The geographic placement of structures has more of an impact of fire response times. Currently the RFD has adequate response times. Since the City is mostly built out, the geographic spatial location of structures is not expected to change significantly under either the proposed General Plan or this alternative.

The proposed General Plan would increase the intensity of development in the change areas, but these areas are already currently served by police protection services. The extent to which development would actually occur in the change areas is not known at this time and it is unclear whether existing police facilities would be able to serve new development in the change areas while maintaining acceptable response times. Future development under the proposed General Plan and under this alternative would be subject to Article XII (Public Works) Chapter 12.64 (Public Facilities Fee) and Chapter 12.65 (Public Facilities Impact Fees) which set forth a means to provide for the equitable and consistent collection of fees for public improvements and facilities which are needed to serve the developing areas of the City of Richmond. Impact fees would be imposed based on an amount set by a resolution of the City Council and payable prior to the issuance of building permits. Thus, impacts under this alternative would be similar to those of the proposed General Plan and remain less than significant.

Impacts due to increases in school enrollment would be reduced through the payment of school fees, required for all new residential development pursuant to Municipal Code 15.10 *et seq.* These fees are based on the use and size of a project. As school fees are collected from residential uses, developers are required to fund necessary school service and facility improvements to accommodate anticipated population and school enrollment growth within the City of Richmond. The process of determining specific fees involves review by WCCUSD school board and the adoption of a resolution by City Council. Since this is a requirement for either the proposed General Plan or this alternative and fees are proportional to development, impacts would be similar and remain less than significant.

Through compliance with section 12.63 of the Municipal Code (Library Impact Fees) which requires the payment of impact fees resulting from new residential or commercial development, it is anticipated that any future identified library needs would be identified and addressed under either the proposed General Plan or this alternative and impacts would remain less than significant.

Recreation

The City currently has 4,312 acres of parklands and open space, which accounts for 22 percent of the land area. Chapter 15.08.04 of the City of Richmond Municipal Code sets a goal of 3 acres of parkland per 1,000 residents. Development under this alternative would result in fewer residents than the proposed General Plan. However, as a condition of approval of a final map or parcel map, the developer is required to either dedicate land or pay a fee for park or recreational purposes. The amount of land to be provided is determined pursuant to Section 15.08.400(4)(a) of the Municipal Code, or developers may pay an in-lieu of fee equal to the value of the land prescribed. Payment of an in-lieu of fee or dedication of land to be used for recreation purposes would ensure that new development in the City would provide adequate park facilities. Since this alternative has less overall development proposed, the implementation of this alternative would also be less than significant.

The potential for the proposed General Plan to cause increased demand for the construction or expansion of recreational facilities beyond that which was contemplated in the General Plan was found to be less than significant due to the imposition of development impact fees pursuant to Chapter 15.08.04 of the City of Richmond Municipal Code. These fees would be required under this alternative; impacts would be similar and remain less than significant.

Transportation

This alternative would result in less development than the proposed General Plan, thus, average daily trips would be reduced under this alternative, as shown in Table 5-5. As discussed above, while this alternative would result in reductions in flow or congestion on area roadway segments relative to the proposed General Plan, it would not result in the reduction of an environmental impact to a less than significant level. Therefore, while impacts are reduced under this Alternative 2, impacts remain significant and unavoidable.

DAILY TRIP GENERATION – ALTERNATIVE 2			
Existing Trips	New Trips Generated		
	No Project	Draft General Plan	Alt 2
219,365	155,824	268,967	217,307
<small>Source: Fehr & Peers, September 2009.</small>			

Impacts related to roadway improvements were found to be significant for the proposed General Plan. Because substantial growth would also occur under this alternative, the segments identified as impacted under the proposed General Plan would also likely be affected under this alternative. As disclosed in the *Transportation Impact Analysis of Project Alternatives* prepared for the project (see

Appendix E), this alternative would reduce the congestion on freeways and arterials in the City, relative to the proposed General Plan, because they contain less growth in population and jobs, but not necessarily to a less-than-significant level. The impact would be less severe under this alternative, but would also be significant.

The residential and employment growth projected by 2030 within the change areas and the proposed General Plan Circulation policies and actions would substantially increase the demand for transit. The current bus frequencies, at typical 30-to-60-minute headways and high passenger loading of certain key routes, would not be sufficient to support the transit demand generated by the proposed General Plan growth patterns. This was found to cause a significant and unavoidable impact. According the *Transportation Impact Analysis of Project Alternatives* prepared for the project, this alternative would have a reduced demand for transit services compared to the proposed General Plan, but would not be reduced to less than significant levels. Therefore, this alternative would have a reduced impact on transit, but the impact would remain significant and unavoidable.

Implementation of the proposed General Plan would increase walking and bicycling trips and provide safety and connectivity improvements to serve the higher activity levels as a result of policies CR2.2, CR2.3, and CR3.1 and associated implementation measures. Transportation improvements would be subject to City transportation engineer approval during the development review process to ensure adequate safety standards, including line-of-site, are incorporated. The increase in biking and walking trips would also exist under this alternative due to the aforementioned policies. Therefore, impacts would be the same under this alternative, and remain less than significant.

Impacts related to safety at railroad crossings would be similar under this alternative with implementation of Policy CR3.1 and its associated implementation measure, which call for studies, design, and implementation of grade separations at various roadways. Impacts would remain less than significant.

Utilities

Water and sewer service is provided to the City by EBMUD. Impacts related to the need for construction or expansion of water supply facilities or insufficient supplies as a result of insufficient entitlements was found to be less than significant. Since this alternative would include less overall development, it would be reasonable to assume that this alternative would have a reduced impact compared to the proposed General Plan and remain less than significant.

Impacts on wastewater services would occur if wastewater requirements were exceeded for the RWQCB, if the project would result in the need for expanded or new wastewater facilities (the construction of which would cause significant environmental effects), or if the wastewater provider could not provide adequate service based on existing commitments. Impacts related to wastewater RWQCB requirements or if the wastewater provider could not provide adequate service based on existing commitments were found to be less than significant for the proposed General Plan. Thus, since this alternative proposes less development overall, based on regulatory requirements and reduced wastewater flows compared to the proposed General Plan, it would be reasonable to assume that these impacts resulting from this alternative would also be less than significant.

Because the existing wastewater treatment facilities are currently inadequate under wet weather conditions, expansion of the facilities would be required, which was determined to be a significant impact for the proposed General Plan. Although this alternative would result in less development and less wastewater generation compared to the proposed General Plan, expansion of facilities would still be required, which would also be a significant impact for this alternative.

Impacts related to solid waste would be significant if the proposed project would be served by a landfill with insufficient permitted capacity, or if it failed to comply with existing regulations. Since the daily permitted capacity at the landfills that serve the City have capacity to serve the proposed General Plan, which assumes more development than this alternative, it would be reasonable that impact from this alternative would be less and also be less than significant. Impacts related to the City complying with existing regulations related to solid waste were found to be less than significant for the proposed General Plan. It is assumed this alternative would also comply with policies for waste reduction and recycling and existing regulations would also be required. Therefore, impacts related this alternative would be similar and remain less than significant.

Visual Resources

Because this alternative would include development of the same areas as the proposed General Plan, the physical impacts associated with development of this alternative would be similar to the potential impacts related to the proposed General Plan. This alternative would include the High Intensity Mixed Use land use, which, like the proposed General Plan, would allow development that is taller than the existing development. Although this alternative assumes less development than the proposed General Plan, much of the reduction in intensity is assumed due to a reduction in residential units. This alternative would also allow for high intensity development in the Downtown/ Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay change areas, which would result in significant impacts due to the potential for development that would substantially alter the character of the City. This alternative would result in impacts on visual resources and character that are similar to the proposed General Plan.

Mitigation That Would No Longer Be Required

All mitigation measures required under the proposed General Plan would be required under this alternative.

Significant and Unavoidable Impacts That Would No Longer Occur

All of the significant and unavoidable impacts identified for the proposed General Plan would occur under this alternative.

Relationship of Alternative 2 to the Project Objectives

Alternative 2 would support most of the values and attain many of the goals as the proposed General Plan. The goals and policies set forth in the proposed General Plan would remain under this alternative. However, the reduction in land use intensity and exclusion of residential mixed-uses in change areas 12 to 16 could potentially circumvent the values and objectives of the City. Creating

transit-oriented, compact, and walkable neighborhoods is a key objective of the proposed General Plan. Eliminating residential uses in areas slated for mixed-use development could also be inconsistent with the City's intent to intensify the uses in the change areas. Also, development under this alternative is expected to create 9,100 fewer jobs than the proposed General Plan. This would likely reduce economic development opportunities which reduce access to a variety of quality jobs.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As discussed above, the No Project Alternative would be consistent with the CAP, but without Mitigation Measure 3.9-4, impacts related to runoff under this alternative would be greater than those of the proposed General Plan, and impacts could be *significant*. Alternatives 1 and 2 would result in reduced environmental impacts due to a reduced development intensity, but do not reduce significant impacts to less than significant levels. Significant impacts identified for the proposed General Plan would be related to air quality, climate change, cultural resources, noise, wastewater, traffic, and visual resources. Transportation and air quality impacts are directly related to population; and reductions in population, as well as improving alternative travel modes, would reduce these impacts. However, impacts related to cultural resources would occur if historic structures or if currently undiscovered remains or artifacts are encountered during construction. Consequently, any alternative that includes development could potentially impact these resources. Similarly, the wastewater treatment plant currently experiences flows beyond capacity during wet weather, so any alternative that would generate wastewater flows would result in an impact. The only alternative, therefore, that could eliminate impacts on cultural resources and wastewater would be the No Development Alternative. But for the reasons discussed above, the No Development Alternative would not be feasible. Because Alternative 1 would include the least amount of development of the two alternatives that do not result in a new significant effect, Alternative 1 would be the environmentally superior alternative. However, although the other alternatives discussed above would reduce some of the impacts compared to the proposed General Plan, none would eliminate a significant impact. Infrastructure improvements that could result in physical effects would be required for any of these alternatives. The proposed General Plan was found through the planning process to be most consistent with the objectives of the plan, particularly through the inclusion of residential uses in change areas 12 through 16, and would serve the greatest population while still potentially resulting in significant effects. Therefore, the proposed General Plan would be the superior alternative.

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6. REPORT PREPARATION

6.0 REPORT PREPARATION

LEAD AGENCY

City of Richmond
450 Civic Center Plaza
Richmond, California 94804

Richard Mitchell, Director of Planning and Building Services

EIR AUTHORS

Consultant

PBS&J
1200 2nd Street
Sacramento, California 95814

Project Manager
Deputy Project Manager

Patrick Hindmarsh
Nicole Keeler

Transportation Consultant

Fehr & Peers Associates
100 Pringle Avenue, #600
Walnut Creek, CA 94596

Project Manager, Ellen Poling

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